



中国睡眠研究会 第16届全国学术年会 暨湖北科学技术学术年会 论文汇编

主办单位：中国睡眠研究会
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华中科技大学同济医学院附属协和医院
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湖北·武汉 2024年9月6~8日

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中国睡眠研究会第16届全国年会暨湖北科学技术学术年会

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陆林，中国科学院院士，北京大学第六医院院长/北京大学精神卫生研究所所长、山东第一医科大学校长/山东省医学科学院院长、国际麻醉品管制局委员、国家精神心理疾病临床医学研究中心主任、国家精神疾病医学中心主任、中国疾病预防控制中心精神卫生中心主任。

睡眠医学与相关学科的交叉展望

在当今科研与临床实践中，我们见证了睡眠医学与神经科学、心理学、内分泌学、免疫学、遗传学以及信息科学等领域的紧密交织。这种交叉不仅深化了我们对睡眠机制的理解，还推动了睡眠障碍病因、诊断及治疗方法的创新。未来，随着技术的不断进步和科研的深入，睡眠医学与相关学科的交叉研究将展现出更广阔的前景。我们期待看到更多跨学科的合作与创新，共同揭开睡眠的更多未知面纱，为患者带来更加个性化、精准的睡眠健康管理方案。同时，我们也期待这种交叉研究能够推动睡眠医学在教育、政策制定以及公众认知等方面的全面发展，形成一个更加综合、全面的睡眠健康生态系统。这将预示着睡眠医学研究与应用将进入一个前所未有的跨学科融合新阶段，为人类的睡眠健康带来更大的福祉。



Professor Yun Kwok WING

MBChB(Hons) FRCPsych(UK), MRCP(UK) FHKAM (Psych), FHKCPsych

Professor Wing is the Choh-Ming Li Professor of Psychiatry and Chairman of the Department of Psychiatry, the Chinese University of Hong Kong. He is also the Director of the Li Chiu Kong Family Sleep Assessment Unit of The Chinese University of Hong Kong.

Professor Wing has engaged in extensive interdisciplinary collaboration to develop a focused line of novel scientific inquiry that centred on sleep and circadian medicine, and lately digital medicine. By integrating various disciplines such as general medicine, pediatrics, public health, neuropsychiatry, clinical psychiatry and digital approach, Professor Wing aims to advance the understanding of sleep-related and mental conditions and their impact on overall well-being. He has published over 400 referred publications in SCI ranked journals. Professor Wing was awarded the distinguished national award for Sleep Medicine Scientific Technological Advance by the Chinese Medical Doctor Association and distinguished contributions to the development of sleep medicine and sleep research by Chinese Sleep Research Society.



Charles M. Morin, Ph.D.

Professor of Psychology and Director, Sleep Research Center
Canada Research Chair in Behavioral Sleep Medicine
Université Laval, Quebec City, Canada

Abstract

Cognitive-Behavioral Therapy for Insomnia (CBTi) – New Developments and Future Challenges

Insomnia is the most prevalent of all sleep disorders and it produces significant burden for the individual patients and for society and the global health care system. After presenting an overview of the epidemiology and burden of chronic insomnia, this lecture will summarize: a) key milestones that have led CBTi to being recognized as first-line treatment in clinical practice guidelines, b) review recent emerging trends regarding digital CBTi, and c) whether this is the solution to make insomnia treatment more accessible to patients. The lecture will conclude with an outline of some implications for clinical practice and challenges ahead for future research.

Biographical Sketch

Charles M. Morin, PhD, is a Professor of Psychology and Director of the Sleep Research Centre at Université Laval in Quebec City, Canada. He holds a Canada Research Chair on behavioural sleep medicine. Professor Morin is a world leader in insomnia research. He has been at the forefront of new developments in therapeutic approaches for insomnia and on the natural history of insomnia with its risk factors and long-term consequences. Professor is a past President of the World Sleep Society and the Canadian Sleep Society and was a founding member of the Society of Behavioral Sleep Medicine and a member of the American Psychiatric Association work group revising sleep disorders diagnostic criteria for DSM-5. He is currently an Associate Editor for the journals SLEEP and Behavioral Sleep Medicine. Professor Morin has published extensively (8 books, > 300 articles) on the topic of insomnia (textbooks, scientific articles, chapters, and books for the lay public) and these writings have been instrumental in enhancing the standards of clinical care for patients affected with insomnia.



Luis de Lecea, PhD

Dept of Psychiatry and Behavioral Sciences. Stanford University School of Medicine. Stanford, CA 94305

Prof. de Lecea is Professor at the Department of Psychiatry and Behavioral Sciences, Stanford University. Prof. de Lecea obtained his PhD from the University of Barcelona and conducted postdoctoral studies at The Scripps Research Institute in La Jolla, California. Prof. de Lecea's research is based on his discovery of several neurotransmitters including hypocretin, cortistatin. Prof. de Lecea has authored 300+ publications on prestigious journals including Nature, Science, etc. His work has been influential in the sleep research field with over 34,000 citations, and led to the development of multiple drugs for the treatment of sleep disorders. His laboratory also pioneered the implementation of optogenetic methods in vivo to manipulate neuronal activity in genetically defined neuronal circuits and alter behaviors. Prof. de Lecea has received numerous awards, including Brain Research Foundation Distinguished Scientist Award, American College of Neuropsychopharmacology Innovation Award, and the Sleep Research Society Outstanding Research Achievement award, Senior Fulbright Fellow. He serves on the editorial board of several journals and on multiple national and international committees including National Institute of Drug Abuse Board of Scientific Counselors.

I will show how the use of optogenetics and circuit mapping methods have transformed our understanding of the regulation of sleep and wakefulness. I will show recent examples from our laboratory describing new circuits and mechanisms of sleep/wake transitions throughout lifespan. In particular, neuronal connections to the Hypocretin system in the lateral hypothalamus have a critical role in establishing sleep architecture both in young and older animals. I will also discuss the identification of voltage-dependent potassium channels as key modulators of Hcrtr excitability and a potential pharmacological target to treat sleep fragmentation in aged patients.

Our laboratory is developing ultrasound as a new approach to sleep intervention in mouse models. We have developed a new method to screen and optimize parameter conditions of fUS-mediated cell type specific modulation of neuronal activity in arousal circuits, with significant effects on sleep architecture. The results from these experiments pave the way towards non-invasive modulation of sleep/wake states in humans.



Yang Dan is Pivotal Life Sciences Chancellor's Chair Professor in the Department of Molecular and Cell Biology and an HHMI investigator at UC Berkeley. She studied physics as an undergraduate student at Peking University and received her Ph.D. from Columbia University. She did her postdoctoral research on vision at Rockefeller University and Harvard Medical School. Her recent interest is to understand how and why we sleep and neural mechanisms underlying cognitive control.

杨丹是加州大学伯克利分校分子和细胞生物学系生命科学校长讲座教授，也是 HHMI 研究员。她在北京大学攻读物理学本科，并在哥伦比亚大学获得博士学位。她在洛克菲勒大学和哈佛医学院做了视力方面的博士后研究。她最近的兴趣是了解我们睡眠的方式和原因，以及认知控制的神经机制。

Title: The how and why of sleep

Abstract: Sleep is a fundamental biological process, and its disruption has profound impacts on human health. To identify neurons involved in sleep generation, we have performed whole-brain screening for sleep active and sleep promoting neurons, using a combination of optogenetics, electrophysiology, imaging, and gene expression profiling. We found that sleep is controlled by a highly distributed network spanning the forebrain, midbrain, and hindbrain, and the sleep neurons are part of the central somatic and autonomic motor circuits. To address the “why” question, we propose a catecholamine hypothesis, in which inactivation of catecholamine signaling may be a basic process underlying how sleep interacts with the cardiovascular, immune, and neuroendocrine systems.

标题:睡眠的方式和原因

摘要:睡眠是一个基本的生物过程，睡眠的中断对人类健康有着深远的影响。为了识别参与睡眠产生的神经元，我们结合光遗传学、电生理学、成像和基因表达谱，对睡眠活跃和睡眠促进神经元进行了全脑筛查。我们发现，睡眠是由跨越前脑、中脑和后脑的高度分布的网络控制的，睡眠神经元是中央躯体和自主运动回路的一部分。为了解决“为什么”的问题，我们提出了儿茶酚胺假说，其中儿茶酚胺信号的失活可能是睡眠与心血管、免疫和神经内分泌系统相互作用的基本过程。



Louis J. Ptáček, MD

John C. Coleman Distinguished Professor of Neurology
University of California, San Francisco

KEYWORDS/AREAS OF INTEREST: Channelopathies, Epilepsy, Episodic Disorders, Circadian Rhythm, Sleep Disorders, Human Genetics, Neurodegeneration, Familial Advanced Sleep Phase Syndrome, Familial Delayed Sleep Phase Syndrome, Andersen-Tawil Syndrome, Familial Periodic Paralysis, Thyrotoxic Hypokalemic Periodic Paralysis, Migraine, Animal Models

PROFESSIONAL ACTIVITIES

Membership in Professional Organizations

Phi Beta Kappa
American Academy of Neurology
American Society of Human Genetics
American Neurological Association
Society for Neuroscience

SERVICE ACTIVITIES SUMMARY

Dr. Ptacek serves on the executive committees of the Biomedical Science Graduate program and the Institute of Human Genetics. In addition, he is a long-standing member of the MSTP council. He mentors 6 junior faculty in the Departments of Neurology, Pediatrics and Anatomy. He serves on many scientific advisory boards including the MRC funded Channelopathy center at University College London, the MRC funded Synaptopathy center at University College London, the Buck Institute, the Periodic paralysis association, and the Jackson Laboratories Board of Scientific Councilors.



陈建国：华中科技大学同济医学院药理学系主任，华中学者领军岗教授、国家杰青、长江学者、国家 973 计划和脑计划项目首席科学家，国家自然科学基金创新群体负责人。曾任华中科技大学副校长、同济医学院院长。长期从事抑郁症发病机制及药物干预研究。中国药理学学会副监事长、神经精神药理专委会副主委。在 Nature Neuroscience、Nature Metabolism, Nature Communications, Science Advances、Biological Psychiatry、Molecular Psychiatry 等发表文章 200 余篇。

基于转化药理学理念的抗抑郁症药物研究

陈建国

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随着社会发展，人们面临的压力越来越大，抑郁症发病率越来越高，而可用药物和有效药物远远不能满足临床治疗需要。除了研发原始创新的有效药物外，基于转化医学的理念，结合疾病发病机制及药物靶标研究新进展，从已上市药物中寻找对疾病有潜在治疗作用的药物，确定新的适应症（repurpose），越来越受到重视，已成为新药发现的一个重要路径。基于这一思路，本实验室最近的工作证明，经典的 ACEI 类抗高血压药卡托普利具有快速抗抑郁症作用，这种作用不是通过 RAA 系统，而是通过非经典途径抑制缓激肽降解，激活缓激肽受体及其下游信号而产生的。另一方面，我们还证明大剂量的 Vitamin C 亦有快速抗抑郁症作用，有可能作为联合用药应用于抑郁症的临床治疗。此外，我们基于临床生化检测结果，通过行为学和肠道菌群组学分析，在抑郁症模型动物上证明一定浓度的氨，有利于调控情绪低落。其机制与通过提供神经递质 GABA 合成的原材料谷氨酰胺，增加 GABA 能神经传递有关。传统的止咳化痰药氯化铵可通过增加体内氨的浓度而产生抗抑郁症作用，有望成为临床可用药物。

——本研究获得科技部科技创新 2030—脑科学重大专项支持



单凌： 荷兰皇家科学院神经生物学研究所

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近5年作为第一作者,共通讯,连续发表两篇 *Ann of Neurol* 及两篇 *Brain Behav. Immu.* 参与 *PNAS* 发现发作性睡病与甲基化修饰有关。受邀在综述杂志 *Nature reviews Neurol* 发文。获得玛丽居里基金等多项基金,获得欧盟发作性睡病及组胺,美国 *NARSAD* 青年科学家奖。

一、睡眠疾病与呼吸、精神、 心理、神经等相关疾病

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γ -tACS 对抑郁症伴失眠障碍患者的疗效及机制的研究

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目的：已有的研究提示 γ -tACS 对于抑郁症以及失眠障碍是一种有潜力的疗法。本文旨在基于近红外脑功能成像技术探究 γ -tACS 治疗抑郁症伴失眠关于调节大脑功能活动的机制。

方法：（1）通过筛选 2022 年 1 月—2023 年 1 月就诊于宁波市康宁医院的患者，纳入抑郁症伴失眠障碍患者 60 名，通过完全随机的方法将其分为两组，其中真刺激组 30 例，伪刺激组 30 例，在入组时收集所有患者的一般临床资料。（2）两组患者需接受一次 30 分钟的刺激干预，其中真刺激组的模式为电流 2mA 的 40Hz γ -tACS 治疗，伪刺激组接受的模式为不通电流的 tACS（伪刺激）治疗。（3）分别在治疗前后采集功能近红外光谱成像数据并且将相关数据进行处理分析。

结果：（1）伪刺激组与真刺激组在治疗前后完成工作记忆（work memory, WM）任务的正确率的组间差异无统计学意义（ $P>0.05$ ）；（2）真刺激组治疗前后完成 WM 任务期间，被试者的右侧背外侧额叶（Rd1pfc）皮层的氧合血红蛋白（oxy-Hb）浓度变化差异的平均值（ $\text{avg}\Delta\text{oxy-Hb}$ ）较前明显增加，且存在统计学差异（ $P<0.05$ ）。伪刺激组的组内差异无统计学意义（ $P>0.05$ ）。

结论：单次 30 分钟的 γ -tACS（40Hz 2mA）能够改善抑郁症伴失眠障碍导致的异常降低的额颞叶血流，从而恢复其受损的脑神经功能。

关键词：抑郁症

发作性睡病患者认知行为功能的昼夜节律波动

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目的：发作性睡病患者存在显著的日间功能损害，既往认为主要与日间过度思睡有关，近年来也有研究提出与发作性睡病内在特异的认知行为功能受损有关。本研究通过多个时间点的认知行为测试，探索发作性睡病患者认知行为功能的昼夜节律波动。

方法：对发作性睡病组（ $n = 29$ ）和睡眠呼吸暂停组（ $n = 33$ ）进行量表评估、多导睡眠监测、多次小睡睡眠潜伏期试验，以及多个时间点的精神行为警觉测验、stroop 色词任务和 2-back 工作记忆任务测试。

结果：与睡眠呼吸暂停组相比，发作性睡病组仅抑制控制表现显著更优（ $p = 0.009$ ），警觉性注意及工作记忆未表现出组间差异。发作性睡病患者警觉性注意（ $p < 0.001$ ）、抑制控制（ $p = 0.008$ ）、工作记忆（ $p < 0.001$ ）在一天中时间节律效应显著。1型和2型发作性睡病间比较也发现呈现显著时间点效应。发作性睡病的警觉性注意整体呈现出“上午

（8:00~10:00）变差，午后（12:00~18:00）回升”的变化规律，且前一夜间（20:00）PVT表现最佳。抑制控制呈现出“上午（8:00~12:00）变好，午后（14:00~18:00）变差”的变化规律，工作记忆呈现出日间变好的趋势，且都在前一夜间（20:00）最差。

结论：发作性睡病的警觉性注意在午间最差，抑制控制和工作记忆在夜间表现最为不佳，这为合理安排休息以调整患者的学习和工作任务提供了一定依据。

关键词：发作性睡病, 认知行为功能, 昼夜节律

单侧牙槽嵴裂患者的睡眠呼吸状况测量评估

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目的：本研究通过鼻呼吸量测定、鼻阻力测定及多导睡眠监测（PSG），结合问卷调查，评估单侧牙槽嵴裂患者的睡眠呼吸状况，以期为临床上单侧牙槽嵴裂患者患者的诊疗提供参考。

方法：本研究纳入 2021 年收入院的诊断为单侧牙槽嵴裂的 13 例连续病例，对所有患者在术前使用 Rhinospirometer NV1 测量鼻呼吸量，使用 Rhinomanometer NR6 测量鼻阻力，使用 ApneaLink Air 进行术前的整夜多导睡眠监测，使用改良的睡眠问卷了解患者打鼾、嗜睡、行为相关症状。

结果：13 名患者中，53.85%存在双侧鼻气流量差异较大，符合由软件建议需外科手术改善的鼻中隔偏曲；76.92%存在双侧鼻阻力的显著差异；问卷中主动报告存在打鼾的患者有 61.53%，而 PSG 结果显示 46.15%的患者 AHI > 5 次/h，即符合阻塞性睡眠呼吸暂停低通气综合征，且有 92.30%的患者夜间最低血氧饱和度低于 85%。

结论：单侧牙槽嵴裂患者中，过半可能存在鼻功能异常及睡眠障碍，鼻功能的改善、鼻中隔偏曲的纠正及睡眠障碍的治疗应纳入鼻唇畸形整复的治疗考虑中。

关键词：牙槽嵴裂，植骨术，阻塞性睡眠呼吸暂停低通气综合征，鼻阻力，鼻气流量

Esketamine rapid antidepression combined with dexmedetomidine sleep modulation for patients with depression and insomnia

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Background: Depression combined with insomnia is a complex bidirectional relationship that is more difficult to treat versus a single disorder, and there is a lack of effective treatments available. In this study, we carried out a novel way to simultaneously intervene in depression combined with insomnia and examined functional magnetic resonance imaging (fMRI) to help further elucidate the mechanisms.

Methods: A total of 105 patients with depression and insomnia were included in this observational and prospective study. 17-item Hamilton Depression Scale (HAMD-17), Pittsburgh Sleep Quality Index (PSQI) were collected from medical records at baseline (T0), 24 hours (T1), 7 days (T2), 14 days (T3), 21 days (T4), one month (T5), two months (T6), three months (T7) follow-up. fMRI scans were performed at baseline and two hours after treatment.

Results: Compared with baseline, the symptoms of depression in T1-T7 were significantly reduced. At two hours after treatment, the left amygdala, the left hippocampus, the left superior temporal gyrus, the left anterior cingulate gyrus, and the left paracingulate gyrus showed a consistent reduction in spontaneous neural functional activity. In contrast, the right dorsolateral superior frontal gyrus, middle frontal gyrus, infraorbital frontal gyrus, middle orbital frontal gyrus and right caudate nucleus showed increased consistency of spontaneous neural function. No unanticipated safety issues were detected, and the rate of side effects was equivalent to those reported in RCTs.

Conclusion: Our findings support the efficacy and safety of esketamine combined with dexmedetomidine (Dex) in patients with depression and insomnia, which provides a new approach to clinical improvement of depression combined with insomnia.

Keyword: Depression, esketamine, insomnia, functional magnetic resonance imaging

Sleep disturbance, sleep-related dysfunctional beliefs, occupational burnout, and their impacts on anxiety of nurses

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Background: Clinical nurses may suffer from anxiety disorders due to a wide range of factors including prolonged working hours as well as enormous emotional burdens. Poor mental health condition is detrimental to both personal welfare and professional performance. Therefore, aiming to further investigate how their levels of anxiety could be impaired by potential factors, we examined various aspects of life among the nursing staff with an emphasis on sleep quality and sleep-related cognition.

Method: This cross-sectional study included 995 clinical nurses at the Second Hospital of Shandong University (94% females, age = 32.5 ± 6.6). Data were collected via an online survey. In addition to demographic information, validated tools were used in the questionnaire to evaluate the levels of anxiety (General Anxiety Disorder-7), sleep disturbance (Insomnia Severity Index), sleep-related beliefs and attitudes (Dysfunction Beliefs and Attitudes about Sleep, DBAS-16, subscales: Consequences, Worry/Helplessness, Medication, Sleep Expectations), somatic symptoms (Patient Health Questionnaire-15), occupational burnout levels (Maslach Burnout Inventory General Survey), perceived stress (Perceived Stress Scale), and the quality of life (36-Item Short Form Survey). Later, a logistic regression model was developed.

Results: In sum, 11.6% individuals were with more than moderate levels of anxiety (GAD-7 scores ≥ 10). To be specific, a history of physical disease and a family history of insomnia both significantly related to a higher level of anxiety. In addition, although there was no difference in terms of DBAS-16 scores between groups, positive associations were found between anxiety levels and DBAS-16 subscales Worry/helplessness as well as Consequences. As revealed by the adjusted logistic regression model, significant factors contributing to greater anxiety levels include the severity of somatization (OR = 1.047, CI = 1.005-1.091), insomnia (OR = 1.108, CI = 1.058 - 1.160), occupational burnout (OR = 1.039, CI = 1.023 - 1.056), malfunctioning beliefs about worry and helplessness (OR = 0.935, CI = 0.880 - 0.993), and poor psychological health (OR = 0.992, CI = 0.989 - 0.996).

Conclusion: This model highlights that anxiety management and other effective means ought to be incorporated to promote the psychophysiological well-being of the nursing staff. Besides this, the preliminary exploration of faulty sleep-related beliefs and attitudes suggests that cognitive behavioral therapy for insomnia (CBTI) could be applied as a useful intervention to improve the overall condition regarding to sleep quality.

Keyword: insomnia, sleep-related dysfunctional beliefs, nurses, anxiety

Exploration of Correlations Between Sleep Quality and Chronic Diseases in a Community-Based Population

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【Objective】 This study aimed to describe the sleep quality in the general community population in China and explore the association between sleep quality and chronic diseases.

【Methods】 This study is based on the Community Cohort Study of Depression, a survey conducted in Beijing. Baseline surveys on sleep quality and disease history of general community residents were conducted using a questionnaire that included demographic information, lifestyle, disease history, sleep, and mood status. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI), with those scoring ≤ 7 having better sleep quality and those scoring > 7 having poorer sleep quality. Chronic diseases included in this study included hypertension, diabetes mellitus, chronic respiratory diseases, coronary heart disease, and thyroid disease, and all disease histories were reported by the respondents themselves. The correlation between sleep and chronic diseases was analyzed using chi-square, and multivariate logistic regression was used for multiple variable analysis. Statistical analyses were performed using SPSS 27.0 software at a significance level of $\alpha = 0.05$.

【Results】 A total of 2672 respondents were included in this analysis. The age ranges of the survey respondents were 20–88 years old, with a Median of 65 years old; 69.8% of all study participants were female ($n=1865$). A total of 56.29% of the respondents self-reported ($n=1504$) a history of chronic disease, including 1005 patients (37.61%) with hypertension, 455 (17.03%) with diabetes mellitus, 288 (10.78%) with coronary heart disease, 214 (8.01%) with thyroid disease, and 98 (3.67%) with chronic respiratory disease. 53.50% of the survey respondents slept 6–7 hours per night, 53.0% self-reported good sleep quality, and 19.2% had varying sleep problems. We found that poor sleep quality was significantly associated with having chronic diseases, and in addition, having hypertension, coronary heart disease, and respiratory diseases correlated with sleep-induced daytime dysfunction ($P < 0.05$). After adjusting for age, sex, and body mass index (BMI), the risk of chronic disease was 1.36 times higher in those with poorer sleep quality than in those with better sleep quality (95% CI: 1.29–1.44, $P < 0.01$).

【Conclusion】 Sleep quality is statistically associated with the development of many diseases, and is a factor of concern to prevent the development of chronic diseases. At the same time, education on the knowledge, beliefs, and behaviors

of sleep improvement should be carried out, and people should be encouraged to improve their sleep problems by seeking medical care.

Keyword: Sleep, Sleep Quality, Chronic Diseases

Sleep disturbance significantly mediates the association between allergic rhinitis and behavior problems among primary school children

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Background: The association between allergic rhinitis (AR) and behavior problems (BPs) is still controversy. In addition, potential critical mediating role of sleep disturbance (SD) in their association has not been explored. Employing large community samples, this cross-sectional study aims to address these issues.

Methods: A total of 18,316 children (mean age 7.89 years, male: 53.1%) were recruited from 34 primary schools from Shanghai, China. Demographic information, medical history, Children's Sleep Habits Questionnaire (CSHQ), and Conners' Parent Rating Scale (CPRS) were reported or scored by guardians via online survey. Logistic regression models with adjustment were employed to investigate the association between self-reported AR and BPs. Reproducible causal mediation analyses were used to explore the mediation effect of SD.

Results: The prevalence of self-reported AR, overall SD and any BP was 32.9%, 23.3% and 18.0%, respectively. Adjusted odds ratios (ORs) for BPs were significantly higher in children with AR compared to those without (all $p < 0.001$): for conduct problems the OR was 1.77; learning problems 1.67; psychosomatic problems 1.82; impulsive-hyperactive 1.68; anxiety 1.36; and hyperactivity 1.67. Mediation analysis indicated that overall SD significantly mediated the association between AR and BPs, with mediation proportions ranging from 32.6% to 64.1% (all $p < 0.001$), among which daytime sleepiness and sleep disordered breathing contributed most.

Conclusion: Children with AR have higher odds of presenting BPs, and SD significantly mediates these associations. These results highlight the importance of proper screening and management of SD and BPs in children with AR.

Keyword: allergic rhinitis; behavior problems; sleep disturbance; mediation effect

Moderating role of sleep variables for the association between work-related stress and incident dementia

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Objective: Both psychosocial work stress and low sleep quality may increase risk for dementia. However, it is unclear whether sleep duration and insomnia symptoms moderate the association between work-related stress and dementia.

Methods: 19,369 participants who were free from dementia and stroke at baseline of the Swedish National March Cohort were included. Job demands and control were estimated using questions derived from the Swedish Demand-Control-Support Questionnaire (DCSQ). Sleep duration and insomnia symptoms were ascertained by the Karolinska Sleep Questionnaire. Incidence of dementia was documented by national registers with a median follow-up of 19.2 years. Multivariable hazards models were used to estimate hazard ratios (HR) and 95% confidence intervals (CIs).

Results: In the fully adjusted model, job demands was not associated with the risk of dementia. However, lower level of job control was associated with higher risk of dementia (HR=1.20, 95% CI: 1.05-1.37). Individuals with a passive job (low demand, low control) had higher risk for dementia than those with an active job (high demand, high control) (HR=1.36, 95%CI: 1.07-1.73). The interaction between job demands and sleep duration was significant, with HR= 1.35 (95%CI: 1.02-1.79) for <7h vs. ≥7h sleep duration among those with high demands, as was the interaction between job demands and insomnia symptoms, with HR = 1.47 (95%CI:1.07-2.04) for having insomnia symptoms vs. no insomnia symptoms among those with high demands. In participants with low vs. high demands, the effect of ≥7 h sleep on dementia was 1.34-fold higher and the effect of having no insomnia symptoms on dementia was 1.30-fold higher. Job control did not show any significant interaction with sleep variables. The interaction between job strain and sleep characteristics was significant, with insomnia symptoms associated with an increased risk of dementia among participants having high job strain (HR 1.58, 95% CI: 1.02 - 2.45). Moreover, a significant association between having a passive job and dementia was observed for participants with ≥7 h sleep (vs. active job, HR 1.58, 95% CI: 1.15-2.16) and among those without insomnia symptoms (vs. active job, HR 1.52, 95% CI: 1.16-1.99).

Conclusion: The findings suggest a moderating role of sleep duration and insomnia symptoms in the association between work-related stress and dementia.

Keyword: Work-related stress, job strain, sleep, dementia

失眠伴阻塞性睡眠呼吸暂停患者脑电功率频谱与认知功能损害的相关性

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目的 探讨失眠伴阻塞性睡眠呼吸暂停（OSA）患者脑电功率频谱与认知功能损害的相关性。
方法 收集失眠患者 74 例，根据是否合并 OSA 将患者分为失眠组和失眠伴 OSA 组。使用脑电功率频谱分析软件分析睡眠脑电功率频谱；采用蒙特利尔认知评估量表（MoCA）、记忆与执行筛查量表（MES）评估认知功能；采用 Pearson 相关法分析失眠伴 OSA 患者脑电功率频谱与认知功能的相关性。
结果 NREM2 期 theta 脑电功率频谱与 MES 总分呈正相关（ $r=0.334$ ， $P<0.05$ ），NREM1 期 alpha 脑电功率频谱与 MoCA 中注意评分呈负相关（ $r=-0.679$ ， $P<0.05$ ），NREM1 期 beta 脑电功率频谱与 MoCA 中抽象评分呈负相关（ $r=-0.585$ ， $P<0.05$ ）。
结论 失眠伴 OSA 患者的脑电功率频谱表现为 NREM2 期 theta 脑电功率频谱减少，NREM1 期 theta、alpha 脑电功率频谱减少，并且睡眠的改变与认知功能具有相关性。

关键词：失眠, 睡眠呼吸暂停, 脑电功率频谱, 认知损害

缺血性脑卒中患者睡眠纺锤波与认知障碍的相关性分析

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背景：睡眠纺锤波是睡眠脑电图（EEG）波形的一种变化，通常被定义为持续 0.5~3.0s 的 sigma 频率（11~16Hz）活动的起伏振荡。研究表明睡眠纺锤波参与记忆巩固，促进记忆与学习，与生理衰老及认知下降显著相关。

目的：探讨缺血性脑卒中患者睡眠纺锤波数量、纺锤振幅及纺锤持续时间的变化，分析纺锤波对脑卒中患者认知的影响，以期了解纺锤波是否可作为评估脑卒中患者认知障碍的脑电图生物标志物。

方法：选取自 2022 年 3 月至 2024 年 2 月在扬州大学附属医院接受多导睡眠监测（PSG）的患者 314 例，将其分为卒中组 229 例与对照组 85 例，收集基线资料、问卷评分、PSG 及纺锤波参数，比较两组指标的差异，使用二变量 spearman 分析与 MOCA 分相关的变量，采用多元线性回归模型来评估缺血性卒中患者 MOCA 评分的影响因素。

结果：与对照组相比，卒中组的 MOCA 评分更低，N2 及 N3 期纺锤波均个数更少、指数更低，N2 期纺锤波平均时长更短，N3 期纺锤波最大幅度更低（ $p < 0.05$ ）；在脑卒中患者中 MOCA 评分与年龄成负相关，与 N2 期纺锤波个数及指数、睡眠效率、REM 期占比、平均 SpO₂ 成正相关；多元线性回归模型显示脑卒中患者 MOCA 评分与 N2 期纺锤波指数显著相关。

结论：脑卒中患者的纺锤波会出现数量减少、持续时间变短、幅度下降，并与患者认知水平下降有关，N2 期纺锤波指数的改变可用于评估缺血性脑卒中患者认知的受损程度。

关键词：脑卒中, 纺锤波, 认知

The effects of transcutaneous vagus nerve stimulation on conditioned fear extinction in humans

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Study Objective: An important component of post-traumatic stress disorder (PTSD) treatment is the elimination of fear through repeated exposure to fearful stimuli. This process relies on emotional and cognitive reframing of traumatic memories, as well as facilitating adaptive updating of memories and emotional regulation through repeated exposure. And vagus nerve stimulation enhances memory formation in humans. The purpose of this study was to assess whether transcutaneous stimulation of the vagus nerve (tVNS) accelerated the extinction of fear and reduced spontaneous recovery from fear.

Methods: To assess fear conditioning and subsequent fear extinction, we captured subjects' electroencephalograms, skin conductance responses, and phasic heart rate responses. We studied fear conditioned reflexes in 45 healthy participants over a 2-day period. After the fear memory learning phase, participants were randomly assigned to either the tVNS or sham stimulation group. Retention of the vanishing memory was tested after the intervention and 24 hours after the intervention.

Results: The results showed that after the intervention, the fear memory faded significantly in the tVNS group, and the electrophysiological results showed that significant negative wave activity was induced during the 600-ms time window after sound cue exposure, and the induced EEG activity was mainly concentrated in the frontal region.

Conclusions: In summary, the present study confirms that tVNS disrupts the formation of fear memories and effectively reduces the expression of fear memories. The present findings provide preliminary indications that tVNS may be a promising tool to improve memory consolidation and eliminate fear, providing a basis for the development of novel intervention strategies for fear-related disorders such as PTSD.

Keyword: PTSD, tVNS, Fear memory, Extinction

轻中度缺血性脑卒中患者白天嗜睡风险的性别差异分析

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背景: 白天过度嗜睡(EDS)是卒中的常见并发症,对患者的日常生活和功能恢复有不利影响。脑卒中后 EDS 的临床特征和危险因素在男性和女性之间可能存在差异。

目的: 本研究旨在探讨轻中度缺血性脑卒中患者睡眠的性别差异性及其不同性别日间嗜睡的风险因素。

方法: 纳入 2022 年 2 月至 2024 年 5 月在扬州大学附属医院接受多导睡眠图监测的轻中度脑卒中患者。回顾性收集基线数据、实验室检查、多导睡眠图数据和相关量表得分。采用 ESS (Epworth Sleepiness Scale)评分评估脑卒中后 EDS,采用 SPSS 26.0 进行统计学分析。

结果: 男性的 ESS 评分高于女性,而女性的匹兹堡睡眠质量指数(PSQI)和医院焦虑与抑郁量表(HADS)得分较高。男性和较高的抑郁评分是 EDS 的危险因素;在男性患者中,较高的焦虑症状是 EDS 的危险因素,而吸烟是 EDS 的保护因素。抑郁、高唤醒指数和 N3 睡眠时间比例减少是女性 EDS 的危险因素。

结论: 轻中度缺血性脑卒中患者 EDS 的特点及影响因素在性别上存在差异。抑郁、睡眠碎片化和慢波睡眠减少是女性 EDS 的危险因素。焦虑会加重男性的 EDS。对患者心理状态的评估有助于进一步推进脑卒中患者的临床干预研究。

关键词: 脑卒中, 白天嗜睡, 性别差异

OSAHS 与反流性食管炎的相关性分析

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目的 研究阻塞性睡眠呼吸暂停低通气综合征 (OSAHS) 与反流性食管炎 (RE) 的相互影响。
方法 本研究为回顾性分析, 以在云南省第一人民医院经多导睡眠监测 (PSG) 诊断为 OSAHS 并进行胃镜检查者为研究对象。以胃镜诊断 RE, 统计 OSAHS 患者的 RE 发生率; 以性别、年龄、体重指数 (BMI)、睡眠呼吸暂停低通气指数 (AHI) 分组, 比较各组的发生率; 研究影响 RE 发生的因素以及 RE 是否会影响 OSAHS 的严重程度。结果 共有符合条件的 373 名研究对象, 男性 216 名, 女性 157 名; 年龄 46 (36, 55), BMI 28.4 (25.6, 32.7), AHI 24.4 (14.3, 43.6)。OSAHS 患者的 RE 发生率为 23.1%, 男性 (29.9%) 显著高于女性 (11.3%)。RE 发生率在年龄分组中无差异, 在 BMI 和 AHI 分组中有差异, BMI 超重和肥胖组分别为 17.1%、32.9%; AHI 轻度、中度和重度组分别为 10.2%、19.8% 和 33.8%。OSAHS 患者合并 RE 时 AHI 和最长呼吸暂停时间 (maxSAT) 更大, 最低血氧饱和度 (LSpO₂) 更低。影响 RE 发生的主要因素是性别、AHI。结论 单中心住院 OSAHS 患者 RE 的发生率为 23.1%, 男性显著高于女性; 影响 RE 发生的主要因素是性别、AHI; BMI、AHI 升高则 OSAHS 患者的 RE 发生率升高; OSAHS 患者合并 RE 时 AHI、maxSAT 更大、LSpO₂ 更低。

关键词: 阻塞性睡眠呼吸暂停低通气综合征, 反流性食管炎, PSG 监测参数, 发病率

The association between obstructive sleep apnea and frailty traits: a bidirectional Mendelian randomization study

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Background: Despite sharing similar risk factors and characteristics, the relationship between obstructive sleep apnea (OSA) and frailty remains unclear due to the predominance of observational researches. This study aimed to explore the genetic association between OSA and frailty traits using a bidirectional two-sample Mendelian randomization (MR) analysis.

Methods: Utilizing summary data from large-scale genome-wide association studies (GWAS) obtained from FinnGen and MRC-IEU on European individuals, we designed a bidirectional two-sample MR analysis to comprehensively assess the genetic-level link between OSA and frailty traits, including frailty index, appendicular lean mass (ALM), grip strength and walking pace. The appropriate single nucleotide polymorphisms (SNPs) were selected as instrumental variables (IVs) based on the three MR assumptions. Effect estimates were primarily evaluated using Inverse-variance weighted (IVW), with MR-Egger, weighted median (WM), simple mode, and weighted mode analyses serving as complementary methods. A series of sensitivity analyses were conducted to ensure the robustness of the results, these included using MR-PRESSO for outlier detection, Cochran's Q test to identify heterogeneity, MR-Egger to assess horizontal pleiotropy, and Leave-One-Out analysis to evaluate the impact of each instrumental variable on the overall findings.

Results: IVW models showed that genetically predicted OSA had no significant effect on frailty index, ALM, grip strength, or walking pace, as did other complementary statistical methods. However, the reverse MR analysis suggested that a higher genetically predicted frailty index increased OSA risk (IVW: OR=1.777, 95% CI: 1.137--2.777, p=0.012) with 14 SNPs, while a faster genetically predicted walking pace was identified as a protective factor for OSA (IVW: OR=0.204, 95% CI: 0.104--0.399, p=3.39E-06; WM: OR=0.368, 95% CI: 0.193--0.703, p=0.003) with 56 SNPs. The reverse MR analysis did not find substantial evidence that ALM or grip strength had a significant association with OSA. MR-Egger indicated no evidence of genetic pleiotropy. Although heterogeneity among the instrumental variable was observed in the reverse MR analysis, the results could be considered robust based on the IVW analysis and other supplementary sensitivity analyses.

Conclusion: The two-sample MR study found genetic evidence supporting OSA causally associated by frailty traits in reverse MR analysis, with frailty index and walking pace as risk and protective factors, respectively. The forward MR analysis did not find significant association between OSA and frailty traits.

Keyword: obstructive sleep apnea, frailty, Mendelian randomization, association

Genetic variants of sarcopenia are related to sleep-breathing events in patients with obstructive sleep apnea: a cross-sectional study

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Background: Obstructive sleep apnea (OSA) and sarcopenia have similar characteristic, but the relationship between OSA and sarcopenia remains unclear. This study aimed to investigate the association of single nucleotide polymorphisms (SNPs) in sarcopenia with OSA and its clinical traits at the genetic level.

Methods: A total of 5031 subjects with suspected OSA in the Sleep Center of Shanghai Sixth People's Hospital were enrolled. Each participant underwent polysomnography (PSG) and had biochemical indicators, physical measurements, and 10 sarcopenia-associated SNPs evaluated. Linear regression and multiple logistic regression were performed to assess the correlation between SNPs and respiratory and sleep indicators. Interacting gene and Protein Interaction Network (PPI) involving the SNPs were evaluated using the Ensembl and STRING databases. Gene function annotation and pathway analysis were conducted by Metascape and DAVID.

Results: The G allele variant of rs2899611 was positively correlated with AHI ($\beta=1.478$, $p=0.006$) and ODI ($\beta=1.336$, $p=0.020$) across all participant, and was more likely to cause severe OSA (OR=1.203, $p=0.001$). rs2899611 located in the Aldh1a2 gene, with Gene Ontology (GO) and KEGG pathway analyses indicating involvement in retinol metabolism ($p=4.46\times 10^{-22}$), neural crest cell development ($p=4.13\times 10^{-5}$), and oxidoreductase activity incorporating or reducing molecular oxygen ($p=4.85\times 10^{-4}$). The T allele variant of rs10952289 increased the duration and proportion of non-REM stage 1 sleep (S1 duration: $\beta=3.973$, $p=0.033$; S1/SPT: $\beta=0.831$, $p=0.043$; S1/TST: $\beta=1.04$, $p=0.026$). rs10952289 variant in the AOC1 gene was mainly responsible for primary amine oxidase activity in histamine metabolism ($p=5.29\times 10^{-6}$). Variant A allele of rs3118903 and variant C allele of rs4842924 affected sleep structure, with rs3118903 increased the risk of low sleep efficiency ($\beta=-0.043$, $p=0.014$). However, no significant association between rs3118903 or rs4842924 and OSA traits was observed in gene function analysis.

Conclusions: rs2899611 and rs10952289 variants, associated with sarcopenia, were linked to AHI, ODI and sleep structure in OSA patients. Individuals with risk variants of sarcopenia may increase the severity of OSA.

Keyword: obstructive sleep apnea, single nucleotide polymorphisms, sarcopenia, apnea hypopnea index, non-rapid eye movement sleep

Visuospatial Dysfunction Predicts Dementia-First Phenoconversion in Isolated REM Sleep Behavior Disorder

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Objective: While isolated REM sleep behavior disorder (iRBD) is known as a prodrome of α -synucleinopathies, the prediction for its future phenoconversion to parkinsonism-first or dementia-first subtype remains a challenge. This study aimed to investigate whether visuospatial dysfunction predicts dementia-first phenoconversion in iRBD.

Methods: Patients with iRBD and control subjects were enrolled in this prospective cohort study. Baseline neuropsychological assessment included the Montreal Cognitive Assessment (MoCA), Rey-Osterrieth complex figure (ROCF), Color Trail test (CTT), Farnsworth-Munsell 100-hue test, and Digit Span test. MoCA score was further divided into anterior and posterior subscores, representing cognitive profile of anterior and posterior cortical regions, respectively. An additional composite score of visuospatial function was generated using Principal Component Analysis by combining the results of the ROCF and CTT. Regular clinical follow-up was conducted to determine the phenoconversion status of iRBD patients.

Results: The study included 175 iRBD patients and 98 controls. During a mean follow-up of 5.1 years, 25.7% of patients experienced phenoconversion. Most of the neuropsychological tests could differentiate dementia-first but not parkinsonism-first converters from non-converters. The MoCA posterior subscore, reflecting visuospatial function, was the strongest predictor for dementia-first phenoconversion (adjusted HR = 4.82, 95% CI = 1.46-15.90). Its predictive performance for dementia improved with the integration of the color trail and clock drawing components of MoCA (aHR = 5.48, 95% CI = 1.67-17.98).

Conclusion: Visuospatial dysfunction, as reflected mainly by the posterior subscore of MoCA, is a predictive factor for dementia-first phenoconversion in iRBD, suggesting its potential for being a biomarker of dementia.

Keyword: DEMENTIA, SLEEP DISORDERS

THE ROLE OF SLEEP IN FEAR GENERALIZATION AND ITS NEURAL MECHANISMS

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OBJECTIVE: Fear overgeneralization is characterized by a diminished ability to discriminate between safety and danger cues, resulting in an inability to differentiate generalized stimuli that are highly similar to danger cues. Maladaptive overgeneralization of fear memories can lead to inappropriate anxiety-like symptoms and common feature of the psychopathology of various anxiety disorders such as post-traumatic stress disorder, panic disorder, and generalized anxiety disorder. Sleep plays a crucial role in the cognitive processing of emotional memories represented by fear memories, which can be divided into two distinct phases: rapid eye movement (REM) sleep and non-rapid eye movement (NREM) sleep. REM sleep (including latency, duration, and density) is associated with the development and exacerbation of excessive generalization-related mental disorders, including post-traumatic stress disorder. However, research on the relationship between sleep and fear generalization is limited and controversial, with a lack of evidence regarding the association between rapid eye movement sleep and fear generalization. The purpose of this study is to explore whether sleep, as a specific temporal window of memory regulation, can intervene in the extent of fear generalization, and whether REM sleep inhibits fear generalization specifically and its underlying neural mechanisms.

METHODS: The study employed a split-night sleep restriction paradigm (restricting sleep in the first half of the night vs. the second half of the night) to intervene in the duration and percentage of REM sleep (with NREM sleep predominant in the first half of the night and REM sleep predominant in the second half of the night), investigating whether REM sleep can specifically inhibit fear generalization. A total of 126 healthy participants were randomly assigned to the NREM-rich sleep group (N=36), REM-rich sleep group (N=38), whole-night sleep control group (TS group, N=36), and whole-night sleep deprivation group (SD group, N=16). The experimental procedure included fear acquisition before sleep, immediate fear generalization testing upon awakening, and remote fear generalization testing one week later. Saliva samples were collected from participants before the generalization tests to analyze changes in cortisol levels, and resting-state neuroimaging data were collected. During the generalization tests, both task-related neuroimaging data and behavioral data were synchronously collected to establish a general linear model to analyze changes in brain function when processing generalized stimuli among the three groups of participants.

RESULTS: Sleep contributes to the inhibition of fear generalization. In the remote testing of fear generalization, the NREM-rich group showed significantly higher levels of fear generalization compared to the REM-rich group and TS group, with no significant differences observed between the NREM-rich group and the SD group. There was a significant negative correlation between the percentage of REM sleep and the degree of fear generalization. In the task fMRI, the NREM-rich group exhibited significantly lower activation levels in the prefrontal cortex, precuneus, inferior parietal lobule, precentral gyrus, and lingual gyrus compared to the REM-rich sleep group and TS group. Moreover, with an increase in

the percentage of REM sleep, there was an elevation in the activation level of the right dorsolateral prefrontal cortex, leading to a decrease in the degree of fear generalization. Sleep electroencephalogram results indicated that theta wave activity in the prefrontal cortex during REM sleep played a mediating role in the inhibition of fear generalization, with the mediating effect accounting for 44% of the total effect.

Keyword: Sleep, REM Sleep, Fear generalization, theta power

OSA 合并夜尿症的危险因素及早期肾损伤形成机制研究

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目的：探索阻塞性睡眠呼吸暂停（OSA）合并夜尿症的危险因素及早期肾损伤形成机制。

方法：纳入 1110 名 OSA 患者，通过横断面研究寻找 OSA 患者合并夜尿症的危险因素。在上述研究中选取 108 名男性 OSA 患者进行队列研究，根据其夜尿情况分为 OSA 夜尿组（n=57）和 OSA 非夜尿组（n=51）。比较两组患者 CPAP 治疗前后尿液生化和肾功能，通过相关性分析探寻两组间相关程度。

结果：本研究中 OSA 患者夜尿症患病率为 18.3%，其中男性占 73.4%。对男性 OSA 患者（n=893）资料进行多因素回归分析得出，夜尿症的发生与平均血氧饱和度及 T90 有显著关联（ $P<0.05$ ）。队列研究中，OSA 夜尿组与 OSA 非夜尿组患者的平均血氧饱和度、T90 有显著差异（ $P<0.05$ ）。治疗前 OSA 夜尿组患者尿白蛋白/肌酐比值（UACR）显著高于 OSA 非夜尿组，CPAP 治疗后两组患者 UACR、循环 ANP、尿 AQP2 均下降（ $P=0.001$ ），但 OSA 夜尿组患者 UACR 随着夜尿的减少而下降得更明显（ $P=0.033$ ）。校正年龄、BMI 后，T90 与尿比重、尿渗透压呈负相关（ $P<0.05$ ）。

结论：缺氧的程度和持续时间是 OSA 相关夜尿症发生的重要危险因素。OSA 合并夜尿症患者存在肾脏早期损伤的可能，CPAP 治疗后，这种缺氧导致的肾损伤是可逆的。缺氧改善后夜尿减少可能通过 AQP2、ANP 相关的水钠重分布、尿液浓缩机制发挥作用。

关键词：OSA；夜尿症；CPAP；AQP2；ANP

药物诱导睡眠内镜在间质性肺病合并阻塞性睡眠呼吸暂停患者中临床应用的新见解及 CPAP 治疗反应的可视化分析

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阻塞性睡眠呼吸暂停（OSA）是影响纤维化型间质性肺病（ILD）患者预后的重要且常见合并症。合并 ILD 的 OSA 患者，因其夜间咳嗽频繁、周期性腿动等原因导致夜间睡眠质量差，仅通过一整夜多导睡眠监测（PSG）往往难以反映其合并睡眠呼吸暂停的真实状态。药物诱导睡眠内镜检查（DISE）对于评估 ILD 患者睡眠呼吸暂停情况提供了新思路。前瞻性纳入 2023.12-至今天津医科大学总医院诊断纤维化型间质性肺病的稳定期患者 60 例，进行 PSG、DISE，并进行 VOTE 评分评估阻塞程度，继而进行持续正压通气（CPAP）压力滴定。OSA 在 ILD 患者中有很高的发生率。ILD 患者睡眠质量受显著干扰。其中 15 例家属目击患者有严重的呼吸暂停且嗜睡明显，然而与 PSG 评估病情严重程度不相符，VOTE 评分更符合临床情况。DISE 直视下 35 例患者 CPAP 治疗有效。CPAP 联合体位治疗（转头）后直视患者睡眠呼吸暂停的阻塞形式及阻塞程度均可发生改变。转头对于缓解前后型阻塞效果好，而不能缓解环形阻塞。对于阻塞部位而言，会厌、舌根部位的阻塞，联合转头后，CPAP 压力可降低 1-2cmH₂O。其中 8 例 CPAP 压力滴定无法解决的 OSA，全部是舌根或会厌阻塞型，经联合体位结合 CPAP 后均可缓解。DISE 提供的可视化信息可作为 ILD 患者睡眠呼吸暂停严重程度评估的重要补充手段。对明确阻塞部位及阻塞方式及 CPAP 等治疗方案有重要价值。

关键词：睡眠呼吸暂停, 药物诱导睡眠内镜, 间质性肺病, 正压通气

Clinical Features and Mechanisms of Neck Myoclonus in Narcolepsy

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Study objectives

The purpose of this study was to investigate the effects of neck myoclonus (NM) on sleep quality and daytime sleepiness in patients with narcolepsy (NT) and to further explore possible underlying mechanisms.

Methods

We included 72 patients with narcolepsy type 1 (NT1), 34 patients with narcolepsy type 2 (NT2) and 33 healthy controls. Patients underwent questionnaires, lumbar puncture procedure, polysomnography, and multiple sleep latency test (MSLT). Healthy controls underwent polysomnography and questionnaires. Orexin-A levels in the cerebrospinal fluid (CSF) were analyzed by radioimmunoassay. Three catecholamines, including dopamine, norepinephrine and epinephrine, in the CSF were measured by high-performance liquid chromatography-tandem mass spectrometry (HPLC-MS/MS).

Results

Both the NT1 and NT2 groups displayed a higher level of NM incidence rate and index compared to the control group in PSG. NT1 displayed greater MSLT REM-NM incidence rate and index than NT2. NM were often associated with arousal or awakening and body movements, which had a prominent influence on sleep quality in both narcoleptic patients and controls. There was a positive correlation between the NM index and the Pittsburgh Sleep Quality Index (PSQI), Stanford Sleepiness Scale (SSS) and Ullanlinna Narcolepsy Scale (UNS) scores in NT1 patients. In MSLT of NT1 patients, REM-NM index were positively correlated with the CSF dopamine levels, and there were elevated dopamine levels but reduced orexin-A levels in patients with REM-NM.

Conclusion

NM incidence rate and index were high in patients with narcolepsy, which had a huge effect on sleep quality and aggravated daytime sleepiness. NM should be considered pathological and viewed as a new sleep-related movement disorder. Orexin-A and dopamine may be involved in the development of NM.

Keyword: Narcolepsy, Neck myoclonus, PSG, Daytime sleepiness, Dopamine, Orexin-A

Performance of Entropy-Based Sleep Fragmentation Metrics in Sleep Apnea and Disease Associations: Development of New Metrics and Machine Learning Validation

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Background and Objectives

Sleep fragmentation is common in patients with sleep apnea, impacting sleep quality and associating with various diseases. Existing metrics are mostly simple descriptive statistics and have limited capacity to evaluate fragmentation across different sleep stages. Entropy, a concept widely used in physics and information theory to describe the degree of disorder in a system, is employed in this study. This study develops new quantitative metrics based on the concept of entropy, which can measure both overall sleep fragmentation and fragmentation within individual sleep stages, and validates their performance in quantifying sleep fragmentation and its association with chronic diseases using machine learning.

Methods

Data for this study were sourced from the OSAHS sample repository at Shanghai Sixth People's Hospital, focusing on three types of sleep fragmentation metrics: traditional metrics (e.g., Arousal Index, Wake After Sleep Onset), entropy-based metrics derived from Fourier and wavelet transforms, and newly proposed metrics, which include: (1) Transition Entropy (TE) calculated from sleep stage transition matrices, (2) Sleep Time Entropy (STE) calculated using the Shannon entropy formula based on sleep stage durations, and (3) Sleep Fragmentation Entropy (SFE) calculated from semi-Markov matrices. Five machine learning models were employed, with chronic diseases, primarily diabetes, as the outcomes. The XGBoost algorithm was primarily used, with 5-fold cross-validation for evaluation. The Shapley method was applied to interpret model outputs, calculating and ranking the contribution of each feature to the prediction outcomes, independent of sleep apnea.

Results

This study included 3,219 samples (78.7% male, mean age 41 ± 13.8 years), with 2,404 patients diagnosed with sleep apnea. Pearson correlation analysis showed that the new entropy metrics correlated with traditional metrics from 0.68 to 0.83, with entropy metrics that included time information showing lower correlations. In the diabetes outcome model, the average area under the Receiver Operating Characteristic (ROC) curve for the XGBoost algorithm with 5-fold cross-validation was 0.74, and for other models: random forest (0.73), support vector machine (0.72), k-nearest neighbors (0.54), and logistic regression (0.72), demonstrating the robustness of the metrics' predictive performance. Shapley analysis indicated that among all sleep fragmentation metrics, the TE for two different stages (Slow-wave sleep and Rapid Eye Movement sleep) had the highest contributions. The new entropy metrics generally outperformed

traditional metrics in quantifying sleep fragmentation. Similar results were observed in other outcome models.

Conclusion

This study validated that entropy-based sleep fragmentation metrics outperform traditional metrics in quantification. Machine learning confirmed that the new entropy metrics can independently assess fragmentation across different sleep stages. These entropy-based metrics provide a new quantitative perspective and method for understanding the specific roles of sleep fragmentation in various diseases.

Keyword: Entropy-based metrics, Sleep fragmentation, Machine learning, Chronic diseases, Sleep stages

Association between sleep parameters and event-related potential in major depressive disorder comorbid patients with obstructive sleep apnea

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Background: Depression shares many of the same symptoms as obstructive sleep apnea (OSA) (inattention, energy loss, and increased fatigue), and a high comorbidity rate. Studies have found that OSA can aggravate neurocognitive impairment in patients with depression through intermittent hypoxia and sleep fragmentation. At present, the subjective assessment of cognitive function is mainly based on neuropsychological tests, and there may be a certain bias in the conclusions drawn. Event-related potential (ERP), as an electrophysiological indicator to detect high-level mental activities (such as attention, memory, sensation, learning, reasoning), is widely used for evaluating cognitive brain functions. Using event-related potentials (P300), To evaluate the effect of comorbidity obstructive sleep apnea (OSA) on the P300 response of event-related potential (ERP) in patients with major depression, and to study the correlation of electrophysiological function with sleep structure and hypoxia.

Methods: A total of 245 patients with Major depression disorder (MDD) who were hospitalized in the Department of Sleep Disorders of the Fourth People's Hospital of Hefei from January 2020 to June 2023 were selected as the research objects. According to polysomnography (PSG), the patients were divided into OSA free group (n=136), mild OSA group (n=75), moderate and severe OSA group (n=34). All patients completed psychological assessment scales, including the 17-item Hamilton Depression Scale (HAMD-17), Hamilton Anxiety Scale (HAMA), and Epworth Sleepiness Scale (ESS), and all patients underwent polysomnesic monitoring (PSG) and event-related unit (ERP) tests.

Results: The proportions of AHI, RDI, ODI and N1 in moderate and severe OSA groups were significantly higher than those in mild OSA group and no OSA group ($p < 0.05$). The proportion of N3 phase and REM phase in moderate and severe OSA group were significantly lower than those in mild OSA group and no OSA group (both $P < 0.05$). The latency of P300 component in mild OSA group and moderate to severe OSA group was longer than that in non-O SA group ($P < 0.001$). Multiple linear regression analysis showed that AHI was positively correlated with the P300 component (P2, N2, P3a, P3b) latency, RDI was positively correlated with the P300 component (P2, P3b) latency, and ODI was positively correlated with the P300 component (P2, N2, P3a, P3b) latency (all $p < 0.05$).

Conclusion: The electrophysiological method ERP-P300 may provide a more sensitive measurement method for identifying cognitive changes in patients with MDD comorbid with OSA. Hypoxia may play a role in the process of cognitive impairment associated with OSA comorbidity in patients with major depressive disorder.

Keyword: MDD, event-related potential (ERP), obstructive sleep apnea (OSA), sleep parameters

Altered Cerebellar Functional in Major Depressive Disorder with Obstructive Sleep Apnea and Its Association with Cognitive Function

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Objective: Major depressive disorder (MDD) comorbid with obstructive sleep apnea (OSA) often present more pronounced cognitive function impairment, yet the underlying alterations in brain function remain unclear, and the function of cerebellum have rarely assessed in previous relevant studies. The present study aims to explore the disparities in cognitive function between MDD with or without OSA and elucidate the potential neural mechanisms.

Methods: Resting-state functional MRI (rs-fMRI), polysomnography (PSG), event-related potential (ERP) and clinical scale assessment data were acquired from 32 MDD patients with OSA and 42 well-matched MDD patients without OSA. Brain function was evaluated based on regional homogeneity (ReHo) and voxel-mirrored homotopic connectivity (VMHC). Between-group differences in the brain function were tested using a voxel-based two-sample t-test, while relationships between brain function and clinical parameters were examined through partial correlation analysis.

Results: Compared with the MDD group without OSA, the MDD group with OSA exhibited lower scores in prospective memory, working memory, and sustained attention, along with longer latency of the P300 wave in electrode Fz and Cz of ERP (FzP300 and CzP300). In neuroimaging, the MDD group with OSA demonstrated significantly higher ReHo in the left cerebellum superior, lower ReHo in the right cerebellum inferior and increased VMHC in both cerebellum superior compared to the MDD group without OSA. Furthermore, partial correlation analysis revealed a significant negative correlation between the increased VMHC in both cerebellum superior and the Continuous Performance Task-Identical Pairs 4-digit score (CPT-IP-4) ($p=0.005$). Heightened ReHo in the left cerebellum superior was significantly negatively correlated with the CPT-IP-4 score ($p=0.002$), while decreased ReHo in the right cerebellum inferior showed significant negative correlations with both FzP300 ($p=0.009$) and CzP300 ($p=0.007$).

Conclusion: This study highlights the significant cerebellar involvement in the pathophysiology of MDD patients with OSA, with these alterations in cerebellar function being associated with impaired cognitive function. Future research should focus on elucidating the specific mechanisms underlying changes in cerebellar function and exploring interventions to enhance cognitive function in MDD patients with OSA.

Keyword: Major depressive disorder, Obstructive sleep apnea, Resting-state fMRI, Cognitive function, Polysomnography, Event-related potential

Neuroimaging study on sleep quality mediating childhood trauma and depressive symptoms in adolescents with depressive disorders

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Background: Adolescent depressive disorder is often related to traumatic childhood experiences, and the patients are often accompanied by sleep disorders. Patients exposed to traumatic events in childhood tend to have more severe depressive symptoms and an increased likelihood of experiencing multiple subsequent stressors throughout their lives, which can negatively affect their sleep quality. However, the neural mechanism by which sleep quality affects childhood trauma and depressive symptoms in adolescents with depressive disorder remain unclear.

Methods: A total of 118 patients and 118 controls were included in this study. Data from a total of 62 adolescents with depressive disorder were included after a rigorous assessment of head movement and image quality. The Pittsburgh Sleep Quality Index (PSQI), Childhood Trauma Questionnaire (CTQSF) and Hamilton Depression (HAMD) scale were used to evaluate the sleep quality, childhood abuse and neglect experience, and the severity of depressive symptoms of the two groups. Resting state functional magnetic resonance imaging (rs-fMRI) was performed on 62 adolescents with depressive disorder. ReHo was used to analyze the changes of local brain activity at rest in adolescents with depressive disorder. Continuous variables with normal distribution were expressed as mean \pm standard deviation, independent sample t test was used for comparison between two groups. Categorical variables were expressed as frequency and percentage, and χ^2 test was used for comparison between groups. Pearson correlation analysis was used to analyze the correlation among PSQI, CTQSF and HAMD scores. The PROCESS program developed by Hayes was used to test the mediation effect. $P < 0.05$ was considered to be statistically significant.

Results: The scores of PSQI, CTQSF and HAMD in the study group were significantly higher than those in the control group (all $P < 0.05$). CTQSF, HAMD and PSQI were significantly positively correlated in adolescents with depressive disorder. Regional homogeneity (ReHo) analysis found that the ReHo positively correlated with PSQI was located in the right lingual gyrus and the right paracentral lobule, and the ReHo was positively correlated with HAMD. Mediation analysis found that PSQI significantly mediated the association between CTQSF and HAMD. ReHo of the right lingual gyrus significantly mediated the association between PSQI and HAMD. These results were not found in the right paracentral lobule. Sex-stratified analysis showed that ReHo in the right lingual gyri mediated the association between PSQI and HAMD in women.

Conclusion: Our study shows that childhood trauma is significantly negatively correlated with the severity of depressive symptoms and sleep quality in adolescents with depression, and sleep quality mediates the association between

childhood trauma and depressive symptoms severity. In addition, ReHo of the right lingual gyrus mediated the association between sleep quality and the severity of depressive symptoms. These findings help to determine the neural mechanisms underlying the association between childhood trauma, sleep quality, and depression severity in adolescents with depression.

Keyword: depressive disorders, childhood trauma, sleep quality, regional homogeneity analysis, mediation analysis

帕金森病患者快速眼球运动睡眠期运动事件特点及相关电生理特征评估

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目的：评估帕金森病患者 REM 睡眠期运动事件并探索皮层活动与 REM 期运动事件中的相关性。

方法：对 2016 年 07 月至 2023 年 10 月在苏州大学附属第二医院神经内科确诊并行多导睡眠监测的 PD 患者 116 例进行临床特征、PSG 指标、REM 睡眠脑电等资料的收集。分析 REM 期的视频记录，将 PD 患者分为无运动事件组（PD-non-motor events, PD-nME）、简单运动事件组（PD-elementary motor events, PD-eME）和复杂运动事件组（PD-complex motor events, PD-cME），在组间进行临床资料、PSG 参数及 REM 期脑电比较，并利用 ROC 曲线评估脑电及下颏肌电活动对 REM 期各种类型运动事件的预测价值。

结果：与 PD-nME 相比，PD-eME 和 PD-cME 组在 REM 期多个皮层区域脑电活动减慢。与 PD-nME 和 PD-eME 相比，PD-cME 的 REM 睡眠时间长（ $P=0.002$ ），REM 睡眠比例高（ $P=0.004$ ），REM 潜伏期短（ $P<0.001$ ），REM 期左侧枕叶 alpha 相对功率低（ $P=0.010$ ）。右侧枕叶 theta/beta 比值对 REM 期简单、复杂运动事件的出现有一定的预测价值，曲线下面积分别为 0.829、0.820。

结论：枕叶的异常激活在 REM 期异常运动事件中发挥了重要作用，可能参与 REM 期睡眠神经调节，可考虑作为 PD 睡眠障碍干预的潜在靶点。

关键词：帕金森病，快速眼动睡眠期

Relationship between daytime sleepiness and anhedonia in MDD patients: a fMRI study

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Objective: Anhedonia stands as the core symptoms of MDD and is closely related to its severity. Approximately 37.4% to 57.1% of people with major depressive disorder (MDD) exhibit symptoms of daytime sleepiness (DS). Patients with MDD with concomitant DS tend to have worse clinical outcomes and are often accompanied by severe anhedonia. This study aimed to clarify the underlying neuroimaging mechanisms connecting DS with anhedonia in MDD patients.

Methods: A total of 22 patients were included in the DS group (Epworth Sleepiness Scale score ≥ 7) and 45 patients were included in the no daytime sleepiness group (No DS). Each participant underwent resting state functional MRI, polysomnography (PSG) and clinical scale assessments. Anhedonia assessed using the Revised Social Anhedonia Scale (RSAS), Revised Physical Anhedonia Scale (RPAS) and Temporal Experience of Pleasure Scale (TEPS). Employing the Dosenbach 160 node atlas, we obtained whole-brain functional networks and extracted topological features global efficiency (Eglob), local efficiency (Eloc), path length (Lp) and clustering coefficient (Cp) through a graph-theoretic-based approach.

Results: The two groups were well matched for gender and age, and there were no differences in HAMD or HAMA scores, duration and percentage of stages N1, N2 and N3, total sleep time (TST) and total time in bed (TIB). The DS group scored worse on the RPAS, while there were no differences in social and temporal anhedonia. In terms of brain networks, the DS group showed reduced functional connectivity of the default mode network (DMN) to the frontoparietal network (FPN) and the visual network (VN) to itself, specifically the ventral lateral prefrontal cortex to the posterior cingulate gyrus and the occipital lobe to the fusiform gyrus. Relative to the No DS group, the DS group appeared to have extensive reductions in Eglob, Eloc, Cp and increases in Lp. Further mediation analysis revealed that functional connectivity of the DMN to the FPN mediated the relationship between DS and RPAS.

Conclusion: MDD patients with EDS are characterized by a lack of physical anhedonia, which may be associated with reduced indicators of their comprehensive whole-brain networks and reduced functional connectivity between some functional brain networks. This diminished functional connectivity may mediate the relationship between DS symptoms and anhedonia in patients with MDD. Our findings may provide a neuroimaging mechanistic basis for clinical identification and intervention of anhedonia in MDD patients with DS.

Keyword: major depressive disorder, physical anhedonia, functional magnetic resonance imaging, polysomnography, brain functional networks, graph theory analysis

Association between cytokines and symptoms of depression and anxiety in patients with type 1 narcolepsy

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Background: Symptoms of depression and anxiety are common complications of narcolepsy. Earlier studies have shown that narcolepsy type 1 (NT1) is an autoimmune inflammatory disease and symptoms of depression and anxiety are closely related to fluctuations in inflammatory cytokines. The objective of the current research was to investigate the potential correlation between cytokines and symptoms of depression and anxiety in patients with NT1.

Methods: We collected demographic and clinical data and information on cytokine levels from 50 patients with NT1 and used Self-Rating Depression Scale (SDS) and Self-Rating Anxiety Scale (SAS) to assess the severity of depression and anxiety symptoms. Patients with SDS scores ≥ 53 points were defined as depressive narcolepsy type 1 (D-NT1) and those with SDS scores < 53 points as non-depressive narcolepsy type 1 (ND-NT1). Patients with SAS scores ≥ 50 points were defined as anxious narcolepsy type 1 (A-NT1) and those with SAS scores < 50 points as non-anxious narcolepsy type 1 (NA-NT1). A binary logistic regression model was employed to identify the influencing factors of depressive and anxiety symptoms.

Results: Levels of IL-10 ($p=0.02$), IL-4 ($p=0.049$) and disease duration ($p=0.049$) were decreased, while SAS scores ($p<0.001$) and total sleep duration ($p=0.03$) were increased in D-NT1 relative to ND-NT1 patients. A-NT1 patients had higher SDS scores ($p<0.001$) compared to NA-NT1 patients. Binary logistic regression analysis revealed associations of longer disease duration (OR=0.83; 95% CI: 0.70 - 0.97) and increased IL-10 (OR=0.40; 95% CI: 0.17 - 0.90) with reduced risk of depression and worsening anxiety (SAS score; OR=1.17; 95% CI: 1.06 - 1.30) with increased risk of depression in patients with NT1. Consistently, worsening depression (SDS score; OR=1.22; 95% CI: 1.07 - 1.39) was correlated with increased risk of anxiety in the NT1 group.

Conclusion: Our finding that higher IL-10 levels correlate with a lower risk of depression in NT1 patients provides a reference for further exploration of the pathophysiological mechanisms of depressive symptoms in NT1 patients.

Keyword: narcolepsy, depression, anxiety, cytokine, interleukin-10

中青年 OSA 患者氧化应激与睡眠片段化相关性的初步探讨

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OSA 尤其重度患者往往有全身多系统影响但易被忽视。患者个体差异与病情进展密切相关。本研究初步探讨 OSA 患者不同氧化应激水平与其临床生物学表现的相关性。

42 例 OSA 患者入组并行 PSG，次晨采外周血测 ROS 水平，测相关生化指标。根据 AHI 分为轻中 OSA 组_{mOSA:n=17}和重度 OSA 组_{sOSA:n=25}。引入 AHI/[ROS] (AHROS) 评估 OSA 患者产生氧化应激能力，计算 TyG 评估患者代谢紊乱水平。

sOSA 组与 mOSA 组在 BMI_{p=0.003} LSO2_{p<0.001} TS90_{p<0.001} N1%_{p=0.001} N3%_{p<0.001} RERAI_{p<0.001} ArousaI_{p<0.001} 均有显著统计学差异，未见 ROS、TyG 组间差异。以 [ROS] 高低重新分组后发现低 ROS 组_{n=20} 与高 ROS 组_{n=22} 之间 N1%_(p=0.019) N3%_{p=0.029} RERAI_{p=0.042} ArousaI_{p=0.017} 有统计学显著差异。相关性分析示 AHROS 与 ArousaI 有良好相关性 $r=0.818$ ，TyG 与 AHROS_{r=0.537}，与 ArousaI_{r=0.510} 均有较好相关性。

中青年 OSA 患者的睡眠片段化与氧化应激具有一定相关性，尤其反映个体氧化应激能力的 AHROS 与睡眠片段化及 TyG 均有显著相关性，提示氧化应激水平个体差异与睡眠片段化及相关代谢紊乱之间可能有更深入或互作的机制，值得进一步研究。

关键词：睡眠呼吸暂停 氧化应激 睡眠片段化 个体差异 TyG 指数

Plasma metabolomics in patients with obstructive sleep apnea and comorbid with major depressive disorder: A case control study

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Introduction: Patients with obstructive sleep apnea (OSA) have a higher prevalence of depression than the general population. However, OSA has many overlapping symptoms with depression, and comorbidities between OSA and patients with major depressive disorder (MDD) are difficult to identify. For more effective treatment, we aim to identify the characteristic metabolites in the plasma of patients with OSA and MDD complications.

Methods: Serum samples of OSA patients (OSA group, n=33), OSA patients with MDD (OSA+ MDD group, n=28) and healthy control group (healthy group, n=28) were collected, and non-targeted metabolomics analysis was performed by liquid chromatography-tandem mass spectrometry.

Results: Compared with the health group, a total of 284 symbolic differential metabolites were present in OSA group ($P < 0.05$), and 316 in OSA+MDD group ($P < 0.05$). Compared with the OSA group, 138 symbolic differential metabolites were present in OSA+MDD group ($P < 0.05$). The Kyoto Encyclopedia of Genes and Genomes (KEGG) enrichment analysis revealed that the symbolic differential metabolites of OSA group vs. health group and OSA+MDD group vs. health group were mainly involved in pentose and glucuronate interconversions, citrate cycle, arginine biosynthesis, and alanine, aspartate, and glutamate metabolism pathways etc. The symbolic differential metabolites in OSA+MDD group vs. OSA group were mainly involved in tryptophan metabolism, retrograde endocannabinoid signaling, and the neuroactive ligand-receptor interaction pathway. Receiver operating characteristic curve (ROC) analysis revealed Oxoglutaric acid (area under the ROC curve [AUC]=0.821), pyrophosphates (AUC=0.911), and 4-Trimethylaminobutyraldehyde (AUC=0.703) as the most common diagnostic markers of differential metabolites in OSA group vs. health group, OSA+MDD group vs. health group, and OSA+MDD group vs. OSA group, respectively.

Conclusion: Changes in signaling pathways involved in energy metabolism may be characteristic of OSA. Meanwhile, changes in tryptophan metabolism, retrograde endocannabinoid signaling, and neuroactive ligand-receptor interaction pathways may better characterize MDD. OSA patients with elevated serum levels of 4-trimethylbutyraldehyde may be associated with MDD which needs to be further evaluated.

Keyword: Obstructive sleep apnea; Major depressive disorder; Plasma; Metabolomics.

强化失眠认知行为治疗对失眠患者主观睡眠认知和生活质量的影响

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目的 探讨强化失眠认知行为治疗(CBTI plus)对失眠障碍合并抑郁、焦虑患者失眠严重程度、睡眠信念和态度及生活质量的影响。

方法 收集上海市精神卫生中心失眠障碍伴抑郁、焦虑症患者149例，随机分配至CBTI组(n=54)和CBTI plus组(n=95)，在基线、2周、4周及8周进行失眠严重程度指数量表(ISI)、简式睡眠信念和态度量表(DBAS)及生活质量问卷(QOL)评估。

结果 1. 两组患者基线数据差异无统计学意义。2. 治疗期间总体脱落率为14.2% (20/141)，CBTI组19.6% (10/51)，CBTI plus组11.1% (10/90)，两组脱落率差异无统计学意义($t=1.931$, $P=0.165$)。3. 两组患者的ISI、DBAS及其分量表分数均改善，时间主效应显著($F=110.375$, $P<0.01$; $F=60.273$, $P<0.01$)，组别与交互作用不显著($F=0.457$, $P>0.05$; $F=1.520$, $P>0.05$)。4. 在QOL量表上，时间主效应、组间主效应以及交互效应均有统计学意义($F=11.976$, $P<0.01$, $F=7.891$, $P<0.01$; $F=5.191$, $P<0.01$)。

结论 CBTI与CBTI plus对失眠障碍合并焦虑、抑郁患者的失眠症状，睡眠信念和态度均有改善作用，CBTI plus可较早改善后果和期望因子，并且可提高患者生活质量，脱落率低，有独特优势。

关键词：失眠的认知行为治疗，焦虑，抑郁，睡眠信念和态度

强化失眠认知行为治疗对失眠患者情绪、生活质量和治疗联盟的影响

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目的 探讨强化失眠认知行为治疗(CBTI plus)对失眠障碍合并抑郁、焦虑患者负面情绪、生活质量和治疗联盟的影响。

方法 收集上海市精神卫生中心失眠伴抑郁、焦虑患者 149 例，随机分配至 CBTI 组(n=54)和 CBTI plus 组(n=95)，分别在基线、2 周、4 周及 8 周进行抑郁症状快速检查量表(QIDS-SR16)、广泛性焦虑量表(GAD-7)和生活质量问卷(QOL-6)评估，在治疗 2 周、4 周和 8 周进行治疗联盟问卷(WAI-S)评估。

结果 1. 两组基线数据无统计学差异。2. 治疗期间总体脱落率 14.2% (20/141)，CBTI 组 19.6% (10/51)，CBTI plus 组 11.1% (10/90)，两组脱落率无统计学差异 ($P=0.165$)。3. 两组患者的 QIDS-SR16、GAD-7 分数均显著下降，时间主效应显著 (均 $P<0.01$)，组间主效应与交互作用不显著 ($P>0.05$)；在 QOL-6 量表上，CBTI plus 组生活质量显著提高，时间主效应、组间主效应及交互效应均有统计学意义 (均 $P<0.01$)；CBTI plus 组治疗前后治疗联盟及因子分数显著提升 ($P<0.01$ 或 $P<0.05$)，CBTI 组未出现显著提高，但组间差异不显著。

结论 CBTI 与 CBTI plus 对失眠合并焦虑、抑郁患者的情绪均有改善作用，CBTI plus 可显著提高患者生活质量以及治疗联盟，有独特优势。

关键词：失眠，认知行为治疗，焦虑，抑郁，治疗联盟，生活质量

CPAP 治疗后残余嗜睡对 OSA 患者皮质活动和神经认知功能的影响：一项前瞻性对照的 ERP 初步研究

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目的：通过纳入接受长达 6 个月以上 CPAP 治疗的 OSA 患者，观察残余 EDS 患者的事件相关电位参数以及神经认知功能，探讨残余 EDS 的影响因素及可能的神经电生理机制。

方法：分析 CPAP 后残余嗜睡患者的行为学参数、ERP 参数是否存在异常，并分析 ERP 参数与 ESS 评分、PSG 参数的相关性。

结果：

1. 有无残余 EDS 两组的 BMI 显著高于对照组，其他基线资料无显著差异。
2. 与无残余 EDS 组相比，残余 EDS 组的 REM 睡眠比例更低。两组间的 CPAP 治疗时间、依从性、95%治疗压力和呼吸机残余 AHI 相当。
3. 残余 EDS 组的 ESS 评分比无残余 EDS 组更高。在冲突图片识别任务中，与无残余 EDS 组相比，残余 EDS 组的反应时间显著延长；与健康对照组相比，有无残余 EDS 两组的正确率显著降低。
4. 经过 6 个月以上的 CPAP 治疗后，与无残余 EDS 组相比，残余 EDS 组的左侧额区 N270 振幅显著降低。
5. 在总 OSA 患者中，ESS 评分与左侧额区 N270 振幅呈正相关；在残余 EDS 组中，呼吸暂停最长时间与右侧枕区 N270 潜伏期呈正相关，低氧负荷与右侧枕区的 N170 振幅呈正相关，TS90 与右侧额区的 P300 潜伏期呈正相关。

结论：经 6 个月以上充分的 CPAP 治疗后，残余 EDS 患者存在工作记忆为主的执行功能损害；长期夜间低氧导致部分脑结构和功能的不可逆损伤，引起任务态脑电活动异常，这可能是 OSA 患者发生残余 EDS 的潜在机制。

关键词：阻塞性睡眠呼吸暂停；事件相关电位；持续气道正压通气治疗；残余 EDS

OSAS、COPD 及重叠综合征患者膈肌功能状态的研究

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目的：探讨阻塞性睡眠呼吸暂停综合征(OSAS)、慢性阻塞性肺疾病（COPD）、重叠综合征（OS）患者的膈肌功能状态。

方法：本研究前瞻性纳入首次接受多导睡眠监测(PSG)的睡眠中心住院患者。根据 PSG、肺功能检查将患者分为 OSAS、COPD、OS 和健康对照组。所有患者及健康对照组均接受超声评估膈肌功能，测量右侧膈肌厚度（DT）为腹膜与胸膜之间的距离、膈肌的厚度变化率（DTF）、膈肌移动度（DE）。

结果：本研究共纳入 103 例患者（男 89 例，女 14 例）。患者平均年龄 56.31 岁。OSAS 组呼气末膈膜厚度显著高于正常组、COPD 组和 OS 组 ($p < 0.05$)。OS 组呼气末和吸气末膈膜厚度均高于 COPD 组 ($p < 0.05$)；四组的 DTF 无显著差异 ($p > 0.05$)；COPD 组、OS 组的 DE 显著低于 OSAS 组和健康组 ($p < 0.05$)，其中 COPD 组 DE 最低。OSAS 的严重程度与膈肌厚度呈正相关 ($p < 0.01$, $r = 0.62$)。COPD 组深呼吸 DE 与 FEV%pred 正相关 ($r = 0.65$, $P < 0.05$)。OS 组深呼吸 DE 与 FEV1%pred 正相关 ($r = 0.75$, $P < 0.05$)。

结论：OSAS 患者膈膜厚度增加，且与 OSAS 的严重程度正相关。COPD 患者膈膜厚度变薄，且与肺功能严重程度负相关。OS 患者虽膈肌厚度与增厚率与正常人相似，但膈肌移动度比正常人降低。OS 和 COPD 患者膈肌功能主要与肺功能严重程度相关。

关键词：阻塞性睡眠呼吸暂停综合征，慢性阻塞性肺疾病，重叠综合征，膈肌功能

Polysomnographic characteristics of patients with heart failure combined with sleep apnea: A systematic review and meta-analysis

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Aims: Poor sleep quality, often self-reported by heart failure (HF) patients, is linked to higher cardiovascular risks. Most previous studies used questionnaires to assess sleep, which may not reflect actual sleep patterns. As comorbid sleep-disordered breathing (SDB) is an independent risk factor for HF, we systematically evaluated objective sleep parameters using polysomnography (PSG) in HF patients with SDB.

Methods: From July 2022 to July 2023, PubMed, Embase, and Web of Science databases were searched for studies on PSG in HF patients. Meta-analyses were conducted to compare PSG parameters between HF patients and healthy controls, HF patients with and without SDB, HF patients with different types of SDB, and HF patients before and after SDB treatments.

Results: Compared to healthy individuals, HF patients showed decreased sleep efficiency (MD = -7.45, 95%CI: [-10.81, -4.09], $P < 0.001$) and reduced slow wave sleep (SWS; MD = -3.16, 95%CI: [-5.66, -0.66], $P = 0.013$).

With comorbid SDB, HF patients experienced further decreases in sleep efficiency and total sleep time, and disruptions in sleep architecture, including decreased random-eye-movement sleep (MD = -3.71, 95%CI: [-7.13, -0.30], $P = 0.033$) and SWS (MD = -3.30, 95%CI: [-4.36, -2.23], $P < 0.001$). Both adaptive servo-ventilation and continuous positive airway pressure treatments significantly reduced sleep apnea and improved sleep architecture.

Conclusions: HF patients showed poorer sleep continuity and less restorative sleep, with SDB comorbidity further worsening sleep. SDB treatments reduce sleep apnea and improve sleep architecture, suggesting effective treatment for HF patients with SDB and potentially reducing cardiovascular risk.

Keyword: heart failure, polysomnography, sleep architecture, slow wave sleep, meta-analysis

发作性睡病中 ADHD 的患病率及其影响因素分析：一项系统回顾和 Meta 分析

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目的：发作性睡病是一种中枢性嗜睡疾病，既往研究报道在该患者中注意力缺陷多动障碍（Attention deficit hyperactivity disorder, ADHD）的患病率可能很高。但是，目前对发作性睡病中 ADHD 的患病率及其影响因素缺乏全面了解。因此，本系统综述和 Meta 分析旨在研究发作性睡病中 ADHD 患病率，明确发作性睡病患者中 ADHD 相关的影响因素。

材料与方：研究检索了截止至 2023 年 3 月发表在 PubMed、EMBASE 和 Cochrane Library 3 个数据库的研究，确定了 10 项符合入排标准的研究。

结果：发作性睡病患者中 ADHD 患病率为 25%。2 型患者 ADHD 患病率明显高于 1 型（46%vs.20%， $p=0.045$ ）。与健康对照者相比，发作性睡病患者 ADHD 发生率显著更高（OR, 9.59; $p < 0.001$ ）。ADHD 与日间过度嗜睡(excessive daytime sleepiness, EDS)、疲劳、失眠症状呈正相关（ $p<0.05$ ）。

结论：在发作性睡病，特别是 2 型发作性睡病患者中，ADHD 的患病率较高。此外，EDS、失眠和疲劳等因素与发作性睡病共患 ADHD 有关。这些结果强调了监测和管理发作性睡病患者中 ADHD 的重要性，针对这些影响因素的干预有助于减少共患。

关键词：发作性睡病；注意力缺陷多动障碍；Meta 分析

阻塞性睡眠呼吸暂停对急性冠脉综合征严重程度的影响

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目的探讨 OSA 对 ACS 患者心肌损伤、冠脉多支病变及术后指标的影响。方法前瞻性收集苏州大学附属第二医院 2022 年 9 月至 2023 年 10 月因胸闷胸痛入院、诊断 ACS 并行急诊/择期 PCI 的患者，待病情稳定后行 Apnealink 检查。根据 AHI 将患者分为 OSA 组（AHI \geq 15 次/h）和对照组（AHI $<$ 15 次/h），比较两组患者血液学指标、超声心电图参数、冠脉血管评分以及术后指标等差异；采用二元 logistic 回归模型分析 ACS 患者发生冠脉多支病变的危险因素。结果最终纳入符合入排标准的 104 例 ACS 患者，男 85 例，女 19 例，年龄（ 57.3 ± 10.8 ）岁，其中 48.1%合并 OSA。OSA 组患者 BMI、高血压及糖尿病患病率、TG、HbA1c 以及 D-二聚体均高于对照组（ $P<0.05$ ）；两组患者睡眠参数的差异均有统计学意义（ $P<0.05$ ）；OSA 组患者 cTnT 更高，左房内径更大，病变血管数更多，多支病变为主，住院期间心血管并发症的发生率也更高。二元 logistic 回归分析提示，调整相关混杂因素后，只有 AHI（OR=1.035，95%CI：1.008~1.063， $P=0.011$ ）与 ACS 患者发生冠脉多支病变相关。结论合并 OSA 的 ACS 患者心肌损害更重，更易出现左心结构改变，更易发生冠脉多支病变，且术后并发症发生率高；高 AHI 是 ACS 患者发生冠脉多支病变的危险因素。

关键词：睡眠呼吸暂停，阻塞性；急性冠脉综合征；冠脉多支病变；横断面研究

缺血性卒中继发日间过度思睡研究进展

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【摘要】 日间过度思睡是缺血性卒中的常见并发症，可导致患者康复动力缺乏、认知功能减退、生活质量下降，使预后不良风险显著增加。本文对缺血性卒中继发日间过度思睡的流行病学特点、继发日间过度思睡的缺血性卒中亚型、发病机制及治疗进展进行综述，以提高疾病诊断与治疗水平。

关键词：

中重度阻塞性睡眠呼吸暂停儿童腺样体扁桃体切除手术治疗前后睡眠质量分析

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目的：本研究旨在通过基于心电信号的心肺耦合（CPC）分析技术，分析阻塞性睡眠呼吸暂停（OSA）儿童腺样体和（或）扁桃体切除术后睡眠质量的变化。

方法：纳入50名在北京儿童医院睡眠中心就诊，诊断为中重度OSA并接受腺样体和（或）扁桃体切除术治疗的儿童，分析了手术前后儿童睡眠调查问卷（PSQ）和整夜CPC参数的转归情况。术后OSA残留定义为术后阻塞性呼吸暂停低通气指数（OAHI） >1 事件/小时，分析残留和非残留中重度OSA儿童基线PSQ和CPC参数特征。

结果：腺扁手术可以使中重度OSA儿童术后PSQ中睡眠及行为异常症状改善；CPC参数也均有改善，具体为：睡眠质量（SQI）升高，反映稳定睡眠的高频耦合（HFC）指数升高，不稳定睡眠的低频耦合（LFC）指数降低，睡眠呼吸暂停指数（SAI）降低，最低及平均经皮血氧饱和度升高。研究还发现，残留与非残留OSA儿童基线CPC参数无明显组间差异；PSQ中睡眠障碍症状、身体症状、白天状况、症状对监护人的影响均无组间差异，但情绪问题中术后残留OSA的儿童其基线有更多的攻击或多动行为（ $P=0.007$ ），且有更严重的纪律问题（ $P=0.038$ ）。

结论：腺扁手术可以改善中重度OSA儿童术后睡眠质量和临床症状；术前有更多行为问题的中重度OSA儿童应该引起家长和医师的更多关注，应积极评估影响中重度OSA儿童的解剖和非解剖因素，对改善其远期预后有重大意义。

关键词：阻塞性睡眠呼吸暂停；儿童；心肺耦合技术；睡眠质量；儿童行为问题

Plasma Level of Alpha-Synuclein Oligomers as a Biomarker for Isolated Rapid Eye Movement Sleep Behavior Disorder Diagnosis and Progression: A Prospective Cohort Study

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Alpha-synuclein oligomers (o- α -syn) are pivotal in the pathogenesis of α -synucleinopathy. Isolated rapid eye movement (REM) sleep behavior disorder (iRBD) serves as an early indicator of the disease, offering insights into disease mechanisms and early intervention. Nevertheless, the diagnostic and predictive potential of o- α -syn in iRBD remains largely unexplored. This study aimed to evaluate the plasma levels of o- α -syn in patients and investigate their utility as biomarkers for diagnosis of and predicting phenoconversion in iRBD. Methods: A total of 143 participants, including 77 polysomnography-confirmed iRBD patients and 66 normal controls (NC), were recruited for this longitudinal observational study. Baseline clinical assessments and plasma collection were conducted for all iRBD patients, with 72 of them undergoing regularly prospective follow-up assessments for parkinsonism or dementia. Plasma levels of o- α -syn were quantified using enzyme-linked immunosorbent assay, and were compared between groups using a general linear model adjusted for age and sex. The diagnostic performance of plasma o- α -syn in iRBD was evaluated by area under the receiver operating characteristic curve (AUC) with 95% CI. Cox regression analysis and Kaplan-Meier survival curves were employed to assess the predictive value of plasma o- α -syn for phenoconversion in iRBD. Results: Plasma o- α -syn levels did not exhibit statistically significant differences among iRBD converter patients, iRBD nonconverter patients, and NC. The AUC for distinguishing NC from iRBD was 0.52 (95% CI: 0.42-0.62, $P = 0.682$). Spearman correlation analysis revealed a significant positive correlation between plasma o- α -syn levels and MOCA scores in the iRBD group ($P < 0.001$). Subgroup analyses indicated that iRBD patients with cognitive decline ($P = 0.058$) and depressive symptoms ($P = 0.017$) had notably lower o- α -syn levels compared to those without such symptoms. Over a median follow-up period of 5.83 years, 26 iRBD patients developed neurodegenerative synucleinopathies. Cox regression and Kaplan-Meier survival curve analyses indicated that plasma level of o- α -syn lacked a predictive value for disease conversion in iRBD patients. Despite a potential role in the pathophysiology of iRBD, o- α -syn are not appropriate biomarkers for diagnosing or predicting disease progression. While this study offers insights into the pathogenesis of iRBD and neurodegenerative synucleinopathies, further large-scale longitudinal studies are warranted to validate these findings.

Keyword: biomarkers, diagnosis, conversion, isolated rapid eye movement sleep behavior disorder, α -synuclein oligomers

Poor sleep quality and mood disorders: risk factors of increasing chronic pain in patients with insomnia

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Objective: The aim of this study was to examine the prevalence of chronic pain and its risk factors in patients with insomnia.

Methods: We consecutively enrolled patients with chronic insomnia from Sleep Medicine Center in West China Hospital between May 2019 and February 2021. All patients were divided into two groups according to comorbid chronic pain or not. The subjective nocturnal sleep and daytime sleepiness were assessed by Insomnia Severity Index (ISI), Pittsburgh Sleep Quality Index (PSQI) and Epworth Sleepiness Scale (ESS) respectively. And the objective sleep characteristics were measured by an overnight polysomnography. Hamilton Rating Scale for Anxiety (HAMA) and Hamilton Rating Scale for Depression (HAMD) were used to assess the symptoms of anxiety and depression. Short-Form McGill Pain Questionnaire (SF-MPQ) and the Visual Analog Scale (VAS) were applied to evaluate the characteristics and intensity of pain. The subjective and objective sleep characteristics, mood symptoms, and pain variables between groups with or without chronic pain were compared. After adjusting for the potential confounders, the binary and multiple linear logistic regression analyses were used to identify the risk factors of chronic pain.

Results: In 358 patients with chronic insomnia, 48.9% had chronic pain with higher scores in HAMA, HAMD, VAS and SF-MPQ (all $P < 0.001$). After controlling for the confounding factors, the higher HAMA scores (AOR =1.083, 95% CI 1.033-1.135, $P = 0.001$), higher HAMD scores (AOR =1.109, 95% CI 1.058-1.163, $P < 0.001$) and shorter N3 sleep duration (AOR = 0.969, 95% CI 0.940-0.999, $P = 0.041$) were significantly associated with the increased risk of chronic pain. Multiple linear regression analyses showed that the higher scores in PSQI ($\beta = 0.108$, 95% CI 0.026-0.191, $P = 0.010$), HAMA ($\beta = 0.085$, 95% CI 0.043-0.127, $P < 0.001$) and HAMD ($\beta = 0.141$, 95% CI 0.093-0.188, $P < 0.001$) were positive related to pain intensity.

Conclusion: Almost one half of patients with insomnia are comorbid with chronic pain. The poor subjective and objective sleep quality are the risk factors for increasing chronic pain, as well as the anxious and depressive symptoms. These findings suggest that improving sleep quality and mood disorders might further benefit to alleviate the chronic pain in patients with insomnia.

Keyword: Insomnia, Chronic pain, Mood disorders, Sleep quality

重复经颅磁刺激对中青年阻塞性睡眠呼吸暂停患者合并抑郁状态的疗效探讨：一项前瞻性对照的初步研究

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目的：观察合并抑郁状态的中青年 OSA 患者 rTMS 疗效，旨在探讨 OSA 患者非 CPAP 治疗的新方法。

方法：纳入中青年 OSA 患者 30 例，1:1 随机单盲分组接受持续两周，每周三次 rTMS 治疗，最终完成全程治疗患者真刺激组 14 例，假刺激组 12 例。治疗前后均需评估 ESS、SDS、SAS 量表，剑桥神经心理测试，并采用情绪图片刺激范式采集 64 导任务态脑电。

结果：1、两组基线一般资料、量表评分、PSG 参数、剑桥测试评分及行为学数据比较均无统计学差异（均 $P>0.05$ ）。2、与治疗前比较：真刺激组与假刺激组治疗后 ESS 及 SDS 评分均有下降趋势，SAS 评分变化不明显，但均无统计学差异（均 $P>0.05$ ）。3、与治疗前比较：真刺激组治疗后图片判断反应时明显缩短（均 $P<0.05$ ），剑桥神经心理测试结果无明显改变（均 $P>0.05$ ）；假刺激组治疗后上述结果均无统计学差异（均 $P>0.05$ ）；与假刺激组相比，真刺激组治疗前后差值图片反应时改善明显（均 $P<0.05$ ）。4、与治疗前比较：真刺激组治疗后 N170、P300 振幅显著升高（均 $P<0.05$ ）；N170、P300 潜伏期无明显改变（均 $P>0.05$ ）；假刺激组治疗后 N170、P300 振幅、潜伏期均无明显改变（均 $P>0.05$ ）。

结论：rTMS 治疗可改善中青年 OSA 合并抑郁状态患者的反应速度并引起 ERP 振幅的改变，可为 OSA 合并抑郁状态患者的治疗提供新的选择。

关键词：阻塞性睡眠呼吸暂停，事件相关电位，经颅磁刺激，抑郁状态

Problematic internet use and suicide ideation among Chinese adolescents: The indirect effects of insomnia, nightmares, and social jetlag

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Background: Problematic Internet use (PIU) is related to suicide ideation (SI) in adolescents, but little is known about the potential mechanisms between them. This study aimed to examine the mediation roles of insomnia, nightmares, and social jetlag in the association of PIU with SI in adolescents.

Methods: A total of 39,731 adolescents (mean age = 13.49 ± 0.76 years, 54.4 % males) from Shenzhen, China, participated in a cross-sectional survey. SI was assessed using the ninth item of the Patient Health Questionnaire-9. PIU was measured by the Revised Chinese Internet Addiction Scale. A self-administered questionnaire was used to assess insomnia symptoms, nightmare frequency, social jetlag, sleep duration, psychological distress, and social-demographical characteristics. Logistic regression and path analyses were performed to examine the associations between PIU, insomnia symptoms, nightmares, social jetlag, and SI.

Results: The prevalence of PIU and SI were 14.9 % and 18.6 %, respectively. PIU, insomnia symptoms, frequent nightmares, and social jetlag were significantly associated with SI. Path analyses showed that the indirect effects of PIU on SI through insomnia symptoms, frequent nightmares, and social jetlag were significant. Conversely, social jetlag significantly mediated the pathway from SI to PIU. The mediation effect sizes of these sleep and circadian problems were slightly larger in females than in males.

Limitations: Cross-sectional design limited the capacity to infer causal relationships.

Conclusions: The associations between PIU and SI were mediated by sleep and circadian problems. These findings underscore the importance of assessing and intervening in sleep and circadian problems among adolescents with PIU or SI.

Keyword: Problematic internet use, Suicide ideation, Insomnia, Nightmares, Social jetlag, Adolescents

Assessing resting-state brain functional connectivity in adolescents and young adults with narcolepsy using functional near-infrared spectroscopy

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This study aimed to elucidate the alterations in the prefrontal cortex's functional connectivity and network topology in narcolepsy patients using functional near-infrared spectroscopy (fNIRS). Twelve narcolepsy-diagnosed patients from Guangxi Zhuang Autonomous Region's People's Hospital Sleep Medicine Department and 11 matched healthy controls underwent resting fNIRS scans. Functional connectivity and graph theory analyses were employed to assess the prefrontal cortex network's properties and their correlation with clinical features. Results indicated increased functional connectivity in these adolescent and young adult patients with narcolepsy, with significant variations in metrics like average degree centrality and node efficiency, particularly in the left middle frontal gyrus. These alterations showed correlations with clinical symptoms, including depression and sleep efficiency. However, the significance of these findings was reduced post False Discovery Rate adjustment, suggesting a larger sample size is needed for validation. In conclusion, the study offers initial observations that alterations in the prefrontal cortex's functional connectivity may potentially act as a neurobiological indicator of narcolepsy, warranting further investigation with a larger cohort to substantiate these findings and understand the underlying mechanisms.

Keyword: narcolepsy, fNIRS, functional connectivity, graph theory, prefrontal cortex

The role of sleep spindles in assessing memory performance in children with OSA

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STUDY OBJECTIVE: To examine the relationship between memory performance and sleep spindles in children with OSA and to investigate whether there are differences in memory performance in children with OSA depending on the period in which OSA occurs.

METHODS: Children aged 6-14 years with OSA attending Beijing Children's Hospital were included, age and gender matched controls were recruited. Children with OSA were classified into non-rapid eye movement sleep-related obstructive sleep apnea (NREM-OSA), rapid eye movement sleep-related obstructive sleep apnea (REM-OSA), and stage-independent (SI)-OSA according to the period of time when OSA occurred. All subjects completed a full night of polysomnography. Memory tests were completed before and after polysomnography, and memory levels were assessed by recall and recognition performance; declarative memory consolidation was calculated from recall and recollection rates. Automatic recognition of spindles was performed using a deep learning model on the C3 channel and during the N2 period, and spindles were separated into fast (> 13 Hz) and slow spindles (< 13 Hz).

RESULTS: 51 children participated in the study, including 15 controls, 14 NREM-OSA, 10 REM-OSA, and 12 SI-OSA. The number of spindles was reduced in SI-OSA compared to NREM-OSA. The number of fast spindles was positively correlated with recall scores. Both recall and recognition scores were positively correlated with the frequency of slow spindles and negatively correlated with the frequency of fast spindles ($P < 0.05$ for all). No relationship was found between declarative memory consolidation and spindle features. No statistical differences were found between groups in the number, frequency, and duration of spindles.

CONCLUSION: Children with SI-OSA have a reduced number of spindles but still show preserved declarative memory consolidation. Fast and slow spindles appear to be a watershed in response to children's memory levels and may suggest the existence of different neurocognitive processes for fast and slow spindles.

Keyword: obstructive sleep apnea, spindles, memory, children

Abnormal prefrontal functional network in adult obstructive sleep apnea: A resting-state fNIRS study

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To assess prefrontal brain network abnormality in adults with obstructive sleep apnea (OSA), resting-state functional near infrared spectroscopy (rs-fNIRS) was used to evaluate 52 subjects, including 27 with OSA and 25 healthy controls (HC). The study found that patients with OSA had a decreased connection edge number, particularly in the connection between the right medial frontal cortex (MFG-R) and other righthemisphere regions. Graph-based analysis also revealed that patients with OSA had a lower global efficiency, local efficiency, and clustering coefficient than the HC group. Additionally, the study found a significant positive correlation between the Montreal Cognitive Assessment (MoCA) score and both the connection edge number and the graph-based indicators in patients with OSA. These preliminary results suggest that prefrontal rs-fNIRS could be a useful tool for objectively and quantitatively assessing cognitive function impairment in patients with OSA.

Keyword: functional near infrared spectroscopy, graph theory, obstructive sleep apnea, prefrontal cortex, resting-state functional connectivity

阻塞性睡眠呼吸暂停综合征对学龄前儿童冲动-多动、多动指数相关分析

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阻塞性睡眠呼吸暂停综合征会影响儿童的认知功能，包括学习能力、记忆力、执行功能和注意力等方面。这些影响可能导致儿童在学业和日常生活中出现问题，甚至影响他们的社交和情绪健康。方法：选取有打鼾或张口呼吸的儿童为研究对象，均完成整夜多导睡眠监测及注Conners 儿童行为问卷父母版。根据阻塞性睡眠呼吸暂停低通气指数（OAHI）分为原发鼾症组，轻度阻塞性睡眠呼吸暂停及中重度 OSA 组。用 Conners 量表分析不同性别、不同年龄 OSA 儿童学习问题、冲动-多动等的发生率。并用儿童多导睡眠监测参数（睡眠效率、非快速眼动睡眠 1 期占总睡眠时间的比例（N1%）、非快速眼动睡眠 2 期占总睡眠时间的比例（N2%）、非快速眼动睡眠 3 期占总睡眠时间的比例（N3%）及快眼动睡眠占总睡眠时间的比例（R%）、OAHI、氧减指数（ODI）、平均血氧饱和度（SpO₂）以及最低 SpO₂）进行相关性分析，通过分析发现睡眠呼吸暂停障碍对儿童认知功能有着明显的影响作用。

关键词：阻塞性睡眠呼吸暂停综合征；认知功能；儿童；学龄前；Conners 儿童行为问卷父母版

The Mitochondrial Dysfunction Links to Impairment of Sleep and Cognition in the Patients with Chronic Insomnia: a Pilot Clinic Study

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Objectives: To explore the changes of mitochondrial uncoupling protein 2 (UCP2) and 4 (UCP4), and 18-kDa transporter protein (TSPO) in serum levels and the correlation with poor sleep quality and cognitive dysfunction in patients with chronic insomnia disorder (CID).

Methods: A total of 80 CID patients from our Sleep Center were collected, and 42 normal sleep subjects underwent health examinations were collected as health controls (HC). The Pittsburgh Sleep Quality Index (PSQI) and Patient Health Questionnaire-9 (PHQ-9) were used to assess sleep and depression, respectively. The Chinese-Beijing version of Montreal Cognitive Assessment scale (MoCA-C) was used to assess the overall cognition, and Nine-Box Maze Test (NBMT) was used to assess memories, including object/spatial reference (ORM, SRM), object/spatial work (OWM, SWM), and object recognition (ORcM) ones. ELISA was used to detect the serum levels of UCP2, UCP4 and TSPO.

Results: Compared to the HC, the CID patients had higher PSQI and PHQ-9 scores, lower MoCA-C score, and had more errors of SRM, OWM, SWM and ORcM ($P < 0.05$). The CID patients had higher serum levels of UCP 2 and TSPO, and lower UCP 4 level ($P < 0.05$). Controlling for sex, age, education, BMI and PHQ-9, the partial analysis showed that the serum levels of UCP2 and TSPO positively correlated with the PSQI score and error number of SRM. Besides, the TSPO level negatively correlated with the MoCA-C score ($P < 0.05$). The results of rotational component matrix showed that the parameters of PSQI, PHQ-9, UCP2 and TSPO had larger load values in factor 1; and the parameters of MoCA-C, SRM, ORM and ORcM had larger load values in factor 2.

Conclusion: UCP2, UCP4 and TSPO levels were altered in CID patients, indicating mitochondrial damage, and were more associated with insomnia severity than cognitive dysfunction.

Keyword: chronic insomnia disorder, cognitive dysfunction, mitochondrial dysfunction

功能磁共振成像在失眠障碍伴焦虑中的研究进展

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失眠障碍 (insomnia disorder, ID) 是最常见的睡眠疾病之一, 根据 DSM-5 的定义, 失眠障碍以入睡困难和 (或) 睡眠持续时间过短及早醒为主要症状。其严重影响人们身心健康、生活质量和工作效率, 已成为一个严峻的社会公共卫生问题。ID 的发病率在世界范围内呈逐年增长趋势, 中国睡眠研究会发布的最新数据显示, 中国成年人失眠率高达 38.2%。研究表明, 失眠增加患焦虑的倾向, 在有焦虑和没有焦虑的人群中, 失眠患病率分别为 25.3% 和 7.3%。失眠障碍往往与焦虑同时发生, 两者之间存在共同的神经生物学机制, 但其机制目前尚不清楚。近年来, 随着功能磁共振神经影像技术的飞速发展, 研究者利用该技术在神经心理及认知方面进行了广泛的研究, 在失眠障碍与焦虑的研究中也取得了许多进展。因此, 本文将从功能磁共振成像 (functional magnetic resonance imaging, fMRI) 的功能连接 (functional connectivity, FC) 角度对失眠障碍伴焦虑的神经影像学研究进展进行综述, 以了解其最新研究进展。

关键词: 失眠障碍; 焦虑; 功能磁共振成像; 功能连接

伴有抑郁的帕金森病患者中突触稳态和慢波睡眠受损

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目的：抑郁和睡眠障碍是帕金森病（PD）患者中常见的非运动症状。本研究旨在通过多导睡眠图评估 PD 患者睡眠特征与抑郁之间的关联，为阐明 PD 的病理机制提供依据。

方法：将 59 名 PD 患者分为两组：不伴抑郁组（nd-PD 组，n=27）和轻-中度抑郁组（d-PD，n=32）。我们比较了两组患者的人口统计学特征、临床评分和多导睡眠图，更重要的是比较了早期和晚期睡眠慢波活动（SWA）频谱密度以及整夜 SWA 下降情况。

结果：d-PD 组的非快速眼动睡眠第三阶段（N3）时间（ $P=0.032$ ）和百分比（ $P=0.043$ ）增高。N3 百分比与 PD 患者抑郁症状相关（ $P=0.014$ ）。在 d-PD 组中，晚期睡眠的额区和中央区 SWA（0.5-4Hz），全脑区、中央区和枕区低频 SWA（0.5-2Hz），额区高频 SWA（2-4Hz），以及早期睡眠的枕区低频 SWA（0.5-2Hz）均显著升高。与 nd-PD 相比，d-PD 全脑区和枕区的早晚期睡眠高频 SWA（2-4Hz）差值（ Δ SWA）明显增高。枕区高频 Δ SWA（2-4Hz）与 PD 抑郁症状相关（ $P=0.049$ ）。

讨论：伴有抑郁的 PD 患者出现慢波睡眠受损，表现为 N3 睡眠时间和比例增高，晚期睡眠 SWA 指标增高及 SWA 过夜下降减少。这表明睡眠期间的突触强度降低和突触稳态调节受损可能与 PD 患者抑郁有关。枕区高频 Δ SWA 下降减少可能作为 PD 患者抑郁的一个新的电生理生物标志物。

关键词：帕金森病, 多导睡眠图, 慢波睡眠, 慢波活动, 抑郁

急性缺血性卒中中的睡眠脑电特征与早期神经功能改善之间的关系

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目的：越来越多的研究发现缺血性卒中与睡眠之间的密切关系，某些睡眠特征可能是预测卒中预后的良好指标。过去的研究多集中在宏观睡眠结构方面，本研究旨在通过多导睡眠图（PSG）记录睡眠，分析宏观和微观睡眠结构与卒中早期神经功能改善（ENI）之间的关系。

方法：根据入院时和出院时 NIHSS 评分差值的百分比，将卒中患者分为 ENI 组（n=53）和 Non-ENI 组（n=43）。所有入组患者均在入院后完成 PSG 的采集，提取睡眠脑电并分析睡眠纺锤波、慢振荡（SO）的特征。比较两组间在临床特征、宏观和微观睡眠结构方面的差异。通过逻辑回归分析 ENI 的相关影响因素。

结果：最终共入组 96 例因急性缺血性卒中住院并完成 PSG 检查的患者。两组卒中患者在总睡眠时间（ $P=0.007$ ）、NREM2 期（ $P=0.032$ ）和 REM 期（ $P=0.016$ ）的睡眠时间方面都具有显著差异。ENI 组患者相较于 Non-ENI 组，其 SO 的持续时间长、斜率小、频率低，SO-纺锤波耦合大，差异具有统计学意义。逻辑回归结果显示，卒中患者的纤维蛋白原水平、睡眠效率、SO 频率、SO-纺锤波耦合是影响卒中 ENI 的独立因素（ $P<0.05$ ）。

结论：我们发现了宏观及微观睡眠结构对卒中早期功能恢复的影响，睡眠中的 SO-纺锤波的精确耦合与卒中 ENI 独立相关。

关键词：缺血性卒中, 早期神经功能改善, 睡眠结构, 纺锤波, 慢振荡

The impact of co-morbid insomnia and obstructive sleep apnea (COMISA) on sleep architecture and the degree of neurological impairment in patients with ischemic stroke

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Abstract

Objectives: Both obstructive sleep apnea (OSA) and insomnia are associated with acute ischemic stroke (AIS); however, the effects of comorbid insomnia and OSA (COMISA) on sleep architecture and the degree of neurological impairment in AIS patients are still uncertain.

Methods: 511 patients diagnosed with acute ischemic stroke (AIS) completed sleep questionnaires and underwent polysomnography (PSG), as well as assessments using the National Institute of Health Stroke Scale (NIHSS) and modified Rankin Scale (mRS). Participants were categorized into four groups: no insomnia/OSA (control), insomnia-only, OSA-only, and COMISA. Post-hoc tests were performed to compare baseline data among the four groups. Univariate and multivariate analyses, adjusting for factors including age, sex, body mass index, lipid abnormalities, and PSG parameters, were performed using a generalized linear regression model to assess the relationship between COMISA and post-ischemic stroke sleep structure and severity of cerebral infarction.

Results: Within the study cohort, the prevalence of COMISA was 40.1%. The COMISA group demonstrated lower sleep efficiency compared to the non-insomnia group and higher Apnea-Hypopnea Index (AHI) and Oxygen Desaturation Index (ODI) compared to the non-OSA group. The COMISA group exhibited higher NIHSS scores (2.0 [1.0, 2.0] vs 2.0 [1.0, 4.0] vs 2.0 [1.0, 3.0] vs 4.0 [3.0, 5.0], $p < 0.001$) and mRS scores (2.0 [1.0, 2.0] vs 1.0 [1.0, 2.0] vs 1.0 [1.0, 2.0] vs 2.0 [1.0, 3.0], $p < 0.001$) compared to the other three groups. Univariate linear regression analysis revealed a significant correlation between COMISA and NIHSS score ($\beta = 0.826$, 95%CI 0.605 to 1.047, $p < 0.001$). Upon adjustment for other confounding factors, multiple linear regression analysis revealed that compared to the control group, the coefficients for the insomnia group and OSA group were 0.1883 (95% CI: -0.081 to 0.458, $p = 0.171$) and 0.145 (95% CI: -0.115 to 0.405, $p = 0.275$), respectively, whereas the coefficient for the COMISA group was 0.8175 (95% CI: 0.561 to 1.074, $p < 0.001$).

Conclusions: The sleep patterns of COMISA patients resemble those of OSA in terms of sleep breathing and those of insomnia in terms of sleep efficiency. COMISA significantly exacerbates neurological impairment in AIS patients. COMISA emerges as an independent risk factor affecting the severity and prognosis of AIS patients. Treating OSA and insomnia as cumulative and modifiable cerebrovascular risk factors is meaningful for acute stroke management.

Keyword: insomnia, obstructive sleep apnea, COMISA, acute ischemic stroke

Effect of Obstructive Sleep Apnea and Use of Positive Airway Pressure on 24-Hour Blood Pressure in Pregnant Women

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Background: There is minimal data on the efficacy of positive airway pressure (PAP) during pregnancy, and the effect of PAP on ambulatory blood pressure (BP) and the development of gestational hypertension (GH) in pregnant women with obstructive sleep apnea (OSA) is controversial. This study aims to comprehensively investigate the association between OSA and ambulatory BP parameters in pregnant women using 24-hour ambulatory BP monitoring (24h-ABPM), and evaluate the changes in ambulatory BP parameters before and after the intervention.

Methods: This prospective, controlled before-and-after intervention study included 145 pregnant women with suspected OSA at the obstetric clinic of Peking University People's Hospital from January 2022 to December 2023. Eligible participants were screened for OSA using an overnight home sleep apnea test (HSAT), and those with an apnea-hypopnea index (AHI) ≥ 5 events/hour were diagnosed with OSA. Participants with OSA were assigned to either a PAP group or a control group based on their treatment preference. Ambulatory BP was monitored at one week and one month after PAP initiation using 24h ABPM.

Results: The prevalence of OSA in pregnant women was 53.80% (78/145), with a median AHI of 14.98 events/hour. Women with OSA had significantly higher pre-pregnancy BMI, pregnancy BMI, room systolic BP (SBP) and diastolic BP (DBP), and fasting glucose (GLU) levels. They also had higher rates of polycystic ovary syndrome (PCOS) (16.7% vs. 3%, $P=0.007$) and gestational diabetes mellitus (GDM) (35.9% vs. 14.9%, $P=0.004$) compared to those without OSA. AHI was positively correlated with nocturnal DBP (nDBP) ($\beta = 0.15$, 95% CI 0.01-0.29; $P = 0.035$) after adjusting for gestational week, pre-pregnancy BMI, GLU, PCOS, and GDM. Stratified analysis revealed that OSA was linked to higher 24h SBP and daytime SBP (dSBP) in women with a BMI < 25 kg/m², or without PCOS or GDM. However, in overweight/obese, PCOS, or GDM pregnant women, OSA did not significantly affect BP parameters. Generalized linear mixed-effects models showed significant reductions in 24h SBP ($P=0.033$), nocturnal SBP (nSBP) ($P=0.003$), and nDBP ($P=0.007$) at one week of PAP compared to baseline. No significant BP differences were observed between one week and one month of PAP, indicating stable ambulatory BP within the normal range. Paired t-tests for 21 subjects completing 24h ABPM at one week of PAP showed significant reductions in 24h SBP (-4.86 mmHg, $P=0.029$), 24h DBP (-3.91 mmHg, $P=0.008$), mean arterial pressure (MAP) (-3.86 mmHg, $P=0.011$), nSBP (-15.67 mmHg, $P<0.001$), and nDBP (-5.71 mmHg, $P=0.002$).

Conclusion: This prospective before-and-after intervention study demonstrates a positive relationship between OSA and ambulatory BP in pregnant women, using 24h ABPM. PAP treatment significantly reduced BP, especially nocturnal BP, within one week. These findings underscore the importance of screening for OSA and

timely PAP intervention in pregnant women, particularly those with normal BMI, without PCOS, or GDM.

Keyword: obstructive sleep apnea, 24-hour ambulatory blood pressure, positive airway pressure, pregnancy

犬尿氨酸介导阻塞性睡眠呼吸暂停所致肝功能损伤：一项横断面研究

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目的 犬尿氨酸是色氨酸代谢途径重要产物，介导多种病理生理活动。本研究旨在探究阻塞性睡眠呼吸暂停（OSA）严重程度及肝功能损伤与血清犬尿氨酸的关系。**方法** 从2019年1月至2019年6月因打鼾就诊于上海市第六人民医院睡眠中心的200例疑似OSA受试者中筛选出142例患者纳入研究。收集人体测量数据、生化指标、睡眠监测数据，并检测血清犬尿氨酸、吡哆胺-2,3-双加氧酶1（IDO1）、丙氨酸氨基转移酶（ALT）、天门冬氨酸氨基转移酶（AST）水平。分析评估睡眠参数、犬尿氨酸、ALT和AST之间的相关性因素及中介因素。**结果** 线性回归分析在校正性别、年龄、体重指数（BMI）后结果显示，呼吸暂停-低通气指数（AHI）、最低氧饱和度（LSpO₂）、氧降指数（ODI）、犬尿氨酸是ALT的独立相关因素；AHI、平均氧饱和度（MSpO₂）、LSpO₂、ODI、睡眠时氧饱和度低于90%的时间占总监测时间的百分比（CT90）和犬尿氨酸是AST的独立相关因素。中介分析显示，犬尿氨酸可分别解释AHI、MSpO₂、LSpO₂和ODI对OSA患者血清AST影响的50.0%、43.0%、54.4%和52.4%。**结论** 犬尿氨酸在OSA引起的肝功能损伤中发挥着重要的中介作用，可能是一种潜在的治疗靶点。

关键词：阻塞性睡眠呼吸暂停；肝功能损伤；犬尿氨酸；色氨酸代谢

A high arousal threshold is associated with nocturnal gastroesophageal reflux in obstructive sleep apnea.

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Objective: Nocturnal gastroesophageal reflux (nGER) was reported to be associated with obstructive sleep apnea (OSA). However, the nature of the relationship between OSA and nGER remains unclear. This study aimed to determine whether a high arousal threshold (ArTH) is an independent risk factor for nGER.

Methods: 482 adult patients with OSA diagnosed by polysomnography (PSG) at Peking University People's Hospital were evaluated in this cross-sectional study. nGER was defined as typical nGER symptoms (heartburn or acid regurgitation occurring at night which affects sleep) at least once a week in the past four weeks. A low ArTH was predicted based on the following PSG features: a total score of 2 or more, with one point assigned for each of the following criteria: apnea-hypopnea index (AHI) < 30/h, nadir oxygen saturation > 82.5%, the proportion of hypopneas > 58.3%, otherwise the ArTH was classified as high. Demographic and anthropometric characteristics, PSG parameters, and questionnaires related to clinical symptoms and comorbidities were obtained. The associations between nGER and clinical features were examined by multivariate logistic regressions.

Results: The prevalence of typical nGER symptoms in patients with OSA was 17.8%. High ArTH ($P = 0.006$), BMI ≥ 28 kg/m² ($P = 0.023$), the Epworth Sleepiness Scale (ESS) Scores > 16 ($P = 0.006$), and age over 60 years old ($P = 0.002$) were associated with a markedly higher risk of nGER in patients with OSA. In BMI < 24 kg/m², a high arousal threshold not only significantly added to the presence of nGER ($P = 0.031$) but also correlated with the severity of nGER ($r^2 = 0.260$, $P = 0.017$).

Conclusions: A high arousal threshold is an independent risk factor in patients with OSA and nGER. For non-overweight patients with OSA, a high arousal threshold is not only associated with the presence of nGER but also correlates with the severity of nGER.

Keyword: Obstructive sleep apnea, gastroesophageal reflux, arousal threshold

Executive function performance in children and adolescent patients with narcolepsy type 1

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Objective: The executive function profile in patients with narcolepsy type 1 (NT1) has been mentioned; however, limited research exists on children and adolescent patients with NT1. This study aims to assess executive function in children and adolescent patients with NT1 in China, examine potential influencing factors and evaluate the short-term treatment effect on executive function.

Methods: 53 NT1 patients (36 males, age 12.2 ± 3.4 years) and 37 healthy controls (23 males, age 12.2 ± 2.5 years) underwent self-reported measures assessing subjective sleepiness, depression, anxiety and sleep quality. A comprehensive neuropsychological test was administered to assess executive function domains, including processing speed, inhibitory control, cognitive flexibility and working memory. These assessments were repeated in NT1 patients after three-day regular drug treatment.

Results: NT1 patients exhibited higher levels of excessive daytime sleepiness, depression, anxiety, and poor sleep quality compared to healthy controls. Patients showed impaired processing speed, inhibitory control and cognitive flexibility ($p < 0.05$), whereas working memory was unaffected ($p > 0.05$). Regression analysis revealed that parameters from sleep monitoring, such as sleep efficiency and sleep latency, were correlated with executive function performance after controlling for age, gender, and education years. The short-term treatment led to improvements in inhibitory control, cognitive flexibility, and working memory.

Conclusion: The findings showed that executive function was impaired among children and adolescent patients with narcolepsy, which was associated with objective sleep parameters. Furthermore, this study emphasizes the necessity of neuropsychological assessments and early interventions among children and adolescent NT1 patients.

Keyword: narcolepsy; executive function; neuropsychological test; treatment

发作性睡病患者血清 TNF- α 、IL-6、T 细胞亚群水平变化及相关影响因素分析

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目的：评估发作性睡病患者与健康对照组（HC）外周血 T 细胞亚群、血清 TNF- α 和 IL-6 水平有无显著差异。方法：纳入 23 例 NT1 患者（NT1 组），23 例 HC。检测 2 组受试者外周血中 CD4⁺ 和 CD8⁺ T 细胞数、血清 TNF- α 及 IL-6 含量。对收集的数据进行统计学分析，P 小于 0.05 差异有统计学意义。结果：（1）两组外周血 CD4⁺ T 细胞数、血清 TNF- α 和 IL-6 水平之间的差异有统计学意义（ $P < 0.05$ ）。（2）外周血 CD4⁺ T 细胞增多和血清 TNF- α 升高与发作性睡病独立相关（ $P < 0.05$ ），且为发作性睡病独立危险因素。（3）CD4⁺ T 细胞的曲线下面积为 0.732（ < 0.05 ），敏感度为 0.652，特异度为 0.913。TNF- α 的曲线下面积为 0.772（ < 0.05 ），敏感度为 0.609，特异度为 0.870。两项指标联合预测的 ROC 曲线下面积为 0.881，敏感度为 0.783，特异度为 0.870，有较高的诊断性能。结论：（1）外周血 CD4⁺ T 细胞数、血清 TNF- α 和 IL-6 水平是发作性睡病的相关危险因素，外周血 CD4⁺ T 细胞数和血清 TNF- α 水平是发作性睡病的独立危险因素。（2）外周血 CD4⁺ T 细胞数和血清 TNF- α 水平联合预测诊断发作性睡病有较高的诊断性能。

关键词：发作性睡病，IL-6，TNF- α ，CD4⁺ T 细胞，CD8⁺ T 细胞

The association between maternal sleep health and mental health: the moderating role of family function

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Objective: Pregnancy is a complex physiological process that leads to significant changes in the sleep patterns of most pregnant women. Sleep conditions are associated with various health outcomes in pregnant and postpartum women. This study aims to investigate the correlations between sleep health and both anxiety and depression in pregnant and postpartum women, as well as to examine the moderating role of family function in these relationships. **Methods:** A cross-sectional survey was conducted among pregnant and postpartum women attending the obstetrics and gynecology departments at two tertiary hospitals in Nanjing, using a self-developed general information questionnaire, the Sleep Health Index, the Family APGAR Index, and the Ultra-brief Screening Scale for Depression and Anxiety (Patient Health Questionnaire-4, PHQ-4) to assess demographic information, sleep health, family function, and symptoms of anxiety and depression. Multiple linear regression analysis was used to explore the relationships between sleep health, family function, anxiety and depression. **Results:** A total of 216 pregnant and postpartum women completed the survey, with an average age of 31.22 ± 3.62 years and an average gestational age of 35.58 ± 4.67 weeks. The scores for sleep health, family function, anxiety, and depression were 84.53 ± 10.46 , 8.78 ± 1.85 , 0.93 (0, 2), and 0.59 (0, 1), respectively. The results indicated that gestational age ($\beta = 0.04$, $P = 0.048$) was positively correlated with anxiety, while sleep health ($\beta = -0.04$, $P < 0.001$) was negatively correlated with it. Pregnant and postpartum women who were unmarried and cohabiting ($\beta = 4.67$, $P = 0.003$) had higher anxiety levels compared to those who were unmarried and not cohabiting. Sleep health ($\beta = -0.04$, $P < 0.001$) and family function ($\beta = -0.14$, $P < 0.001$) were negatively correlated with depression, and unmarried and cohabiting women ($\beta = 2.52$, $P = 0.033$) had higher depression levels compared to those unmarried and not cohabiting. Additionally, an interaction effect was observed between sleep health and family function on depression ($\beta = 0.01$, $P < 0.001$), indicating that among women with high levels of family function, improvements in sleep health were associated with a more rapid reduction in depression scores compared to those with low levels of family function. **Conclusion:** Improvements in sleep health can help reduce anxiety and depression in pregnant and postpartum women. Additionally, enhancing family function can strengthen the protective effect of sleep health against depression.

Keyword: Pregnancy; Sleep health; Anxiety; Depression; Family function

Differences in attention abilities, growth, development, and quality of life of children with obstructive sleep apnea and healthy controls in China: A cross-sectional study

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Objectives: Few studies on obstructive sleep apnea (OSA) in children have comprehensively examined multiple parameters. This study aimed to compare the growth and development, quality of life, and attention abilities of Chinese children with vs. without OSA.

Methods: This cross-sectional study included children with OSA and healthy controls who visited the 980th Hospital, Joint Logistics Support Force, China, between February 2017 and February 2018. The children were evaluated using the Myklebust pupil rating scale (PRS), inventory of subjective life quality (ISLQ), Zung self-rating anxiety scale (SAS), Conners parent symptom questionnaire (PSQ), and continuous performance task (CPT) (validated Chinese versions were used).

Results: Compared with the control group (n = 60), higher proportions of children with OSA (n = 67) had low height (14.9% vs. 0%), obesity (22.4% vs. 11.7%), low PRS scores (74.9 ± 13.1 vs. 87.9 ± 15.3 , $P < 0.001$), low ISLQ scores (45.0 ± 15.5 vs. 60.7 ± 11.4 , $P < 0.001$), high anxiety (20.5 ± 9.4 vs. 10.9 ± 7.3 , $P < 0.001$), abnormal learning performance (35.8% vs. 18.3%, $P = 0.028$), impulsivity and hyperactivity (50.7% vs. 25.0%, $P = 0.003$), and abnormal hyperactivity index (53.7% vs. 28.3%, $P = 0.004$). Moreover, children in the OSA group showed worse sustained visual attention ability ($P = 0.010$), auditory attention ability ($P < 0.001$), and both visual and auditory attention abilities ($P = 0.002$) than control children.

Conclusions: Significant impairments were observed in the growth and development, quality of life, and cognitive and attention abilities of children with OSA compared with healthy controls.

Keyword: obstructive sleep apnea; children; growth; development; attention; quality of life

Performance of Machine Learning-based Models to Screen Obstructive Sleep Apnea in Pregnancy

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Background: Obstructive sleep apnea (OSA) is prevalent during pregnancy and linked to an increasing risk of adverse maternal and fetal outcomes. It has been proposed that identifying and managing OSA in pregnant women could potentially improve pregnancy outcomes. However, the lack of screening tools for OSA in this population results in low diagnosis rates.

Objective: The purpose of this study is to improve the performance of existing OSA screening tools for pregnant women with machine learning algorithms.

Study design: A total of 296 pregnant women who complained of snoring OSA were recruited to complete four traditional OSA screening questionnaires: Berlin, STOP, STOP-Bang questionnaires (SBQ) and Epworth Sleepiness Scale (ESS). OSA status was confirmed using an overnight type III home sleep test, with an apnea-hypopnea index (AHI) of ≥ 5 events/h indicating OSA. 76 of the participants repeated the procedure at different trimesters, generating a total of 402 records. The participants were randomly split into a training set (n=207) and a test set (n=89) in a 7:3 ratio. We applied logistic regression model to build Mixture of Models for OSA screen (MoMOSA) based on demographic data and selected questions from all the questionnaires. Performances were evaluated by accuracy, area under the receiver-operating-characteristic curves (AUC), sensitivity, and specificity. Odds ratios and corresponding 95% confidence intervals (CIs) were also calculated. Finally, we transformed the MoMOSA into a new questionnaire with a nomogram for visualizable calculation.

Results: Four improved model developed by machine learning algorithm demonstrated better predictive performance for OSA in pregnancy than four traditional approaches. MoMOSA with 13 features achieved the highest performance among the traditional questionnaires and built models. The probability threshold was 0.506 which helped separate patients into high- and low-risk groups of OSA. The accuracy, AUC, sensitivity, and specificity of MoMOSA in the test set are 0.739, 0.823 (95% CI, 0.748 - 0.898), 0.821 (95% CI, 0.721 - 0.922), and 0.661 (95% CI, 0.540 - 0.781), respectively. According to our model, presence of mandibular deficiency (OR: 4.206 (3.190, 5.546)), snore loudly (OR: 2.532 (1.748, 3.670)) and hyperglycemia in pregnancy (OR: 2.372 (1.977, 2.846)) are the most influencing factors of OSA.

Conclusion: The machine learning algorithm can help improve traditional OSA screening approaches for pregnant women.

Keyword: Obstructive sleep apnea; pregnancy; screen; machine learning; nomogram

童年期虐待对青少年抑郁障碍患者非自杀性自伤行为的影响： 睡眠质量和快感缺失的链式中介作用

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目的 探讨青少年抑郁障碍患者童年期虐待、快感缺失和睡眠质量与非自杀性自伤行为的关系。

方法 采用青少年非自杀性自伤行为问卷、匹兹堡睡眠问卷、时间性快感体验量表和童年期虐待问卷对合肥市第四人民医院住院治疗的 120 例青少年抑郁障碍患者进行调查；采用独立样本 t 检验进行 2 组间差异性检验；采用 Pearson 相关分析进行各量表得分之间的相关分析；采用 Hayes 编制的 PROCESS 宏程序进行链式中介模型分析。

结果 童年期虐待对快感缺失具有正向预测作用 ($\beta = 0.06, P < 0.001$)，童年期虐待对睡眠质量存在正向预测作用 ($\beta = 0.06, P < 0.001$)；快感缺失对睡眠质量存在正向预测作用 ($\beta = 0.06, P < 0.001$)；童年期虐待、睡眠质量、快感缺失同时对 NSSI 行为存在预测作用 ($\beta = 0.06, P < 0.001, \beta = 0.06, P < 0.001$ 和 $\beta = 0.06, P < 0.001$)；快感缺失在童年期虐待与 NSSI 行为之间的中介效应值为 0.1 (0.008~0.206)，占总效应的 18.65%；睡眠质量在童年期虐待与 NSSI 行为之间的中介效应值 0.08 (0.028~0.137)，占总效应的 13.61%；快感缺失和睡眠质量在童年期虐待与 NSSI 行为之间的链式中介效应值 0.03 (0.011~0.062)，占总效应的 5.91%。

结论 睡眠质量和快感缺失在青少年抑郁障碍患者童年期虐待对 NSSI 的影响中起到链式中介作用

关键词：青少年抑郁障碍；快感缺失；童年期虐待；睡眠质量；非自杀性自伤

注意缺陷多动障碍患儿核心症状和行为问题对其睡眠的影响

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目的 探讨注意缺陷多动障碍（ADHD）核心症状和行为问题对其睡眠的影响及三者关系的路径分析。**方法** 横断面研究。收集6-12岁ADHD患儿289例。采用SNAP-IV量表评估ADHD核心症状（注意缺陷和多动冲动）、Conners父母用症状问卷评估行为问题（品行问题、学习问题、心身症状和焦虑）、儿童睡眠紊乱量表评估睡眠。**结果** 多因素Logistic回归分析结果表明，在控制了年龄、性别、言语智商和操作智商后，注意缺陷（ $P=0.008$ ， $OR=2.60$ ）、心身症状（ $P=0.027$ ， $OR=6.77$ ）和焦虑（ $P=0.013$ ， $OR=3.96$ ）的增加将增加ADHD儿童睡眠障碍（SDSC总分 >39 分）的风险。路径分析结果显示，注意缺陷（ $Beta=0.244$ ， $P=0.001$ ）、心身症状（ $Beta=0.114$ ， $P=0.046$ ）和焦虑（ $Beta=0.216$ ， $P<0.001$ ）直接影响SDSC总分。多动冲动通过心身症状间接影响SDSC（ $Beta=0.142$ ， $P=0.039$ ），注意缺陷通过焦虑间接影响SDSC（ $Beta=0.321$ ， $P<0.001$ ）。**结论** ADHD的核心症状和行为问题越严重，ADHD儿童睡眠紊乱程度越高。心身症状和焦虑直接影响ADHD儿童睡眠，注意缺陷可以直接或者通过焦虑间接影响ADHD儿童睡眠，多动冲动通过心身症状间接影响ADHD儿童睡眠。

关键词：儿童 睡眠 注意缺陷多动障碍 行为问题 焦虑 心身症状

慢性失眠障碍的失眠认知行为治疗疗效分析

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背景 失眠的认知行为治疗（CBT-I）为失眠的一线疗法，但其疗效存在较大差异，分析影响其疗效的因素有较大的临床意义。**目的** 调查慢性失眠障碍患者 CBT-I 的疗效及相关因素。**方法** 本研究为类实验性研究。纳入 2020 年 1 月至 2022 年 10 月就诊于绵阳市第三人民医院的慢性失眠障碍（ICD）患者共 50 例为研究对象，使用自编问卷调查社会人口学特征，使用匹兹堡睡眠质量指数量表（PSQI）、汉密尔顿抑郁量表（HAMD）、汉密尔顿焦虑量表（HAMA）评估睡眠、情绪，使用卡特尔十六人格因素量表（16PF）测量人格特征，予以面对面 CBT-I 对 ICD 患者进行干预治疗，以治疗后 PSQI 得分和治疗前后 PSQI 减分率共同评估疗效。**结果** 经 6 周治疗后 PSQI 总分及各维度得分均较治疗前下降；年龄、性别、受教育程度、婚姻状况等因素在有无临床疗效组间不存在差异，16PF 中幻想性 M 在无临床疗效的患者中得分更低（ $P < 0.05$ ），其它因子无差异。**结论** CBT-I 改善慢性失眠障碍患者睡眠疗效显著，同时幻想性人格特征对患者 CBT-I 的疗效可能存在影响。

关键词：失眠；人格特征；失眠的认知行为疗法；卡特尔十六人格因素量表；疗效分析

重复经颅磁刺激治疗慢性失眠障碍的临床疗效及血清 BDNF、NF- κ B 及 Tau 变化

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目的：(1)探索重复经颅磁刺激(rTMS)治疗慢性失眠障碍(CID)的疗效。(2)探讨 CID 患者经真 rTMS 联合药物治疗后睡眠质量、认知功能及血清 BDNF、NF- κ B、Tau 变化之间是否存在相关性。方法：采用随机数字表将符合纳排标准的 88 名 CID 患者分为药物组、伪 rTMS+药物组及真 rTMS+药物组。所有研究对象分别在基线期(T0)及治疗第 2 周(T1)行 PSQI 及 MoCA 量表评估，采用 ELISA 测定血清 BDNF、NF- κ B、Tau 浓度。使用 SPSS27.0 对数据进行分析。结果：(1)三组在年龄、性别、婚姻状况、受教育年限及药物使用情况差异无统计学意义。(2)T0 期，三组 PSQI、MoCA、血清 BDNF、NF- κ B、Tau 浓度差异无统计学意义。(3)T1 较 T0 期相比，真 rTMS 组 PSQI 评分及血清 NF- κ B 浓度均低于另两组，MoCA 评分及血清 BDNF 浓度均高于另两组。(4)PSQI 总分与血清 BDNF 呈负相关，与血清 NF- κ B 呈正相关；注意力与血清 BDNF 呈正相关；记忆力与血清 NF- κ B 呈负相关；语言能力与血清 Tau 呈负相关。结论：(1)低频 rTMS 治疗在改善 CID 患者的睡眠质量及神经认知功能有一定的疗效。(2)睡眠质量及神经认知功能改善可能与升高体内 BDNF 或降低 NF- κ B 水平有关。

关键词：慢性失眠障碍，重复经颅磁刺激，血清因子

Association between sleep and Alzheimer' s disease: A 20-year bibliometric analysis

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Introduction: Alzheimer' s disease (AD) often presents with sleep disorders, which are also an important risk factor for AD, affecting cognitive function to a certain extent. This study aimed to reveal the current global status, present hotspots, and discuss emerging trends of sleep and AD using a bibliometric approach.

Methods: Research and review articles related to sleep and AD from 2003 to 2022 were extracted from the Web of Science Core Collection. VOSviewer 1.6.18.0, Scimago Graphica, and CiteSpace 6.2.R2 were used to map the productive and highly cited countries, institutions, journals, authors, references, and keywords in the field.

Results: Overall, 4,008 publications were included in this bibliometric analysis. The number of publications and citations showed an increasing trend over the past two decades. The USA and China had the largest and second largest, respectively, number of publications and citations and cooperated with other countries more closely. Ancoli-Israel Sonia published the most papers, and Holtzman David M was co-cited most frequently. The most productive journal was Journal of Alzheimer' s Disease, and Neurology was the most frequently cited journal. The risk factors, β -amyloid ($A\beta$), tau, neuroinflammation, astrocytes, glymphatic system, orexin, functional connectivity, and management have been the main research directions of researchers over the past few years and may be the future trend of valuable research.

Conclusion: We identified hotspots and emerging trends including risk factors, $A\beta$, tau, neuroinflammation, the glymphatic system, orexin, and management, which may help identify new therapeutic targets and improve clinical efficacy of sleep and AD.

Keyword: Sleep, Alzheimer' s disease, Bibliometrics, Hotspots, Emerging trends

Characteristics of altered cingulate gyrus subregions functional connectivity in chronic insomnia disorder with anxiety

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Background: Chronic insomnia disorder (CID) is commonly associated with mood disorders. The cingulate gyrus (CG) plays a critical role in the pathophysiology of CID and anxiety. However, the specific characteristics of altered brain networks in the CG in CID with anxiety remain unclear. **Objective:** This study aimed to investigate the characteristics of CG functional connectivity (FC) in CID with and without anxiety.

Methods: A total of 92 CID patients and 36 healthy controls (HC) underwent resting-state functional magnetic resonance imaging (fMRI). Based on anxiety scores, the CID patients were divided into two groups: CID with anxiety (CID-A, N=37) and CID without anxiety (CID-NA, N=55). Using the Human Brainnetome Atlas, 14 CG subregions were selected (bilateral: A23d, dorsal area 23; A24rv, rostroventral area 24; A32p, pregenual area 32; A23v, ventral area 23; A24cd, caudodorsal area 24; A23c, caudal area 23; A32sg, subgenual area 32) to construct a CG FC network. A machine learning approach based on linear kernel support vector machines (SVM) was employed to classify CID-A and CID-NA groups using CG FC features. **Results:** Compared with HC, CID showed significantly decreased CG FC with the precuneus, middle frontal gyrus (MFG), and hippocampus, while showing significantly increased CG FC with the middle temporal gyrus (MTG)/superior temporal gyrus (STG). In contrast, CID-A showed significantly decreased CG FC with the insular, putamen, MTG/STG, and inferior parietal lobule, while showing significantly increased CG FC with the thalamus and MFG compared to CID-NA. Further, CID-A and CID-NA could be classified with 84.21% accuracy by using the CG FCs as features. Among these features, the CG FC with MFG, thalamus, and putamen had the highest contribution weights. **Conclusion:** This study revealed specific changes in the brain network of the CG subregion in CID-A. Understanding these FC alterations can contribute to the identification of potential biomarkers for CID-A, aiding in early detection.

Keyword: Insomnia disorder, anxiety, cingulated gyrus, functional connectivity, machine learning

中国人群习惯性午睡与健康结局的关联性分析

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【目的】随着社会的发展，人们的工作及学习压力也随之增加，午睡成为了大多数人缓解疲劳的一种习惯。在中国，午睡通常被认为是一种健康的生活习惯，但长时间的午睡等也可能对健康造成负面影响。习惯性午睡对身心健康的影响尚存在争议。本研究旨在探索中国人群中习惯性午睡与健康结局之间的关联性。

【方法】采用横断面研究的方法，探索中国人群习惯性午睡与健康结局的关系，同时根据夜间睡眠分组，分析午睡与夜间睡眠时长、夜间睡眠质量共同对健康结局的影响。

【结果】本研究纳入 41061 名参与者，分析发现：1) 在中国人群中，午睡与躯体疾病 (OR=0.90, 0.85-0.96) 和精神障碍 (OR=0.81, 0.70-0.94) 的低风险相关。2) 对于夜间睡眠较短的人群，午睡会降低躯体疾病的风险 (OR=0.83, 0.75-0.91)，对于夜间睡眠较长的人群，午睡则会增加躯体疾病的风险 (OR=1.48, 1.05-2.08)。3) 在睡眠质量较差 (PSQI \geq 7) 的人群中，午睡与慢性躯体疾病 (OR=0.88, 0.82-0.96) 和精神障碍 (OR=0.79, 0.67-0.93) 低风险显著相关，而在睡眠质量较好的人群中未见午睡对健康结局有明显影响。

【结论】本研究提示习惯性午睡可能是一些慢性躯体疾病和精神障碍的风险因素，但同时也可以减少夜间睡眠不足、夜间睡眠质量较差带来的负面影响，为有午睡习惯的人群作息安排和疾病预防提供了启发。

关键词：午睡习惯，健康结局，躯体疾病，精神障碍，横断面研究

Sleep-disordered breathing and metabolic syndrome across gender, age, and sleep subtypes in East Asians

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Background

Previous research has identified several phenotypes of sleep-disordered breathing (SDB) symptoms: "minimally symptomatic," "excessive daytime sleepiness," "sleep disturbance," "upper airway symptoms," and "sleepiness predominant." The potential outcomes of SDB, such as cardiovascular prognosis and treatment response, vary. The cardiovascular risks associated with SDB differ based on gender, age, and subtype, with uncertainty regarding whether metabolic syndrome mediation influences this variability. This study aims to identify different SDB clusters and investigate their relationship with metabolic syndrome and its components.

Methods

Community-dwelling participants from southern China were involved in the "Guangdong Sleep Health Study." Participants underwent type IV sleep monitoring and completed structured questionnaires. MetS was defined according to the Chinese Guidelines for the Prevention and Treatment of Type 2 Diabetes (2020 Edition). We conducted a latent class analysis to categorize patients based on SDB symptoms and characteristics.

Results

The severity of SDB was independently associated with an increased risk of metabolic syndrome, particularly in males under 60 and females aged 60 and above. A total of 1,483 SDB patients were categorized into four distinct clusters: Cluster 1 included the pure insomnia group with fewer daytime symptoms; Cluster 2 consisted of the minimally symptomatic group; Cluster 3 comprised the insomnia group with multiple daytime symptoms; and Cluster 4 encompassed the group with upper airway symptoms and sleepiness. Among the SDB subtypes, there was no significant difference in the prevalence of metabolic syndrome. However, the pure insomnia group had the highest prevalence of hypertension.

Conclusion

These findings highlight the importance of considering gender, age differences, and sleep symptom subtypes when evaluating and managing metabolic syndrome. Tailored strategies, early identification, and consideration of different subtypes are necessary to optimize treatment.

Keyword: Sleep-Disordered Breathing, Metabolic Syndrome, Hypoxia, Cardiovascular Risk, Gender Differences, Sleep Quality

失眠在老年人慢性病与焦虑之间的中介作用

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目的:探讨老年人失眠与慢性病和焦虑的关系,以及失眠在慢性病和焦虑间的中介作用。

方法:采用多阶段随机整群抽样的方法抽取四川省绵阳市 12175 名 60 岁及以上的老年人。采用一般人口学问卷、健康相关因素问卷、慢性病情况、广泛性焦虑量表、失眠严重程度指数量表进行调查。对一般资料进行描述性分析;采用 Harman 单因素检验法检验数据是否存在共同方法偏差;采用卡方检验分析老年人慢性病和焦虑的特征;运用 Spearman 相关对慢性病、睡眠质量和焦虑症状进行相关性分析;通过 Bootstrap 程序检验睡眠质量中介作用。

结果:(1)老年人慢性病与失眠($r=0.102$, $P<0.01$),焦虑与失眠($r=0.661$, $P<0.01$)以及焦虑与慢性病($r=0.046$, $P<0.01$)两两均呈显著正相关。(2)失眠在慢性病与焦虑之间存在部分中介效应,中介效应值为 12.19%。在控制性别和年龄之后,慢性病可以显著预测老年人焦虑($\beta=0.0707$, $P<0.001$)、睡眠质量($\beta=0.1685$, $P<0.001$);睡眠质量作为中介变量后,慢性病($\beta=-0.0512$, $P<0.001$)和睡眠质量($\beta=0.7238$, $P<0.001$)对焦虑的预测作用显著。失眠能部分增加慢性病对焦虑的不利影响($P<0.001$)。

结论:失眠中介了慢性病与老年人焦虑的关系。临床可通过改善老年人睡眠质量,减轻慢性病对老年人心理健康的不利影响。

关键词:失眠,慢性病,焦虑,老年人,健康管理

夜间低睡眠质量和日间嗜睡对精神分裂症患者自杀行为进展的影响

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【目的】 精神分裂症患者的自杀意念常见，在自杀预防中需关注其向自杀未遂的进展。睡眠紊乱是精神分裂症自杀的重要风险因素，本研究旨在探究睡眠紊乱症状在精神分裂症自杀进展的作用。

【方法】 本研究从9家医院招募精神分裂症住院患者。使用简明国际神经精神访谈自杀模块评估患者是否有近1月自杀意念和自杀未遂。睡眠紊乱症状包括夜间低睡眠质量和日间嗜睡，分别采用匹兹堡睡眠质量指数和Epworth嗜睡量表进行评估。采用多因素Logistic回归模型分析睡眠紊乱症状对于自杀意念的影响及其在自杀意念者发生自杀未遂中的作用，均纳入一般人口学信息、病史信息和量表评估的抑郁、焦虑等精神症状进行协变量调整。

【结果】 本研究共纳入672例精神分裂症住院患者，近1月自杀意念率为10.9%（95%CI：8.7%~13.4%），自杀意念者存在自杀未遂的比例为30.1%（95%CI：20.8%~41.4%）。在整体样本中，夜间低睡眠质量（OR：3.56，95%CI：1.79~7.06， $p<0.001$ ）是自杀意念的独立相关因素；而在自杀意念到自杀未遂的进展中，日间嗜睡（OR：4.15，95%CI：1.13~15.24， $p=0.032$ ）是关键的睡眠紊乱症状。

【结论】 精神分裂症患者自杀进展不同阶段的影响因素存在差异。夜间低睡眠质量与自杀意念相关，日间嗜睡则对自杀意念进展为自杀未遂具有重要作用，需在自杀预防中进行重点评估和关注。

关键词：精神分裂症, 睡眠紊乱, 自杀意念, 自杀未遂

客观失眠与认知功能的相关性分析

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研究目的：为进一步明确慢性失眠与认知功能之间的关系，本研究结合多导睡眠监测，进一步阐述客观睡眠结构、睡眠时长与患者认知功能之间的关系，为慢性失眠患者的精准治疗提供科学依据。

1 材料与方法

1.1 研究对象

根据研究目的从慢性失眠患者中筛选了 100 位完成了 PSG 检查的患者，按照 MoCA 评分

(MoCA \geq 26 分为认知正常组， $<$ 26 分认知障碍组)，其中认知障碍组共有 71 名患者，认知正常组共有 29 名患者。

2 研究结果

经独立样本 t 检验后，结果显示认知障碍组患者的 N3%较认知正常组患者的 N3%显著减少

(2.78 ± 5.32 vs 7.53 ± 8.23 , $F=10.349$, P 值 <0.05)、睡眠觉醒时间即 WASO 显著增加

(105.90 ± 53.06 vs 65.32 ± 43.80 , $F=2.292$, P 值 <0.05)、睡眠效率 SE%显著降低

(70.46 ± 14.55 vs 77.24 ± 11.50 , $F=0.023$, P 值 <0.05)，3 个指标均存在显著差异，

而睡眠潜伏期、TST、N1%、N2%和 REM%均没有显著差异。

3 研究结论

伴认知障碍的慢性失眠患者客观睡眠质量更差，N3%更少，睡眠效率更低，睡眠期间觉醒时间更长，也间接显示出睡眠连续性下降。此外，不同睡眠时长的慢性失眠患者其睡眠结构和认知功能也存在差异。

关键词：客观睡眠；认知功能；睡眠监测

中国人群午睡特征及其与精神心理问题与慢性躯体疾病的相关性研究

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目的: 为了解中国人群午睡习惯的人群分布和特征, 探讨影响午睡习惯的相关因素, 分析午睡、夜间睡眠及其交互作用与慢性躯体疾病及精神疾病的相关性。

方法: 数据来源于京东平台 2022 年 6-7 月开展的网络问卷调查。本研究以来自中国 34 个省/市/自治区的居民为研究对象, 通过问卷调查收集资料, 采用多因素 Logistic 回归计算比值比和 95% 置信区间。

结果: 有效样本包括 41061 名 15 岁以上的调查对象。约 40.4% 的人没有午睡的习惯。有午睡习惯者中平均每天午睡时长为 40min±24; 午睡时长 1-30 分钟者占 33.3%, >30 分钟者占 26.4%。人群中焦虑检出率 16.7%, 抑郁检出率 19.4%, 慢性躯体疾病史检出率 17.3%。多因素 Logistic 回归分析结果显示, 调整混杂因素后, 与无午睡习惯组相比, 午睡时长为 1-30min 的人群增加 6.9% 亚临床失眠的风险, 降低 24.4% 重度失眠的风险; 午睡时长 >30min 的人群增加 12.1% 亚临床失眠的风险和 13.9% 中度失眠的风险。此外, 与不午睡的人群相比, 午睡时长为 1-30min 降低 6.9% 慢性躯体疾病的风险。与没有午睡习惯的人群相比, 无论午睡的时间是 1-30min 还是 >30min, 都可以降低焦虑、抑郁的风险, 焦虑是 19.7% 和 19%, 抑郁是 18.9% 和 13.5%。

结论: 成年居民午睡时长在 30 分钟以内在一定程度上可能是重度失眠、慢性躯体疾病、焦虑抑郁的保护因素。

关键词: 午睡; 夜间睡眠; 慢性躯体疾病; 焦虑; 抑郁; 分布情况

癫痫共病阻塞性睡眠呼吸暂停综合征一例

贺嘉

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患者，男，53岁，以“发作性抽搐半年”为主诉于2024.6.3入我院。患者于入院前半年睡眠中突然出现抽搐发作，表现为双眼向左凝视，左下肢抽搐，后四肢伸直，牙关紧闭，伴有喊叫，意识丧失，抽搐持续约5-6分钟后自行缓解，伴有舌咬伤及尿失禁。抽搐发作停止后仍有意识模糊，约20余分钟后意识完全恢复，伴有头痛，周身无力，对发作全无记忆。自发病以来，记忆力无明显下降，情绪尚可，睡眠欠佳。既往史：2023年3月脑出血术后脑梗死，遗留左侧肢体无力；高血压病史，血压最高160/100mmHg，口服替米沙坦控制可；否认糖尿病、心脏病病史；否认家族史；否认高热惊厥史。吸烟20年，20支/天，已戒；偶饮酒，已戒。神经系统查体阳性体征：左上肢近端肌力2级，远端1级，左下肢肌力3级，左侧肢体肌张力升高，右侧肢体肌力正常，右侧肌张力正常。完善睡眠呼吸监测，结果显示AHI46.4，以阻塞性事件为主，最低血氧饱和度64.2%。推测OSA可能为患者癫痫控制不佳及脑梗死复发的危险因素。给予患者无创呼吸机辅助通气治疗，患者AHI降至1.6，最低血氧饱和度90%，家属诉患者夜醒次数明显减少，夜间睡眠质量明显提高。本例患者为症状性癫痫，在常规抗癫痫药物剂量治疗下控制不佳，排查诱发癫痫发作的危险因素，最后发现患者合并重度OSA。对本例患者而言，OSA是癫痫发作及脑血管病的共同危险因素，应该积极控制，有利于改善患者远期预后。

关键词：癫痫, 阻塞性睡眠呼吸暂停综合征, 共患病

Obstructive Sleep Apnea Combined With Negative Sleep Characteristics Is Associated With Hearing Loss In Older Adults

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Background: Obstructive sleep apnea (OSA) and negative sleep characteristics are associated with hearing loss in older adults, but whether they have a significant combined effect on hearing loss in older adults is unclear.

Methods: We analyzed data from the National Health and Nutrition Examination Survey (NHANES) 2015–2018 with older adults aged 60 years and older. OSA symptoms and sleep characteristics were defined by answers to sleep disorders questionnaire. Testing of hearing thresholds was measured using pure-tone air conduction audiometry and performed on both ears at seven frequencies (0.5, 1, 2, 3, 4, 6, and 8 kHz). Participants who responded to the seven frequency tone signals in both ears were included in our final analysis. Hearing loss was defined as low-frequency (0.5, 1, and 2 kHz), speech-frequency (0.5, 1, 2, and 4 kHz), and high-frequency (3, 4, 6, and 8 kHz) pure-tone average (PTA) >25 dB, respectively. Two models were constructed: unadjusted and adjusted. The adjusted model adjusted for age (continuous variable), sex, race, body mass index, education, poverty-income ratio, smoking, hypertension, diabetes, stroke, cardiovascular disease, occupational noise exposure, recreational noise exposure, and current employment status. Weighted multivariable logistic regression analysis was used to explore the relationship between OSA symptoms and hearing loss. In addition, we combined OSA symptoms with sleep characteristics (sleep duration, bedtime and trouble sleeping) for subgroup analysis.

Results: In the weighted sample of 1232 participants, 44.04% were male, 55.96% were female, and 55.14% reported OSA symptoms. The age distribution was as follows: 59.94% were aged 60–69 years, 30.56% were 70–79 years, and 9.51% were 80 years and above. Among them, 25.10% reported snoring 3–4 nights a week, and 25.70% reported snoring 5 or more nights a week. Meanwhile, 7.15% and 5.78% of the participants reported snort or stop breathing 3–4 nights and 5 or more nights a week, respectively. Another 7.73% of the participants reported feel overly sleepy 16–30 times per month during the day. In addition, 37.59% of the participants had trouble sleeping, 15.26% reported sleeping less than 7 hours per night, and 26.99% of the participants had a bedtime between >11:00 p.m. to 7:00 a.m.. The low-frequency PTA of the participants' better ear was 17.31(0.52) dB HL, the speech-frequency PTA was 22.06(0.53) dB HL, and the high-frequency PTA was 39.34(0.75) dB HL. In the adjusted model, OSA symptoms was associated with high-frequency hearing loss in the subgroups of bedtime >11:00 p.m. to 7:00 a.m. and trouble sleeping, with estimated ORs of 2.64 (95% CI: 1.24, 5.62) and 2.08 (95% CI: 1.02, 4.27), respectively. Meanwhile, OSA symptoms showed significant interactions with sleep characteristics. In low-frequency PTA, there were significant interactions with sleep duration (p for interaction = 0.04) and trouble sleeping (p for interaction = 0.01); in speech-frequency PTA, there was a significant interaction with trouble sleeping (p for interaction = 0.04); and in high-frequency PTA, a significant interaction was found with bedtime (p for interaction = 0.004).

Conclusion: We found a significant joint effect of OSA symptoms and negative sleep characteristics on hearing loss in older adults. The sleep disorders questionnaire may be a potentially screening tool for identifying individuals at high risk for hearing loss in older adults. Prospective studies are necessary to confirm this finding.

Keyword: Keywords: Obstructive sleep apnea, Sleep, Hearing, Older adults, NHANES

Prevalence and risk factors of obstructive sleep apnea among pneumoconiosis patients: a cross-sectional study

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Purpose This study aimed to determine the prevalence and clinical characteristics of obstructive sleep apnea (OSA) in pneumoconiosis patients using home sleep apnea tests (HSAT) and to identify associated risk factors.

Methods The study included pneumoconiosis patients who underwent sleep respiratory monitoring at the Fifth People's Hospital of Suzhou from March 30, 2021, to March 30, 2023. Data collection encompassed clinical information, arterial blood gas analysis, C-reactive protein (CRP), procalcitonin (PCT), tumor necrosis factor alpha (TNF- α), and interleukins. Additionally, patients completed questionnaires such as the STOP-BANG (snoring, tiredness, observed apnea, high blood pressure, body mass index, age, neck circumference, and male gender), Pittsburgh Sleep Quality Index (PSQI), Epworth Sleepiness Scale (ESS), Generalized Anxiety Disorder 7-item (GAD-7), and Patient Health Questionnaire-9 (PHQ-9).

Results The study enrolled 217 pneumoconiosis patients. Finding showed that 82.49% (179/217) had OSA: 36.86% (80) mild, 29.95% (65) moderate, and 15.68% (34) severe. Patients with moderate to severe OSA were significantly older than those with no or mild OSA groups ($p = 0.005$). Higher body mass index (BMI) was noted in patients with severe OSA compared to other groups ($p < 0.001$). Increased STOP-BANG scores were observed in moderate and severe OSA compared to no or mild OSA groups ($p < 0.001$). Additionally, arterial oxygen tension (PaO₂) and arterial oxygen saturation (SaO₂) levels were significantly higher in patients without OSA ($p < 0.05$). IL-8 levels were higher in the severe OSA group ($p = 0.072$). Logistic regression analysis identified older age, pottery pneumoconiosis, and a history of smoking as risk factors for OSA.

Conclusion OSA prevalence is high in pneumoconiosis patients. Targeted attention to OSA is beneficial, particularly for older patients, those with pottery pneumoconiosis, or former smokers.

Keyword: Pneumoconiosis; Obstructive Sleep Apnea; Hypoxia; Interleukins; Questionnaires

COPD-OSA 重叠综合征 (OVS) 的临床特征研究

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背景与目的

OVS 指 COPD 与 OSA 的结合，但现有证据不足以全面描述两种疾病的关联。本研究旨在通过对 COPD 患者进行 OSA 筛查和诊断，分析 OVS 的临床特征。

方法

1. 评估非接触式生物雷达睡眠监测 (OrbSense+) 在 OSA 患者中的应用价值：使用 OrbSense+ 和便携式监测设备 (PM) 同时对研究对象进行睡眠检测，评估两种方法的一致性及 OrbSense+ 对 OSA 的诊断价值。2. 分析 OVS 患者临床特征：对 COPD 患者进行便携 PSG 检测，分析 OVS 的临床特征。

结果

1. OrbSense+ 与 PM 的 REI 和 ODI 一致性良好。以 5 次/小时为 OSA 诊断标准，OrbSense+ 的敏感性和特异性均为 100%；
2. 94 例 COPD 患者中，73 人 (77.7%) 合并 OSA；
3. OVS 组 RICU 入住率、住院天数和激素使用均随 OSA 严重程度增加；
4. OVS 患者的 AHI、ODI、T90% 更高，夜间血氧饱和度更低；
5. OSA 对 COPD 肺功能影响主要表现在小气道功能受损；
6. 合并轻度 OSA 的 COPD 患者在全身炎症和血脂代谢方面有显著变化。

结论

1. 生物雷达非接触式睡眠监测能有效诊断和评估 OSA 的严重程度。
2. 在住院 COPD 患者中，OVS 高发 (77.7%)。OVS 预后更差，OSA 对肺功能影响主要在小气道功能，合并轻度 OSA 的 OVS 患者全身炎症更加明显。

关键词：慢性阻塞性肺疾病，阻塞性睡眠呼吸暂停，重叠综合征

有氧训练对慢性阻塞性肺疾病合并阻塞性睡眠呼吸暂停患者的康复疗效

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目的:评价中强度有氧训练对慢性阻塞性肺疾病(COPD)-阻塞性睡眠呼吸暂停(OSA)重叠综合征患者的康复疗效。

材料与amp;方法:回顾性选取2021年1月至2023年10月上海第四康复医院诊断为COPD-OSA重叠综合征并应用气道正压通气的患者。29例干预组完成中强度有氧训练20周,另选择同期相匹配的29例作为对照组,比较两组患者治疗前后运动耐力、日常生活能力、体成分、呼吸功能、心理状态及睡眠参数的差异。

结果:与治疗前比较,干预组患者6MWD[(268.62±47.02)比(316.97±58.44)m]、伸膝肌肌力[22.40(20.40,27.45)比25.40(20.00,30.45)kg]、Barthel指数均显著提高,5次起坐时间、BMI及脂肪质量[(24.13±9.22)比(20.47±8.32)kg]降低,PSG参数、血气分析、HAMA及HAMD均明显改善(均 $P<0.05$);对照组伸膝肌肌力、mMRC、PSG参数及心理状态改善,而脂肪质量增加(均 $P<0.05$)。组间比较,干预组6MWD、伸膝肌肌力、5次起坐时间、Barthel指数、mMRC、PaO₂、TS90、BMI、脂肪质量、HAMA及HAMD均显著优于对照组(均 $P<0.05$)。

结论:中强度有氧训练可提高应用气道正压通气的COPD-OSA重叠综合征患者的运动耐力、降低体脂,改善缺氧、呼吸困难及心理状态,提高日常生活能力。

关键词:有氧训练;气道正压通气;慢性阻塞性肺疾病;阻塞性睡眠呼吸暂停

Evaluation of nocturnal apnea and airflow limitation as indicators for cognitive dysfunction in patients with chronic obstructive pulmonary disease/obstructive sleep apnea hypopnea syndrome overlap syndrome

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Objective: The aim of this study is to investigate how much intermittent hypoxemia and airflow limitation contribute to cognitive impairment in overlap syndrome (OS), which is the coexistence of two common diseases, obstructive sleep apnea hypopnea syndrome (OSAHS) and chronic obstructive pulmonary disease (COPD).

Methods: We conducted a cross-sectional study of patients with OSAHS, COPD or OS, compared with normal controls, to determine the association between sleep apnea/pulmonary function-related indicators and cognitive dysfunction in individuals with OSAHS, COPD or OS.

Results: A total of 157 participants were recruited. Both OSAHS and OS presented lower adjusted Montreal cognitive assessment (MoCA) scores compared with COPD group. In addition, the MoCA score was significantly lower in COPD group compared with control group. The incidence of cognitive impairment was 57.4% in OSAHS group, and 78% in OS group, which were significantly higher than COPD group (29%) and control group (8.8%). Furthermore, a broader range of cognitive domains were affected in OS group compared with OSAHS group. Elevated levels of oxygen desaturation index (ODI) and/or apnea hypopnea index (AHI) were positively correlated with increased Epworth sleeping scale (ESS) in OSAHS and OS. Forced vital capacity (FVC), forced expiratory volume in 1 s (FEV1) and peak expiratory flow (PEF) were positively correlated with cognitive scores in OSAHS but not in OS. Serum level of hypoxia-inducible factor-1 α (HIF-1 α) was significantly higher in OS. Logistic regression identified ODI as an independent risk factor for cognitive impairment in OS, while severity of snoring and PEF were independent risk factors in OSAHS.

Conclusion: This study revealed significant cognitive impairment in OS, OSAHS and COPD. Sleep-related indicators are warranted in OS patients for detection, differentiation and grading of cognitive impairment, whereas pulmonary functions are warranted in OSAHS patients for detection and early intervention of cognitive impairment.

Keyword: Obstructive sleep apnea hypopnea syndrome, chronic obstructive pulmonary disease, overlap syndrome, cognitive impairment

正压通气治疗阻塞性睡眠呼吸暂停低通气综合征不同依从性患者的临床特征分析

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目的：分析正压通气治疗 OSAHS 不同依从性患者的临床特征。

方法：回顾性分析就诊于盛京医院诊断为 OSAHS 并接受正压通气治疗的患者 102 例。收集基线资料、psg 数据、ESS、GAD-7、PHQ-9 评分、上呼吸道三维 CT 和呼吸机相关信息。根据后台监测数据中的呼吸机使用时间对依从性进行分组，即开始接受治疗后 3 个月内 $\geq 70\%$ 的夜晚使用正压通气治疗且至少 4 小时/晚为依从性好组（A 组）， < 4 小时为依从性差组（B 组）。将两组患者的临床资料进行组间比较，将有统计学意义的指标纳入多因素二元 Logistic 回归分析，分析正压通气治疗 OSAHS 不同依从性患者的临床特征及影响因素。

结果：1、纳入研究对象 102 例，其中 B 组 34 例，A 组 68 例。其中，B 组 BMI 值明显更高，有统计学意义。2、B 的 TST、NREM 持续时间及 AHI 明显低于 A 组。3、A 组 GAD-7 及 PHQ-9 评分高于 B 组，差异具有统计学意义。4、B 组软腭后区最小横截面积及舌后壁与咽喉壁的最短距离明显低于 A 组；B 组鼻咽区深度高于 A 组。5、多因素二元 Logistic 回归结果提示：AHI、GAD-7 评分、舌后壁与咽喉壁的最短距离、BMI 是 OSAHS 患者正压通气治疗依从性的影响因素。

结论：正压通气治疗依从性好组具有初始 AHI 高、焦虑程度重、舌后壁与咽喉壁最短距离长及 BMI 低的临床特征。

关键词：阻塞性睡眠呼吸暂停低通气综合征，正压通气，依从性，上呼吸道结构

Association between EEG Power during Sleep and Attention Levels in Patients with Major Depressive Disorder

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Purpose: Major depressive disorder (MDD) is associated with cognitive impairment through unclear mechanisms. We examined the relationship between sleep electroencephalogram (EEG) power and attention level in MDD.

Methods: Forty-seven untreated patients with MDD and forty-seven age- and sex-matched controls were included. We examined relative EEG power during non-rapid eye movement (NREM) sleep and rapid eye movement (REM) sleep by fast Fourier transform. The Attention Network Test (ANT) was performed to evaluate attention levels.

Results: Compared to controls, patients with MDD had lower theta power during NREM ($P = 0.018$) and REM ($P = 0.002$) sleep, while higher beta power ($P = 0.050$) during NREM sleep and delta power ($P = 0.018$) during REM sleep. Regarding attention level, patients with MDD had lower levels of accuracy ($P = 0.021$), longer mean reaction time ($P < 0.001$), poorer manifestations of the alerting effect ($P = 0.038$) and worse executive control ($P = 0.048$).

Moreover, decreased theta power during NREM sleep was correlated with worsened accuracy ($\beta = 0.329$, $P = 0.040$), decreased theta power during REM sleep was correlated with worsened alerting effect ($\beta = 0.355$, $P = 0.020$), and increased delta power during REM sleep was correlated with longer mean reaction time ($\beta = 0.325$, $P = 0.022$) in patients with MDD. No association between ANT performance and other frequency bands was observed in patients with MDD.

Conclusion: Our findings suggest that patients with MDD manifest impaired selective attention function that is associated with decreased theta power during NREM/REM sleep and increased delta power during REM sleep.

Keyword: Major depressive disorder, sleep, EEG power, attention

失眠障碍的睡眠事件相关脑激活模式研究

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【目的】失眠障碍（insomnia disorder, ID）是最常见的睡眠障碍，觉醒、K-复合波、纺锤波和慢波是已知具备生理功能的睡眠事件。然而 ID 患者的睡眠事件相关脑激活模式及其与疾病特征的关系仍不明确。本研究旨在睡眠事件水平探索 ID 的神经生物学机制。

【方法】纳入符合 DSM-5 诊断标准的 43 例 ID 患者及年龄、性别和受教育年限匹配的 40 名健康受试者。所有受试者完成一般人口学资料采集及匹兹堡睡眠质量指数量表、抑郁自评量表、焦虑自评量表的评估，佩戴腕式体外活动仪并记录两周睡眠日记，随后接受连续两晚的多导睡眠监测。并在一周后接受睡眠状态下的同步脑电-功能磁共振成像扫描。随后标记包括觉醒、K-复合波、纺锤波和慢波活动在内的睡眠事件，建立事件相关脑激活图谱，运用混合线性模型识别事件×组交互效应。运用 Spearman's 相关性分析探索睡眠事件相关脑激活模式与临床特征的关系。

【结果】混合线性模型分析显示，在左侧半球的颞叶、额叶、顶叶及枕叶观察到事件×组的交互效应。与健康对照相比，ID 组觉醒相关左侧颞叶和左侧枕叶激活均减低，左侧额叶 K-复合波相关激活和左侧额叶纺锤波相关激活均增高。探索性关联分析显示，左侧枕叶觉醒相关脑激活强度与匹兹堡睡眠质量指数量表得分呈显著负相关。

【结论】ID 患者的睡眠事件相关脑活动状态与健康人不同，提示睡眠保护和睡眠环境探测相关的脑功能受损可能是 ID 的神经生物学机制。

关键词：失眠障碍；睡眠事件；同步脑电与功能磁共振

Cyber-victimization associated with psychotic-like experiences among sexual minorities: The chain mediation effect of perceived stress and sleep disturbance

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Background: Previous studies have indicated that cyber-victimization is an important predictive factor for psychotic-like experiences (PLEs). However, the effects of cyber-victimization on PLEs among sexual minorities and the potential mediation mechanisms in these associations remain unclear.

Objective: This study aimed to investigate the effects of cyber-victimization on PLEs, as well as the chain mediation roles of perceived stress and sleep disturbance in this relationship.

Method: this study was a two-timepoint repeated cross-sectional survey with a nested longitudinal subsample. Data collection took place from October 2023 to April 2024. A total of 2951 sexual minorities were included in the final data analysis. The age of participants ranged from 16 to 25 years (M age = 19.52 years, SD age = 1.42). The hypothesized chain mediation models were examined using SPSS PROCESS macro 4.1 software.

Results: The prevalence of PLEs in this study was 48.4% at T1 and 39.5% at T2. Cyber-victimization, perceived stress and sleep disturbance were positively related to PLEs. In chain mediation analyses, there was a significant total effect of cyber-victimization on PLEs and perceived stress and sleep disturbance played a chain mediating roles between cyber-victimization and PLEs.

Conclusions: This study demonstrates a potential mechanism underlying the path from cyber-victimization and PLEs, highlighting the importance of tailored prevention and intervention of among sexual minorities with an experience of cyber-victimization.

Keyword: Cyber-victimization, Perceived stress, Sleep disturbance, Psychotic-like experiences, Chain mediation

青少年抑郁症患者噩梦的临床特征与影响因素分析

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目的:本研究对青少年抑郁症患者噩梦的临床特征与影响因素做初步探索,为临床上青少年噩梦的识别与干预提供理论依据。

方法:于2023年6月—10月对在北京回龙观医院就诊的106名12~18岁青少年抑郁症患者进行调查,使用自编量表、童年期不良生活经历量表(ACE-IQ)、渥太华非自杀性自伤量表(OSI)、汉密尔顿抑郁量表(HAMD)、汉密尔顿焦虑量表(HAMA)、噩梦障碍指数量表

(NDI)分别评定青少年抑郁症患者的一般资料、童年期不良生活经历、非自杀性自伤、抑郁焦虑和睡眠情况。根据患者近1个月内是否有噩梦分为噩梦组(n=83)和无噩梦组

(n=23)。使用SPSS软件进行T检验、 χ^2 检验、皮尔逊相关分析与logistic回归分析。

结果:1. 78%的患者报告过去1个月内有过噩梦体验。2. 童年期不良生活经历、NSSI、汉密尔顿抑郁量表、汉密尔顿焦虑量表均与噩梦总分呈正相关($r=0.275$ 、 0.368 、 0.220 、 0.397 、 0.256)。3. 性别、NSSI在有无噩梦组间存在显著差异($P<0.05$)。噩梦组中女性比例(76%)显著高于男性(24%)。文化程度、童年期不良生活经历、汉密尔顿抑郁量表、汉密尔顿焦虑量表在有无噩梦组间不存在显著差异($P>0.05$)。

结论:青少年抑郁症患者噩梦体验频率较高且受患者的性别和NSSI的影响,女性和有过NSSI行为的青少年抑郁症患者噩梦概率更高。

关键词:青少年;抑郁症;噩梦;非自杀性自杀

老年人昼夜节律综合征、脑老化生物标志物和痴呆的相关性：MIND-China 队列研究

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背景：目前尚无大样本队列研究探讨昼夜节律综合征、痴呆与脑老化生物标志物之间的关系。

方法：这项以人群为基础的研究包括 5109 名参与者(年龄 ≥ 65 岁)，其中，1729 名参与者提供了血清微血管生物标志物（如可溶性粘附分子），1222 名参与者提供了脑部 MRI 生物标志物（如白质、灰质、海马体），1139 名参与者提供了脑小血管病标志物（如腔隙性脑梗死、脑微出血、扩大脑周围间隙和白质高信号）。痴呆及其亚型按照国际标准进行诊断。昼夜节律综合征的定义基于代谢综合征的基础上，并增加了抑郁症、短睡眠和非酒精性脂肪性肝病。昼夜节律综合征的界值设为 ≥ 5 。数据分析采用逻辑和一般线性回归模型。

结果：在总样本（ $n=5109$ ）中，160 名参与者被定义为痴呆，其中 107 人为阿尔茨海默病（AD），46 人为血管性痴呆（VaD）。有昼夜节律综合征与全因痴呆、AD 和 VaD 的发生率增加相关（ $P<0.05$ ），在具有 ≥ 5 项昼夜节律综合征成分中观察到更强的关联。在子样本中，昼夜节律综合征与血清可溶性粘附分子 ICAM-1 较高、以及白质体积较小相关（ $P<0.05$ ），与 VCAM-1 呈现边缘显著（ $p=0.08$ ）。昼夜节律综合征与腔隙性脑梗死、脑微出血、扩大脑周围间隙和白质高信号体积无显著关联（ $P>0.05$ ）。

结论：昼夜节律综合征与痴呆相关，这可能与血管损伤有关。

关键词：队列研究 痴呆 昼夜节律综合征 风险因素 脑老化

阻塞性呼吸睡眠暂停对病态性肥胖患者的焦虑和抑郁的影响

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目的 探究阻塞性呼吸睡眠暂停对病态性肥胖患者的睡眠和焦虑、抑郁的影响。

方法 招募 2022.9 至 2024.4 择期行腹腔镜下胃减容术的病态性肥胖病人以及同期健康志愿者，采用多导睡眠监测，HAMA、HAMD、PSQI、SF-36 量表评估焦虑、抑郁、睡眠质量和生活质量。

结果：共招募健康对照 42 人，病态性肥胖患者 231 人，除外 BMI (21.7 ± 1.6 vs 39.6 ± 6.6 kg/m², $P < 0.001$)，两组年龄、性别比差异无统计学意义。与健康对照相比，肥胖患者有较高的 OSA 患病率 (61.9% vs 0.0% , $P < 0.001$)，较高的焦虑、抑郁样症状的患病率 (55.5% vs 18.5% , 57.5% vs 14.8% , $P < 0.05$)，较长的睡眠时长 485.6 ± 91.2 分钟 ($P < 0.001$)，在睡眠质量等多方面均存在显著差异 ($P < 0.05$)。

根据肥胖患者是否患有 OSA，分为肥胖-OOSA 组 88 人，肥胖+OSA 组 143 人。两组年龄、性别、BMI 和焦虑、抑郁样症状，以及 PSQI 总得分差异均无统计学意义。但是，肥胖+OSA 的患者入睡时间更短 ($P = 0.005$)。

进一步根据 AHI 将肥胖患者分为 OSA 不同程度组，发现只有重度 OSA 的肥胖患者的入睡时间显著低于其他组 ($P < 0.05$)。焦虑、抑郁和生活质量的差异均无统计学意义。

结论：肥胖患者的抑郁和焦虑症状与睡眠呼吸暂停的严重程度没有相关性。

关键词：肥胖，睡眠障碍，焦虑，抑郁

Reshaping social image in sleep

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Objective: Social cognition pertains to interpreting, analyzing, and utilizing social information. It is essential for understanding others, emotional regulation, decision-making, and social adaptation. A well-developed social cognitive ability aids in fostering effective social interactions, cultural adaptation, and the development of self-awareness. The current understanding of whether social cognition can be enhanced during sleep remains to be investigated. This study aims to enhance participants' mental representations of others by presenting auditory cues during slow-wave sleep, aiming for improved social cognition and functioning.

Methods: The research utilized a within-subjects design and consisted of three stages: a pre-sleep testing phase, exposure to semantic association cues during sleep, and a post-sleep testing task. During the pre-sleep testing phase, healthy adult participants engaged in a task involving face memorization. Upon completing the memory task, participants underwent an information memory bias test and an implicit association test. Subsequently, participants took a 90-minute nap in a quiet sleep-monitoring room. During the participants' slow-wave sleep phase, the experimenter presented auditory cues through a Bluetooth speaker. During the post-sleep testing phase, participants underwent a series of behavioral assessments assessing their mental representation and social attitude evaluations.

Results: (1) After the sleep intervention, participants demonstrated a significantly higher memory bias for positive information about the target individual than negative information. The implicit social bias towards the target individual was significantly higher after the sleep intervention. (2) The average social trust in the target individual significantly exceeded what would be expected from random selection. (3) The average mental representation of the target individual was positive for intervention groups. (4) The likeability and social willingness ratings towards the target individual were significantly higher compared with those of the non-target individual.

Conclusion: Our findings demonstrated that presenting auditory cues during slow-wave sleep could enhance the healthy participants' social cognition towards the target individual.

Keyword: sleep learning, social cognition

高血压合并 OSAS 患者中 TyG 指数、Hcy 与 OSAS 严重程度的相关性分析

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目的：探讨甘油三酯-葡萄糖（TyG）指数、同型半胱氨酸（Hcy）在高血压合并 OSAS 患者中与 OSAS 程度相关性。

方法：选取 2022 年 1 月-12 月在山西医科大学第二医院心内科入院的高血压患者且睡眠中打鼾等行多导睡眠监测，据 AHI 分单纯高血压组、高血压合并 OSAS 组。通过 Logistic 回归分析和 ROC 曲线评估 Hcy 和 TyG 指数对高血压患者发生 OSAS 的预测能力。采用线性回归分析 AHI 的影响因素，以及 TyG 指数、Hcy 对 AHI 的影响程度。

结果：1. 共 184 例高血压患者中，139 例高血压合并 OSAS。Logistic 回归示 Hcy 和 TyG 指数是高血压患者发生 OSAS 危险因素。ROC 曲线分析表明，Hcy 和 TyG 指数联合预测 OSAS 的曲线下面积最大，效能更高。2. 按 TyG 三分位数分组的高血压合并 OSAS 患者，AHI 和平均血氧饱和度等睡眠指标在三组间存在差异。TyG 指数与 AHI 等正相关，与平均血氧饱和度等负相关。按 Hcy 分组的高血压合并 OSAS 患者中，AHI、最长暂停时间等指标也有统计学意义。3. 多因素线性回归表明，TyG 指数和 Hcy 水平对 AHI 的影响有差异，TyG 指数每增加一个单位，AHI 上升 6.307 个单位。

结论：TyG 指数和 Hcy 二者联合预测高血压患者发生 OSAS 的效能高。TyG 指数、Hcy 水平与高血压合并 OSAS 人群 OSAS 严重程度相关，为早期识别和干预提供可能生物标志物。

关键词：TyG 指数；胰岛素抵抗；高血压；阻塞性睡眠呼吸暂停综合征

绵阳市居民失眠与抑郁、焦虑的关系研究

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目的:探讨绵阳市常住居民失眠与抑郁、焦虑的关系。

方法:采用多阶段整群随机抽样方法于2021年8月至2022年12月对绵阳市共29920名≥18岁常住居民进行调查,采用失眠严重程度指数量表(ISI)、健康问卷抑郁量表(PHQ-9)、广泛性焦虑量表(GAD-7)分别评估其睡眠、抑郁及焦虑情况并分析。

结果:ISI总分及各维度得分与PHQ-9、GAD-7得分均呈显著正相关;不同ISI水平之间PHQ-9及GAD-7得分差异具有统计学意义,ISI得分较高的人群PHQ-9与GAD-7得分也越高,而有抑郁、焦虑的普通人群ISI总分分别高于无抑郁、无焦虑者;ISI中入睡困难、睡眠维持困难、早醒、睡眠满意度、日间功能障碍可以显著预测普通人群的抑郁症状,而入睡困难、睡眠维持困难、早醒、日间功能障碍可以显著预测普通人群的焦虑症状。

结论:绵阳市常住人群失眠与抑郁、焦虑密切相关,失眠可以预测抑郁、焦虑症状的发生,应加强早期失眠干预。

关键词:失眠,抑郁,焦虑

探索睡眠呼吸暂停综合征和动脉粥样硬化的免疫浸润水平和共享基因特征

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目的: 本研究旨在通过转录组测序和单细胞转录组测序探索睡眠呼吸暂停综合征 (OSAS) 和动脉粥样硬化 (AS) 的共同致病机制, 并寻找新的生物标志物。**方法:** 分析 GEO 数据库中的 OSAS 和 AS 相关数据集, 识别差异基因及其生物学功能, 并通过蛋白互作分析和 LASSO 分析筛选核心差异基因。此外, 使用 ssGSEA 分析核心基因与免疫细胞浸润的关系, 并通过单细胞转录组测序探究核心基因在不同细胞亚群中的表达, 最后用 WB 技术验证蛋白表达。

结果: 从 GSE135917 和 GSE100927 数据集中分别鉴定出 843 个和 2188 个差异基因。通过蛋白互作和 LASSO 分析, 我们筛选出 6 个核心基因: FCER1G、MMP9、SAA1、FBLN1、PPBP 和 GLB1。ssGSEA 分析显示, 除 SAA1, 其余基因与多种免疫细胞有关, 尤其是 FCER1G。单细胞分析揭示 FCER1G 主要在单核细胞和自然杀伤细胞中表达, 而 PPBP 主要在血小板中表达, 其他基因未显示特异性分布。外部数据集和 WB 验证确认了 FCER1G 在 OSAS 和 AS 患者中的高表达。**结论:** 通过生信分析, 我们发现了 OSAS 和 AS 共有的核心差异基因 FCER1G, 其在单核细胞和自然杀伤细胞中的表达为 OSAS 合并 AS 的预防和治疗提供了新的研究思路和潜在的生物标志物。这一发现有助于深入理解 OSAS 和 AS 的共同病理机制, 并可能促进新的诊断和治疗策略的开发。

关键词:

青少年抑郁症患者噩梦与非自杀性自伤的关系：元认知的中介作用

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目的：探讨青少年抑郁症患者噩梦与非自杀性自伤的关系，为青少年非自杀性自伤行为的预防干预提供理论依据。

方法：选取 2023 年 6 月~9 月在北京回龙观医院就诊并符合 DSM-5 中抑郁障碍诊断标准的 12~18 岁青少年患者进行调查，使用自编调查表收集青少年的一般人口学资料，采用噩梦障碍指数量表（NDI）、渥太华非自杀性自伤量表（OSI）、元认知问卷（MCQ-30）分别测量青少年噩梦情况、非自杀性自伤行为与元认知水平。使用 spss26.0 统计软件进行数据分析，各量表得分进行正态性检验和方差齐性检验。采用 Bootstrap 方法进行中介效应检验。

结果：1. 本研究青少年抑郁症患者中非自杀性自伤行为检出率为 80.2%，有 85 名青少年抑郁症患者报告过去一年中至少存在一次非自杀性自伤行为。2. 青少年噩梦障碍、NSSI 频率及原因、元认知得分两两之间均呈显著正相关（ $r=0.3\sim 0.6$ ，均 $P<0.001$ ）。3. 元认知在青少年噩梦障碍与 NSSI 频率和原因之间均起部分中介作用，中介效应分别为 26.6% 和 29.5%。

结论：青少年抑郁症患者睡眠情况既可以直接影响 NSSI，又可以通过元认知间接影响 NSSI，元认知在青少年抑郁症患者噩梦与 NSSI 行为间起中介作用。

关键词：青少年；抑郁症；噩梦；非自杀性自伤；元认知

青少年噩梦障碍与童年期创伤、感知压力的关系

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目的: 探讨青少年噩梦障碍的发生率, 以及与童年期创伤、感知压力之间的关系。

方法: 采用横断面抽样调查, 共纳入 6780 名 12-18 岁的青少年。采用噩梦障碍指数问卷评估青少年噩梦障碍。采用不良童年经历问卷 (ACE-R) 评估青少年的童年期创伤经历, 采用感知压力量表 (PSS-10) 评估患者近 1 月的压力状态。采用卡方检验比较两组的人口学及临床资料的差异, 采用独立样本 t 检验比较青少年有无噩梦障碍组的童年期创伤、感知压力得分的差异, Logistic 回归分析青少年噩梦障碍的危险因素。

结果: 青少年的发生率为 45.1%。在一般资料方面, 高中生、留守儿童、女生发生率高于初中生, 非留守儿童、男生。有噩梦障碍的青少年在童年期创伤经历总分、儿童期虐待忽视、家庭功能不良、其他逆境、感知压力总分、主观压力感知、压力应对能力方面的得分显著高于无噩梦障碍组。Logistic 回归分析显示, 女性、高中生、儿童期虐待忽视、主观压力感知是青少年磨牙症的危险因素。

结论: 青少年噩梦障碍的发生率较高, 女性、高中生、儿童期虐待忽视、主观压力感知是青少年噩梦障碍的危险因素, 我们要重视对青少年噩梦障碍的评估及相关危险因素的干预。

关键词: 青少年; 噩梦障碍; 童年期创伤; 感知压力

绵阳市成年居民睡眠状况及其影响因素分析

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目的:了解绵阳市成年居民的睡眠状况及其影响因素,为相关部门对睡眠质量调适提供依据。

方法:采用多阶段系统抽样的方法,选取绵阳市3个市辖区、5个县、1个县级市29920名成年居民进行问卷调查,采用 χ^2 检验以及多因logistic回归分析睡眠质量的影响因素。

结果:绵阳市成年居民失眠检出率为12.7%。女性、年龄增大、患有慢性疾病、焦虑、抑郁、健康状况自我评价差、上床睡觉时间晚是失眠症状发生的影响因素。

结论:绵阳市成年居民失眠检出率较高,家庭、社会应密切关注重点人群身心健康,采取积极的干预措施,提高其睡眠质量。

关键词:睡眠质量,焦虑,抑郁,影响因素

咳嗽晕厥综合征合并睡眠呼吸暂停综合征 2 例

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目的

咳嗽晕厥综合征与睡眠呼吸暂停之间的关系

方法

收集我院近期因咳嗽晕厥综合征住院患者，查因过程中明确诊断睡眠呼吸暂停 2 例。相关辅助检查：心电图、胸部 CT、血液分析、血气分析、肺功能、睡眠呼吸监测、血脂测定等。2 例患者均给予止咳雾化等对症，无创呼吸机辅助通气治疗。

结果

病例 1：卡某，男，31 岁，维吾尔族，患者咳嗽病程半月，病程中伴有短暂晕厥，持续时间约 10 秒左右，有吸烟史 10 包年，脂肪肝，肺功能检查提示轻度阻塞性通气功能障碍，动态呼吸监测：氧减指数 47.6 次/小时，最低血氧饱和度 75%，血氧饱和度低于 90% 占 9%，夜间重度低氧血症。睡眠呼吸监测：符合中度阻塞性呼吸睡眠暂停低通气综合征。随访患者院外持续无创呼吸机治疗，未在有晕厥发生。

病例 2：患者阿某，男，35 岁，维吾尔族，咳嗽病程 2 月，咳嗽剧烈，出现晕厥，持续大概约 3-4 分钟，并伴有四肢抖动、双眼向单侧凝视、口吐白沫，清醒后否认头痛、无肢体活动障碍，有吸烟史 10 包年，高脂血症；头颈部增强 CT：1. 头颈部 CTA 未见明显斑块及狭窄。2. 头颅 CT 平扫未见明显异常。3. 左侧上颌窦炎症伴粘膜下囊肿。动态呼吸监测：夜间重度低氧血症。睡眠监测：符合轻度阻塞性睡眠呼吸暂停低通气综合征。随访院外患者未在使用无创呼吸机，未在发生晕厥。

结论

明确诊断咳嗽晕厥综合征患者，需关注患者夜间缺氧，是否合并睡眠呼吸暂停综合征。

关键词：咳嗽，晕厥，低氧血症，睡眠呼吸暂停

Impact of Chronic Intermittent Hypoxia on Cognitive Function and Hippocampal Neurons in Mice: Insights into Molecular Mechanisms

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Purpose: This study aimed to explore the effects of chronic intermittent hypoxia (CIH) on cognitive function and hippocampal neurons in mice and to reveal its potential molecular mechanisms.

Methods: SPF-grade C57BL/6J mice were selected as subjects and divided into control, mild CIH, and severe CIH groups. Cognitive function was assessed using the Morris water maze test, and hippocampal neuron numbers and morphological changes were observed using HE staining and Nissl staining. Additionally, differential genes and pathways were revealed through RNA sequencing (RNA-seq) and bioinformatics analysis. Additionally, we examined oxidative stress-related biochemical markers in the hippocampal tissue and used Western Blot to verify changes in the expression of potential key genes.

Results: CIH mice exhibited significant cognitive impairment, including decreased learning and memory abilities and abnormal hippocampal neuron morphology. RNA-seq analysis revealed numerous differentially expressed genes, mainly enriched in biological processes such as inflammation and oxidative stress, as well as multiple signaling pathways. Specifically, LepR, SIRT1, and Nrf2 genes were identified as significantly differentially expressed, and further validation showed increased oxidative stress levels in hippocampal tissue and downregulation of key gene expression.

Conclusion: Cognitive impairment and hippocampal neuron damage in CIH mice may be closely associated with abnormal expression of inflammation, oxidative stress pathways, and key genes (such as LepR, SIRT1, Nrf2). These findings provide important clues for further exploration of the mechanisms of hypoxia-induced neural damage and identification of potential therapeutic targets.

Keyword: Obstructive sleep apnea; Chronic intermittent hypoxia; Cognitive impairment; Oxidative stress

Activation of SIRT1 Improves Leptin Resistance and Subsequently Alleviates Cognitive Dysfunction in Mice Exposed to Chronic Intermittent Hypoxia

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Objective: This study aims to investigate the effect of SIRT1 activation on the improvement of leptin resistance and its subsequent impact on cognitive impairment, neuronal damage, and neuroinflammation induced by chronic intermittent hypoxia (CIH). Additionally, it explores the possible mechanisms involved.

Methods: A mouse model was used, dividing the mice into four groups: control group, SRT1720 (SIRT1 agonist) group, CIH group, and CIH + SRT1720 group. We recorded the changes in body weight of the mice during the experimental period. The central leptin sensitivity test was used to assess the improvement in leptin resistance. Cognitive function was evaluated using the Morris water maze and Y-maze. Histological staining and molecular biology techniques were employed to detect neuronal damage and neuroinflammation, and the mechanism of SIRT1's role in leptin resistance was further explored.

Results: There were no significant changes in body weight among the groups. Central leptin sensitivity was reduced in the CIH mice, and SRT1720 improved central leptin sensitivity in the CIH mice. SRT1720 treatment significantly improved cognitive impairment caused by CIH, alleviated neuronal damage, and reduced neuroinflammatory responses.

Conclusion: The results of this study reveal the important role of SIRT1 in leptin resistance induced by CIH and its impact on cognitive function. These findings provide new insights into the pathological mechanisms of cognitive impairment in patients with sleep-disordered breathing (SDB) and offer a theoretical basis for the development of treatment strategies for related diseases.

Keyword: leptin resistance; chronic intermittent hypoxia; cognitive function

PVTD2R NEURONS AND PVTD2R-CeA CIRCUIT GATE SLEEP DISTURBANCE AND NEGATIVE EFFECTS INDUCED BY MORPHINE WITHDRAWAL

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OBJECTIVE: Opioid use disorder (OUD) is a chronic relapsing disease contributing to a significant global health burden. Individuals suffering from OUD often experience intense and prolonged withdrawal symptoms, such as sleep disturbance and negative emotional states, which frequently lead to relapse. The paraventricular nucleus of thalamus (PVT) is a crucial brain region for opioid withdrawal. However, its specific role in the sleep disturbance and negative effects induced by opioid withdrawal remains unclear.

METHODS: (1) Following six days of chronic morphine administration, we monitored sleep architecture and negative affective states of mice during withdrawal. Furthermore, the impact of chronic sleep deprivation during withdrawal on negative affective states was explored. (2) To verify the involvement of PVT and neurons expressing dopamine D2 receptors (D2R) in the PVT (PVT^{D2R} neurons) in morphine withdrawal, we utilized immunofluorescence staining, in situ hybridization and fiber photometry recording. (3) Finally, we investigated the role of PVT^{D2R} neurons and projections from PVT^{D2R} neurons to the central amygdala (CeA) in sleep disturbance and negative effects induced by morphine withdrawal, using whole-cell patch clamp recordings and chemogenetic techniques.

RESULTS: (1) Within one week, wakefulness notably increased, alongside the emergence of anxiety-like and depression-like behaviors. Furthermore, chronic sleep deprivation during withdrawal exacerbated negative affective states. (2) The immunofluorescence staining and in situ hybridization study revealed activation in PVT^{D2R} neurons. Besides, Fiber photometry recordings further confirmed the real-time activation of PVT^{D2R} neurons. (3) One week following withdrawal, spontaneous inhibitory post synaptic currents in PVT^{D2R} neurons projecting to the CeA decreased in both frequency and amplitude. Chronic chemogenetic inhibition of PVT^{D2R} neurons or PVT^{D2R}-CeA projection during withdrawal improved sleep disturbance and negative emotions, while activation of PVT^{D2R} neurons or PVT^{D2R}-CeA projection exacerbated these symptoms.

CONCLUSION: In conclusion, this study highlights the critical role of PVT^{D2R} neurons and PVT^{D2R}-CeA circuit in the sleep disturbance and negative effects induced by morphine withdrawal, offering insights to improve the understanding and treatment of opioid use disorder to prevent relapse.

Keyword: Opioid use disorder, Paraventricular nucleus of thalamus, Central Amygdala, Sleep disturbance, Negative affective state

Dual orexin receptor antagonist ameliorates sleep deprivation-induced learning and memory impairment in APP/PS1 mice

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Sleep is considered closely related to cognitive function, and cognitive impairment is the main clinical manifestation of Alzheimer's disease (AD). Sleep disturbance in AD patients is more severe than that in healthy elderly individuals. Additionally, sleep deprivation reportedly increases the activity of the hypothalamic orexin system and the risk of AD. To investigate whether intervention with the orexin system can improve sleep disturbance in AD and its impact on AD pathology. In this study, six-month-old amyloid precursor protein/presenilin 1 mice were subjected to six weeks of chronic sleep deprivation and injected intraperitoneally with almorexant, a dual orexin receptor antagonist (DORA), to investigate the effects and mechanisms of sleep deprivation and almorexant intervention on learning and memory in mice with AD. We found that sleep deprivation aggravated learning and memory impairment and increased brain β -amyloid ($A\beta$) deposition in mice with AD. The application of almorexant can increase the total sleep time of sleep-deprived mice and reduce cognitive impairment and $A\beta$ deposition, which is related to the improvement in Aquaporin-4 polarity. Thus, DORA may be an effective strategy for delaying the progression of AD patients by improving the sleep disturbances.

Keyword: Dual orexin receptor antagonist, sleep deprivation, learning and memory, β -amyloid, Aquaporin-4

慢性失眠障碍伴发抑郁的个体化脑网络机制及早期预测

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目的

慢性失眠（CID）患者常常伴随抑郁情绪，其脑网络机制尚不清楚。本研究拟采用个体化脑功能分析技术，探讨 CID 伴不同抑郁状态患者（CID-D 及 CID-ND）个体水平脑网络特征及其在 CID 伴发抑郁中的预测作用。

方法

共招募 60 例良好睡眠者（GSC）及 107 例 CID 患者（CID-D46 例，CID-ND 患者 61 例）。采用非负矩阵分解（NMF）获得个体水平功能脑网络特征，构建采用动态及静态脑网络，探讨个体水平脑网络特征差异。进一步采用机器学习方法构建 GSC、CID-D 及 CID-ND 的分类模型。

结果

通过 NMF 方法，将全脑分成 17 个网络，包括 SAL、DAN、DMN、VIS、CON、SMN、LM 以及 Cereb。三组之间在 CON1-DAN4 以及 DMN2-VIS2 具有明显的静态功能连接异常，在 DAN1-LBM、DAN2-VIS2 以及 DAN1-CON2 具有明显的功能连接异常。CON1-DAN4 的静态功能、DAN2-VIS2 的动态功能连接与失眠评分呈负相关。DMN2-DMN4 的静态功能连接与失眠评分及焦虑评分正相关。运用静动态功能连接特征进行分类时，GSC 与 CID 准确率 88.40%，CID-D 与 CID-ND 准确率 85.2%。

结论

本研究采用个体化脑网络分析方法揭示了 CID 伴随不同情绪状态的静态动态脑网络改变特征。可为 CID 患者伴情绪障碍的诊断及治疗靶点的选择提供了客观依据。

关键词：失眠, 抑郁, 个体化脑网络, 机器学习

睡眠不足对 A β 阳性认知正常老年人脑功能的影响

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目的：探讨睡眠不足及 APOE 基因多态性对 A β 阳性认知正常老年人（CUOA-A β +）脑功能的影响。

方法：纳入 A4 数据库中 695 名 CUOA-A β +，睡眠时间小于 6 小时定义为睡眠不足，共纳入 191 名睡眠不足受试者。采用基于蓝斑功能连接（LCFC）构建其脑功能网络，采用 MMSE、PACC 评估总体认知功能，DSST 评估执行功能，LM 评估记忆功能。采用 2*2 方差分析探讨 2 因素对脑功能的影响。相关分析探讨脑功能与认知的关系，中介分析探讨睡眠不足、脑功能及认知功能的关系。

结果：在 CUOA-A β + 中，在人口学资料及认知功能中，睡眠不足及 APOE 均无显著影响。睡眠对脑功能影响脑区包括颞极、脑桥及中扣带，睡眠及 APOE 交互作用脑区包括中央前回、内侧眶额叶、颞中回及颞下回。相关分析发现睡眠不足影响的中扣带脑功能与执行功能评分呈正相关，颞极功能与记忆功能评分相关。中介分析发现，中扣带回脑功能对睡眠不足与执行功能的关系其中介作用。

结论：睡眠不足在 CUOA-A β + 人群中可能影响脑功能而进一步导致认知工下降。针对睡眠的调整及脑功能的神经调控均可能延缓其认知工下降。

关键词：睡眠不足, 认知功能, 脑功能, 蓝斑

Hydrogen Sulfide Mediates Carotid Body Hyperactivity Induced by Chronic Intermittent Hypoxia Through Sp1 S-sulphydration / AT1

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Background and Objective: Increased activity of carotid body (CB) is one of the important phenotypes of obstructive sleep apnea (OSA). Hydrogen sulfide (H₂S) is essential for CB to sense oxygen, which involved in the formation of high CB activity. This study aims to explore the mechanism of increased CB activity caused by chronic intermittent hypoxia (CIH) participated by H₂S.

Methods: Using rats subjected to 12 weeks of normoxia or CIH, CB activity and H₂S production was assessed in vivo. mRNA and protein expression of AT1 were semi-quantified using real-time PCR and immunofluorescence. In PC12 cells exposed to intermittent hypoxia (IH), Sp1 S-sulphydration and AT1 upregulation were explored.

Results: Rats subjected to CIH exhibited enhanced CB activity, accompanied by increased production, of H₂S production, which could be reversed by H₂S synthase inhibitor.

Further, Increased expression of AT1 were also found both in CB tissue or PC12 cells exposed to CIH. The high expression of AT1 was inhibited by the H₂S enzyme inhibitor, and inhibition of AT1 by losartan decreased CB activity.

Mechanistically, IH resulted in S-sulphydration of transcription factor Sp1 and promoted the binding of Sp1 to AT1 gene promoter, whereas the H₂S synthase inhibitor AOAA significantly inhibited both Sp1 S-sulphydration and AT1 expression in PC12 cells.

Conclusion: Our findings demonstrated the critical role of H₂S in CIH-induced CB hyperactivity, which was mediated by S-sulphydration of Sp1-driven AT1 upregulation, providing insights into potential therapeutic strategies for OSA

Keyword: obstructive sleep apnea, carotid body, hydrogen sulfide, S-sulphydration, angiotensin II receptor type 1, Sp1

NR1H4 ameliorates Parkinson' s disease via inhibiting astrocyte activation and neuroinflammation in a CEBP β /NF- κ B dependent manner

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Parkinson' s Disease (PD) is a degenerative disease driven by neuroinflammation. Nuclear receptor subfamily 1 group H member 4 (NR1H4), a nuclear receptor involved in metabolic and inflammatory regulation, is found to be widely expressed in central nervous system. Previous studies suggested the protective role of NR1H4 in various diseases related to inflammation, whether NR1H4 participates in PD progression remains unknown. To investigate the role of NR1H4 in neuroinflammation regulation, especially astrocyte activation during PD, siRNA and adenovirus were used to manipulate Nrlh4 expression. RNA-sequencing (RNA-seq), quantitative real-time PCR, enzyme-linked immunosorbent assay, Chromatin immunoprecipitation and western blotting were performed to further study the underlying mechanisms. We identified that NR1H4 was down-regulated during PD progression. In vitro experiments suggested that Nrlh4 knockdown led to inflammatory response, reactive oxygen species generation and astrocytes activation whereas Nrlh4 overexpression had the opposite effects. The results of RNA-seq on astrocytes revealed that NR1H4 manipulated neuroinflammation in a CEBP β /NF- κ B dependent manner. Additionally, pharmacological activation of NR1H4 via Obeticholic acid ameliorated neuroinflammation and promoted neuronal survival. Our study first proved the neuroprotective effects of NR1H4 against PD via inhibiting astrocyte activation and neuroinflammation in a CEBP β /NF- κ B dependent manner.

Keyword: NR1H4, PD, Inflammation, Obeticholic acid, Oxidative stress

The association of objective daytime sleepiness with impaired glucose metabolism in patients with obstructive sleep apnea: a multi-omics study

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Study objectives: To examine the joint effect of obstructive sleep apnea (OSA) and objective EDS on glucose metabolism and the underlying mechanisms.

Methods: We included 127 patients with OSA. The multiple sleep latency test (MSLT) and Epworth sleepiness scale (ESS) were used to assess objective and subjective EDS, respectively. Disordered glucose metabolism was defined as either a physician diagnosis or having fasting blood glucose levels ≥ 5.6 mmol/L. Values of fasting insulin and homeostasis model assessment of insulin resistance (HOMA-IR) higher than the median values of our sample were defined as high fasting insulin and insulin resistance. Serum metabolomics and fecal microbiota were used to explore underlying mechanisms.

Results: Lower MSLT values were associated with higher levels of fasting blood glucose, fasting insulin, and HOMA-IR. Furthermore, objective EDS was associated with increased odds of disordered glucose metabolism, elevated fasting insulin, and insulin resistance. Dysregulation of serum valine degradation and dysbiosis of fecal *Bacteroides thetaiotaomicron* were associated with impaired glucose metabolism in OSA with objective EDS. Combining objective EDS with metabolites of valine degradation, *Bacteroides thetaiotaomicron*, age, gender, BMI and AHI was associated with markedly improved predictive value of disordered glucose metabolism in OSA (AUC = 0.866). No association between subjective EDS and impaired glucose metabolism was observed.

Conclusions: OSA with objective, but not subjective, EDS is associated with an increased risk of disordered glucose metabolism and insulin resistance. Dysregulation of valine degradation and dysbiosis of *Bacteroides thetaiotaomicron* appear to link objective EDS and disordered glucose metabolism in OSA.

Keyword: Obstructive sleep apnea, daytime sleepiness, diabetes, insulin resistance, metabolomics, gut microbiota

Neuroinflammatory changes in the hypoglossal nucleus in PD model rats

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Parkinson's disease (PD) is a common neurodegenerative disorder and PD patients often experience various forms of sleep disorder, with obstructive sleep apnea (OSA) occurring in 60% of PD patients. In the study adult male SD rats with PD-OSA comorbidity were used to investigate whether neuroinflammation exists in their hypoglossal nucleus (HN) which regulates genioglossus activity by neurophysiological and molecular biological techniques. Our results showed that the GG-EMG decreased and the number of Iba1-labeled microglial cells and GFAP-labeled astrocytes increased in the medullary HN of the PD-OSA model rats. Additionally, there was a mild reduction in the number of cholinergic neurons labeled with ChAT. NLRP3 protein expressed more in both microglial cells and cholinergic neurons within the HN. Western blot analysis demonstrated an upregulation of NLRP3, ASC, IL-18, and pro-IL-1 β protein expression. These results indicated that the cholinergic neurons and microglial cells in the medullary HN exhibit neuroinflammation in the PD-OSA comorbidity model of rats.

Keyword: Parkinson's disease; obstructive sleep apnea; genioglossus muscle; NLRP3 inflammasome

Causal associations of insomnia with chronic kidney diseases and underlying blood proteins: an observational and Mendelian randomization study

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Background: Insomnia symptom is associated with chronic kidney disease (CKD) in observational studies. However, whether insomnia symptom is causally associated with CKD remains not established.

Objective: This study aims to estimate the causal association of insomnia symptom with CKD and investigate the protein pathways linking insomnia symptom to the risk of CKD.

Methods: In primary analyses, multivariate regression (MVR) and one-sample Mendelian randomization (1SMR) analyses were performed to estimate the associations between insomnia symptom and CKD in >400,000 people. Thereafter, a two-sample MR (2SMR) analysis was used to validate the findings from primary analyses. Finally, proteome-wide MR analysis was conducted to pinpoint CKD-associated blood proteins, supplemented by the colocalization analysis to rule out bias caused by linkage disequilibrium. Additionally, the potential mediation effects of blood proteins on the pathway of insomnia symptom giving rise to CKD were explored through a two-step MR design.

Results: Across the MVR, 1SMR, and their sensitivity analyses, we found consistent evidence suggesting that more frequent insomnia symptom symptoms were significantly associated with a higher risk of CKD (MVR: HR = 1.20, 95%CI = 1.16-1.24; 1SMR: OR = 1.35; 95%CI = 1.02-1.79). Consistent evidence was obtained by using 2SMR (OR = 1.06, 95%CI = 1.02-1.11). Genetically predicted 124 circulating proteins were associated with CKD in proteome-wide MR analysis. ENPP5 is a promising novel target that mediates the association between insomnia symptom and CKD.

Conclusions: More frequent insomnia symptom symptoms are causally associated with increased risk of CKD, and ENPP5 as a potential blood protein mediates the association between insomnia symptom and CKD. These findings indicate that addressing insomnia symptom could serve as a viable and valid intervention to mitigate CKD risk.

Keyword: Insomnia symptom, Blood proteins, Chronic kidney disease, Mendelian randomization, Causality, Genetic risk

Anxiety-Induced Hyperarousal through Altered Cav3.1-Driven Long-Lasting Low-Threshold Spiking in Laterodorsal Tegmental Glutamatergic Neurons

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Anxiety hyperarousal is a widespread emotional sleep disorder significantly affecting the quality of life globally. The laterodorsal tegmental (LDT) nucleus, crucial in sleep-wake regulation, may play a key role in anxiety modulation. However, how LDT neurons regulate stress-induced emotional sleep disorders remains poorly understood. This study investigates the role and mechanisms of LDT glutamatergic neurons in anxiety hyperarousal. Using a chronic unpredictable mild stress (CUMS) model, *in vitro* electrophysiological recordings and optogenetics, we found that the proportion of LDT neurons exhibiting long-lasting low-threshold spikes (LLLTS) significantly increased after chronic stress. Optogenetically evoked LLLTS led to anxiety-like behavior and increased wakefulness. Retrograde tracing revealed multiple upstream innervations to LDT, with the LH GABA-LDT Vglut2 neural circuit playing a crucial role in anxiety hyperarousal. Pharmacological and genetic interventions targeting Cav3.1 channels showed significant reductions in anxiety hyperarousal. In conclusion, our study revealed the important role of Cav3.1-driven LLLTS in LDT neurons in controlling anxiety hyperarousal, providing a potential therapeutic target for the treatment of chronic stress-induced emotional sleep disorders.

Keyword: anxiety, Cav 3.1, hyperarousal, laterodorsal tegmental nucleus, long-lasting low-threshold spike

The role of circulating fatty acids in mediating the effect of insomnia on heart failure: A two-step, two-sample Mendelian randomization study

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Purpose: Previous studies support the causal effect of insomnia on heart failure. Fatty acid metabolism plays key roles in the occurrence and development of heart failure. It is unclear whether fatty acids play roles in the causal association between insomnia and heart failure. This study aims to investigate the mediating role of fatty acids in the association between insomnia and heart failure.

Methods: We performed two-step, two-sample Mendelian randomization analysis by applying SNPs as genetic instruments for exposures, mediators and outcomes.

Summary data obtained from genome-wide association studies for insomnia, proposed fatty acid mediators and heart failure were used in this study. The overall effect of insomnia on heart failure includes direct and indirect effects.

Results: Genetically predicted insomnia has a significant causal effect on circulating total fatty acids, saturated fatty acids, monounsaturated fatty acids and omega-3 fatty acids. In addition, different circulating fatty acids have no causal effect on insomnia incidence. A significant positive correlation between genetic predicted insomnia and heart failure (OR = 1.10, 95% CI: 1.06–1.14, P<0.001) was observed. Finally, we found that circulating fatty acids play a mediating role in the causal association between insomnia and heart failure. Total fatty acids, saturated fatty acids and monounsaturated fatty acids explained 3% (95% CI: 0%–7.5%), 3% (95% CI: –1.1%–7.5%), 4% (95% CI: 0%–9.7%) of the overall effect of insomnia on heart failure, respectively.

Conclusion: These results support circulating fatty acids as potential mediators in the causal association between insomnia and heart failure.

Keyword: Mendelian randomization; Insomnia; Heart failure; Circulating fatty acids

COPD-OSA 重叠综合征（OVS）免疫炎症机制研究

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背景与目的

COPD 和 OSA 的共存称为重叠综合征（OVS）。缺氧诱发炎症是 COPD 和 OSA 疾病发生发展和并发症的重要机制，但具体的机制尚未完全被阐明。基于此，本部分研究拟通过构建 COPD 和 OVS 动物模型，从组织学、免疫炎症因子和细胞以及转录组学方面综合探讨 OVS 免疫炎症机制，为深入机制探讨及探寻潜在的诊断生物标记物及治疗靶点奠定一定的基础。

方法

（1）构建 OVS 动物模型，探究肺组织损伤、局部炎症反应以及全身炎症反应，并通过肺泡巨噬细胞检测（免疫荧光和电镜检测）评估 OVS 小鼠肺泡巨噬细胞变化。

（2）通过转录组学测定评估实验小鼠肺动脉转录组学的差异性表达，探究以探讨 OVS 的免疫炎症机制。

结果

（1）COPD 组和 COPD+IH 组小鼠显示出更明显的肺组织损伤和炎症细胞浸润。

（2）COPD+IH 组在外周血和肺泡灌洗液中 TGF- β 、IL-10 降低，而 VEGF、MMP9、TNF- α 、IL-8、CXCL-5、IL-6、IL-1 β 、IL-1 α 等炎症因子显著升高。肺泡巨噬细胞数量增加，电镜下观察到结构破坏。

（3）肺动脉转录组分析揭示，COPD+IH 组差异基因显著富集在炎症反应、免疫细胞调控、白细胞调控等通路，这些通路可能在 OVS 的发病机制中发挥重要作用。

结论

IH 加重 COPD 局部和全身炎症，肺泡巨噬细胞可能是其机制之一；肺动脉转录组结果显示免疫、炎症调控通路 OVS 机制中可能发挥重要作用。

关键词：慢性阻塞性肺疾病，阻塞性睡眠呼吸暂停，重叠综合征，间歇性低氧

Targeting Nicotinamide Phosphoribosyltransferase Acetylation in Muscle Dysfunction: A Potential Approach for Sleep Apnea in Obesity

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Rationale: Obstructive sleep apnea occurs frequently among individuals with obesity, which attributes to upper airway muscle dysfunction. Muscle function is regulated by the dynamic balance of the nicotinamide adenine dinucleotide (NAD⁺) and its reduced form (NADH), which is controlled by the enzyme nicotinamide phosphoribosyltransferase (NAMPT). Elevated NAMPT levels were found in individuals with obesity. However, the role of NAMPT in obesity-induced muscle impairment has not been fully clarified.

Objectives: We aimed to investigate the role of NAMPT in regulating the NAD⁺/NADH ratio in the context of obesity and its involvement in upper airway muscle dysfunction.

Measurements and Main Results: We found that a high-fat diet reduced the levels of NAD-dependent deacetylase sirtuin-1 (SIRT1), which plays a crucial role in the deacetylation of NAMPT. The reduction in SIRT1-mediated NAMPT deacetylation resulted in decreased NAMPT activity, leading to a decrease in NAD⁺/NADH ratio and decreased the myosin heavy chain isoform (MyHC) I levels, thereby affecting the effectiveness of upper airway muscle and ultimately leading to upper airway collapse. Moreover, the introduction of estradiol mitigated high-fat diet-induced muscle dysfunction by enhancing express of SIRT1 and inhibiting the acetylation of NAMPT.

Conclusions: These findings highlight the crucial role of SIRT1-mediated NAMPT deacetylation on obesity-induced NAD⁺/NADH imbalance and suggest the potential for developing therapeutics targeting muscle effectiveness to treat sleep apnea patients with obesity.

Keyword: obstructive sleep apnea, obesity, nicotinamide phosphoribosyltransferase, estradiol, skeletal muscle

老年人多维睡眠健康与认知功能的相关性:MIND-China 队列研究

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目的: 探究自我报告的多维睡眠健康与阿尔茨海默病、轻度认知障碍及其亚型、主观认知能力下降的关系。

方法: 这项基于人群的研究包括 5174 名生活在中国农村的参与者。使用匹兹堡睡眠质量指数测量睡眠参数。自我报告的睡眠健康得分基于满意度、警觉性、时间、效率和睡眠时长: 满意度: 对睡眠满意情况的主观评价; 警觉性: 白天保持清醒不打瞌睡; 时间: 以睡眠中段时间进行评估; 效率: 晚上入睡或再次入睡时间少于 30 分钟; 睡眠时长: 报告睡眠时间为 6-8 小时。多维睡眠健康得分从 0 到 5, 得分越高睡眠越健康。将多维睡眠健康作为连续和分类变量, 采用逻辑回归进行分析。

结果: 117 人诊断为阿尔茨海默病, 1310 人诊断为轻度认知障碍, 3002 人患有主观认知下降; 多维睡眠健康 2-3 分(与多维睡眠健康 0-1 相比): 阿尔茨海默病的多变量调整比值比(OR95%CI)为 0.542(0.338, 0.868); 轻度认知障碍 1.083(0.881, 1.331); 主观认知下降 0.421(0.289, 0.611), 多维睡眠健康 4-5(与多维睡眠健康 0-1 相比): 阿尔茨海默病 0.379(0.205, 0.701); 轻度认知障碍 0.759(0.607, 0.949); 主观认知下降 0.296(0.203, 0.432)。我们发现在女性样本中多维睡眠健康与主观认知下降显著相关。

结论: 多维睡眠健康与全因痴呆、阿尔茨海默病、轻度认知障碍、主观认知下降均有显著相关性。

关键词: 多维睡眠健康; 阿尔茨海默病; 轻度认知障碍; 主观认知下降

S1c52a3 及其 SNP 变异在改善 OSAHS 患者睡眠呼吸中的机制研究

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【目的】：睡眠结构改变以及呼吸窘迫是 OSA 患者最显著的临床特征，但具体机制不明确。项目前期通过临床大规模连续性的 OSA 患者样本的全基因组关联研究，发现核黄素转运体蛋白 S1c52a3 基因及其 SNP (P267L) 对 OSA 患者的睡眠呼吸具有显著的保护作用，本项目旨在揭示其具体机制。**【方法】**：S1c52a3 及其 SNP (P267L) 位点在多物种中具有高度保守性，本项目以模拟人 SNP 置换效果的点突变小鼠 S1c52a3 (P258L) 以及 S1c52a3 敲除小鼠作为研究对象，通过对小鼠睡眠呼吸表型监测以及全身脏器生化指标检测，并结合转录组、蛋白组以及代谢组等测序技术，揭示 S1c52a3 调控睡眠呼吸的潜在机制。**【结果】**：S1c52a3 的主要生物学功能是促进机体核黄素的吸收转运，S1c52a3 点突变小鼠的血清及多脏器核黄素的含量显著高于野生型小鼠，而敲除 S1c52a3 显著抑制了核黄素的在体的吸收转运。同时，点突变小鼠的整体呼吸机能相较于野生型小鼠有所提升，而敲除小鼠呼吸机能整体下降。此外，机制结果表明，S1c52a3 介导的核黄素在脑部主要调控小胶质细胞的活性及功能，进而通过神经炎症反应介导小鼠的呼吸机能。**【结论】**：S1c52a3 对 OSA 患者睡眠呼吸的调控依赖于核黄素，S1c52a3 的 SNP (P267L) 变异能够促进脑组织核黄素的转运吸收，维持小胶质细胞活性，提升脑部机能，进而降低 OSA 的发病。

关键词：S1c52a3 基因；单核苷酸多态性；阻塞性睡眠呼吸暂停低通气综合征

前包钦格复合体的星形胶质细胞参与调控呼吸模式

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目的: 前包钦格复合体位于延髓腹外侧, 是呼吸中枢模式发生器的重要结构。前包钦格复合体主要包括吸气节律神经元和模式调控神经元。近年来的研究表明, 星形胶质细胞和神经元之间的交互作用对于维持稳态发挥重要作用, 然而前包钦格复合体的星形胶质细胞在呼吸调控中的作用还尚未完全阐明, 本研究旨在明确此类神经细胞是否参与调控通气反应和呼吸模式。

方法: 利用化学遗传学方法选择性激活或抑制小鼠的前包钦格复合体区的星形胶质细胞; 利用全身无创体积描记系统测定自由活动小鼠的呼吸参数。

结果: 化学遗传学方法激活前包钦格复合体的星形胶质细胞, 小鼠呼吸频率减慢, 潮气量增加, 然而每分通气量不变, 同时叹息样呼吸次数增加, 但对自发性呼吸暂停的频率无影响。化学遗传学方法抑制 preBötC 的星形胶质细胞对呼吸参数无显著性影响。

结论: 激活前包钦格复合体的星形胶质细胞引起深慢呼吸, 但不影响通气量, 同时伴有特殊呼吸模式的变化。

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关键词: 呼吸中枢, 呼吸模式, 星形胶质细胞, 肺通气

Study on changes in brain function and heart sound in acute sleep deprivation individuals

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Aims: Sleep deprivation (SD) has become a health problem in modern society due to its adverse effects on different aspects. However, the relationship between sleep and cardiovascular system function remains unclear. Here we explored the changes occurring in the brain and the heart sounds after SD. **Methods:** Ninety healthy adult men were recruited and subjected to 36 h of Sleep Deprivation (SD). They participated in a number of tests, including measurements of the heart sound, blood oxygen, and heart rate every 2 h. By using of principal component analysis to reduced the dimensionality of heart sound data. While the ALFF and ReHo indexes were measured via fMRI before and after SD. Correlation and regression analyses were used to reveal the relationship between fMRI and heart sound changes due to SD. **Results:** In this study, there were no abnormal values in the heart rate and blood oxygen during 36 h of SD, whereas the intensity of heart sounds fluctuated significantly increased and decreased. The ALFF was increased in bilateral pericalcarine(Calcarine), left anterior cuneus, (Precuneus_L), right superior temporal gyrus(Temporal_Sup_R), left supplementary motor area (Supp_Motor_Area_L); However, it was reduced in the right medial superior frontal gyrus (Frontal_Sup_Medial_R), right dorsolateral superior frontal gyrus (Frontal_Sup_R) and left medial frontal gyrus (Frontal_Mid_L). The regression analysis uncovered that the intensity of the heart sound in the systole, s1, and s2 phase could be explained by Calcarine_L changes. **Conclusion:** Acute sleep deprivation affects cardiac-brain axis and the specific brain regions. Calcarine_L changes during sleep deprivation are involved in regulating heart contractions.

Keyword: Sleep deprivation, Heart sound, fMRI

中学生噩梦频率、噩梦困扰与非自杀自伤的关系

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背景:处于青春期的中学生身心发生变化,会影响情绪、睡眠,导致非自杀的自伤行为。

目的:了解中学生噩梦和非自杀自伤的流行特征,探讨青少年的性别差异及噩梦在其中的作用。

方法:2022年5月,对山东省初中和高中进行问卷调查。问卷项目包括患者健康问卷-4(PHQ-4)、噩梦困扰问卷-中文版(NDQ-CV)、青少年非自杀自伤评估问卷(ANSAQ)等。使用SPSSAU 21.0进行分析。

结果:研究对象的中位年龄为16岁,女性占53.37%。NSSI在学生中的发病率为38.62%,女生发病率高于男生(40.17%比36.86%)。近一个月内做噩梦的频率发生率为13.29%,女性也较高。频繁做噩梦的性别差异在除高一外的所有年级样本中也存在。无论在总体样本中还是在性别样本中,中介效应都是显著的,女性样本的中介效应百分比高于男性样本(35.78%比27.10%)。

结论:中学生非自杀行为和睡眠问题的发生率较高,尤其是女性。NSSI的发病率随着年级的升高而升高,然后降低。其中高一学生的NSSI发病率最高。噩梦频率不仅可以直接预测,还可以通过噩梦困扰的中介作用间接预测NSSI。研究睡眠和情绪有助于预防和减少NSSI的发生。

关键词:噩梦频率,噩梦困扰,中介作用,非自杀自伤

Reoxygenation improves hypothalamic leptin responsiveness diminished by intermittent hypoxia in obese rats

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Abstract: Objective The diet-induced obesity (DIO) rat model was employed to explore the effects of intermittent hypoxia-reoxygenation (IHR) on body weight, diet and water intake, circulating metabolites, and the response to central leptin injection in obese rats. Methods The DIO rat model was constructed by 12-week high-fat diet (HFD) feeding, and then randomly divided into 3 groups and continued to feed with HFD: normoxia group (NM, n=15), intermittent hypoxia group (IH: 6% O₂, 30 cycles/h, 8 h/day, 4 weeks, n=15), and IHR group (2-week IH followed by 2-week reoxygenation, n=15). Body weight, diet and water intake were recorded, and circulating leptin, IL-6, and Ang-II were detected. After hypoxia-reoxygenation management, rats received 4 μg leptin intracerebroventricular injection, and hypothalamus and liver were taken 1 h later. To compare the changes of leptin receptor and downstream pathway proteins, POMC, FRA-1 and FRA-2 in the hypothalamus were observed by immunohistochemistry, POMC, pSTAT3 and LepR were detected by Western blot, and LepR mRNA in the hypothalamus and liver were detected by RT-PCR. Results DIO rats in the IH group showed increased weight gain [(653.33±23.94) g vs (610.60±38.45) g, P=0.001], and diet intake [(22.67±3.37) g vs (18.78±2.81) g, P=0.001], along with elevated systemic inflammatory cytokines [leptin (1.40±0.13)ng/mL vs (1.19±0.17)ng/mL, P=0.004; IL-6 (33.66±2.98)pg/mL vs (29.53±3.31)pg/mL, P=0.008; Ang-II (220.60±39.12)pg/mL vs (139.89±22.19)pg/mL, P<0.001]. Additionally, IH inhibited the hypothalamic appetite-suppressing peptide POMC expression (vs NM group, P<0.001), decreased FRA-1 expression which reflected leptin-responsive neuron activity (vs NM group, P<0.001), suppressed leptin-induced pSTAT3 expression (leptin⁺ vs leptin⁻, P=0.241), displayed reduced responsiveness to exogenous leptin administration (vs NM group, P<0.001), and downregulated the transcription and expression of LepR (vs NM group, P<0.001). After 2-week reoxygenation treatment, the weight gain and metabolic disorder intensified by IH can be mitigated, along with rising leptin sensitivity. Conclusion IH may impair hypothalamic leptin signaling by downregulating LepR expression, thus promoting weight gain in obese rats, which can be improved by reoxygenation treatment.

Keyword: intermittent hypoxia; obstructive sleep apnea; obesity; leptin

某三甲综合医院护士职业压力与职业倦怠的关系：失眠的中介效应

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目的:探讨失眠对护士职业压力和职业倦怠的中介作用。方法:采用横断面分层抽样法,于2023年10月至11月在山东省济南市某三级综合医院招募1050名护士。获取一般资料、量表评估。结果:共1020人入组(女957人男63人)。以PSQI>7分为失眠患者,共302人(发病率31.37%);得分:PSS(20.58±10.23),PSPI(5.95±3.91),MBI(31.15±17.61)。Pearson相关分析显示职业倦怠与压力、睡眠质量($P<0.001$)呈正相关,与年龄、每周运动次数、自评精神状态、自评躯体状态($P<0.05$)呈负相关。共同方法偏差检验显示:特征值>1的因子有3个,第1个因子解释的变异量为35.28%,<40%的临界标准,说明本研究不存在明显的共同方法偏差。采用SPSS宏程序PROCESS中的模型4构建中介效应模型,运用Bootstrap方法检验中介效应,抽样5000次,设置95%置信区间。中介效应模型显示,失眠在职业压力与职业倦怠中起部分中介作用,直接效应显著($P<0.05$),占总效应的44.86%,间接效果值为 $a*b=0.1311*1.3955=0.1489$,占总效应的55.14%,95%CI(0.1427~0.2317)。结论:失眠不仅对职业压力和职业倦怠有直接影响,而且起中介作用。未来研究探索提升睡眠质量方案对改善护士群体职业倦怠和压力有现实意义。

关键词:职业倦怠,职业压力,失眠,中介作用

不同年龄段发作性睡病患者临床症状和多导睡眠监测结果的特征性分析

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目的 分析不同年龄段发作性睡病患者的临床症状和多导睡眠监测结果特征。**方法** 收集 32 例发作性睡病患者的临床资料, 分为 ≤ 18 岁青少年组 16 例, > 18 岁成人组 16 例, 对比其临床症状、多导睡眠监测和多次睡眠潜伏期试验的结果。**结果** 32 例患者均表现为日间嗜睡, 两组睡前幻觉和睡瘫发生率无统计学差异, 与青少年组相比, 成人组男性比例明显增加, BMI 值明显升高(均 $P < 0.05$)。从临床症状来看, 32 例均主诉日间嗜睡(100%)。21 例出现猝倒发作(65.6%), 青少年组猝倒发生率明显高于成人组($P < 0.05$)。两组睡前幻觉和睡眠瘫痪发生率差异无统计学意义青少年组的失眠障碍的发生率均明显低于成人组($P < 0.05$), 两组 OSA 和 PLMD 发生率差异无统计学意义。32 例患者 HLADQB1*0602 均阳性, 两组的食欲素水平差异无统计学意义青少年组的 N1%、AHI 和微觉醒指数均明显低于成人组(均 $P < 0.05$), 青少年组的 N3%、最低氧饱、MSL 均明显高于成人组(均 $P < 0.05$), 两组的 N2% 和 REM% 和 PLMSindex 差异无统计学意义。两组 MSLT 结果显示, 两组 SOREMP 差异无统计学意义, 但 MSL 差异有统计学意义($P < 0.05$)。**结论** 不同年龄段发作性睡病临床特征和多导睡眠监测结果存在显著差异。

关键词: 发作性睡病; 多导睡眠监测

终末期肾病患者合并阻塞性睡眠呼吸暂停的临床特征及预后分析

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目的：分析 ESRD 合并 OSA 患者的临床特征以及相关影响因素，并探讨合并 OSA 与 ESRD 患者发生心脑血管或全因死亡事件的相关性。

方法：本研究前瞻性地收集了 2022.9-2023.12 月至苏大附二院肾内科及透析中心就诊的稳定透析 ≥ 3 个月的 ESRD 患者，所有患者均完成 PMD 监测，根据 $AHI \geq 15$ 次/h 的标准将所有患者分为 OSA 组和对照组。比较两组患者的一般临床资料、PMD 参数、实验室检验及检查指标、量表评分、PVT 参数等方面的差异，通过 Logistic 逐步回归探索 ESRD 患者合并 OSA 的危险因素。对患者进行随访，采用多因素 Cox 回归分析 OSA 与 ESRD 患者的心脑血管事件或全因死亡事件的关系。

结果：本研究最终纳入 105 例患者，其中 OSA 组患者 31 例，对照组 74 例。经二元 Logistic 回归分析显示，RRF 是 ESRD 合并 OSA 的独立影响因素（ $OR=0.649$ ， $95\%CI: 0.463-0.909$ ， $P=0.012$ ）。入组患者经过平均 59.98 ± 2.18 周的随访，至随访结束共 18 例患者出现了心脑血管或全因死亡事件，多因素 Cox 回归分析发现 OSA 是 ESRD 患者发生心脑血管或全因死亡事件的独立危险因素（ $HR=4.111$ ， $95\%CI 1.561-10.826$ ， $P=0.004$ ）。

结论：RRF 下降是 ESRD 患者合并 OSA 的独立危险因素；合并 OSA 是 ESRD 患者远期发生心脑血管或全因死亡事件的独立危险因素。

关键词：阻塞性睡眠呼吸暂停，终末期肾病，预后，前瞻性研究

持续气道正压通气对重叠综合征伴 II 型呼吸衰竭患者的影响。

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目的：慢性阻塞性肺疾病合并阻塞型睡眠呼吸暂停低通气综合征称为“重叠综合征”，导致更严重的持续性低氧、高碳酸血症。方法：病例：1例慢阻肺急性加重期的84岁老年女性患者，既往肺结核及高血压病史，无其他慢性病史；平素睡眠打鼾。入院时急查血气：pH:7.248、PaO₂:83mmHg、PaCO₂:88mmHg、Spo₂269%、HCO₃:30.5mmol/L；予无创机械通气（IPAP:12cmH₂O、EPAP:5 cmH₂O、FiO₂:40%），复测血气 pH 处于 7.20-7.26、PaO₂83-89mmHg、PaCO₂:64-100mmHg、HCO₃:29-40mmol/L，血氧维持 96%左右。患者 PaCO₂ 仍较高，予睡眠呼吸监测：AHI=35 次/小时，属重度睡眠呼吸暂停低通气综合征，以阻塞型呼吸暂停为主，夜间睡眠最低血氧饱和度 83%，属中度夜眠低氧血症，诊断重叠综合征，调整通气参数（IPAP:24cmH₂O EPAP:8 cmH₂O FiO₂:35%）pH:7.258 PaCO₂:92.0mmHg PaO₂:67.6mmHg HCO₃:32.8mmol/L。复查血气 PaCO₂ 69.9mmHg ↑；PaO₂ 140.0mmHg ↑；Spo₂ 98.9% ↑；结果：有效的持续气道正压通气，增加 EPAP 值可在一定程度上开放塌陷的上气道、提高肺通气、改善重叠综合征患者氧合及二氧化碳潴留等。

关键词：

Chiari 畸形与慢性呼吸衰竭——病例系列报道及文献复习

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目的：探讨 Chiari 畸形对慢性呼吸衰竭的影响。

方法：对 3 例伴有慢性呼吸衰竭的 Chiari 畸形 I 型（Chiari malformation type I, CM-I）患者的诊治过程进行回顾。

结果：

病例一：患者女，50 岁，因“夜间打鼾伴晨起头痛 15 年余，加重伴双下肢浮肿 2 年”入院。查体：口唇轻度发绀，球结膜水肿，双下肢可凹性水肿。诊断 CM-I。行后颅窝减压术。术后拒绝无创通气治疗，1 年后于夜间死亡。

病例二：患者女，52 岁，因“夜间睡眠打鼾 30 年”入院。1 个月前出现持续右上肢体麻木、共济失调、行走不稳、饮水呛咳。颈椎 MRI 提示 CM-I、脊髓空洞。查体：步态不稳，双侧肌力 IV 级，未引出病理征。诊断 CM-I。行后颅窝减压术+小脑扁桃体电灼术+硬膜扩大成型术后上述症状明显改善，联合无创通气治疗，病情平稳。

病例三：患者女，45 岁，因“打鼾伴呼吸暂停 2 年余，加重伴发作性意识丧失 1 年余”入院。查体：被动体位，不能行走，四肢活动受限，双手屈曲呈握拳状，不能展开，左侧肢体肌力 III 级，右侧肢体肌力 I 级，双侧巴氏征阳性。诊断 CM-I。行寰枕畸形减压术后无创通气治疗，病情平稳。

结论：

CM-I 易合并睡眠呼吸障碍（SRBD），可表现为阻塞性睡眠呼吸暂停（OSA）、中枢性睡眠呼吸暂停（CSA）、低通气等。超重、男性、年龄较大、脑积水与 SRBD 及严重程度有关。术后应积极复查 PSG，继续无创通气治疗，并进行密切随访。

关键词：慢性呼吸衰竭, Chiari 畸形, 无创通气治疗

认知行为疗法在治疗失眠障碍共病的研究进展

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失眠是睡眠障碍中最常见的一种类型，其患病率高，经济负担重，失眠常常与其他疾病共病，发病率高，治疗难度大。认知行为疗法是一种以行为改变科学、心理学理论和睡眠科学为基础的失眠治疗方法，其在治疗失眠及其他疾病时被证实是积极有效的。本文主要介绍认知行为疗法及其作用机制、优势所在，并重点介绍认知行为疗法在治疗失眠共病其他疾病（失眠共病糖尿病、慢性疼痛、其他睡眠障碍、消化系统疾病、癌症、耳鸣以及心血管系统疾病）中的作用机制、应用现状及治疗效果，为认知行为疗法进一步拓宽应用范围，也为共病患者拓展治疗的窗口，实现失眠障碍共病患者的多疾病联合诊疗，同时指出目前认知行为疗法在治疗失眠障碍共病其他疾病患者的实际应用中的存在的诸多不足，在未来具体的应用过程中要进一步完善，实现认知行为疗法在失眠障碍共病其他疾病患者的规范化、个性化、生活化诊疗。

关键词：认知行为疗法, 失眠共病, 睡眠效率, 生活质量

基于低氧参数构建成人阻塞性睡眠呼吸暂停觉醒预测模型

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目的 分析 OSA 患者低氧参数, 探究其与呼吸事件相关觉醒之间联系, 并基于低氧参数构建觉醒预测模型。

材料与方 回顾性分析 90 例进行 PSG 监测的患者, 提取整夜 PSG 记录数据中伴有氧降的呼吸事件, 将其分为伴觉醒的呼吸事件 (REA) 组和不伴觉醒的呼吸事件 (N-REA) 组, 使用内部构建 Matlab 软件导入分析。采用 Kolmogorov-Smirnov 检验比较 e-minSpO₂、 Δ SpO₂、DSpO₂、d.DSpO₂、r.DSpO₂、T90、d.T90、r.T90、ST90、d.ST90、r.ST90、ODR、ORR 差异。通过 logistic 回归分析构建觉醒预测模型, 绘制 ROC 曲线, 计算模型的敏感度、特异度、阳性预测值、阴性预测值。

结果 REA 组 e-minSpO₂、r.DSpO₂ 均低于 N-REA 组, Δ SpO₂、d.DSpO₂、ODR、ORR、T90、d.T90、r.T90、ST90、d.ST90、r.ST90 均高于 N-REA 组。Logistic 回归显示 d.DSpO₂、r.DSpO₂、ODR、ORR、d.T90、r.T90、d.ST90、r.ST90 均为觉醒的独立预测因子, 模型 AUC 为 0.753, 特异度和阳性预测值较高。

结论 可基于低氧参数建立 OSA 患者觉醒预测模型, 提高便携式睡眠监测 (PM) 的准确性, 有助于评估 OSA 患者的睡眠结构紊乱程度进而预判其病理生理损伤风险, 为制定个体化诊疗方案提供依据。

关键词: 阻塞性睡眠呼吸暂停, 低氧参数, 觉醒, 预测模型

上气道不同阻塞平面对儿童静息舌位和牙颌畸形影响的二维与三维测量分析

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目的: 分析上气道不同阻塞平面对儿童舌位、牙颌面畸形的影响。**方法:** 对正畸前因阻生牙定位、颞下颌关节疾病,同时拍摄头侧 X 线片和 CBCT 的 90 例儿童的影像资料进行回顾性分析。根据儿童腺样体扁桃体肥大情况分为四组:腺样体肥大组(22)、扁桃体肥大组(25)、腺样体扁桃体肥大组(24)、无肥大组(19),分析四组儿童静息状态下舌体与口腔周界的关系、四组儿童牙颌畸形的差异以及不同舌位对儿童牙颌畸形的影响,探讨因腺样体扁桃体阻塞上气道不同平面对儿童舌位、牙颌面形态的影响。**结果:**单纯腺样体肥大组舌背舌尖未紧贴腭部、上前牙舌侧,随着腺样体阻塞程度加重,舌体呈远离舌背及上前牙区位置,腺样体肥大可能与骨性 II 高角错合畸形有关。扁桃体肥大组舌背未紧贴腭部,但紧贴上下前牙,差异具有统计学意义($P < 0.5$),部分扁桃体肥大儿童与 III 类错合畸形有关,但差异无统计学意义($P > 0.5$),这可能提示早期儿童腺样体肥大比扁桃体肥大更容易导致骨性错合畸形改变,儿童早期扁桃体肥大多引起牙性畸形改变而非骨性畸形。腺样体扁桃体肥大舌体多呈舌后缩位置,即舌体远离腭部、上下前牙,腺样体扁桃体肥大也可能与骨性 II 类畸形有关($P < 0.5$),与腺样体肥大组相比,腺样体扁桃体肥大组垂直生长型多为均角型,下前牙易出现代偿唇倾($P < 0.5$)。**结论:**腺样体扁桃体肥大可通过影响儿童舌位,引起儿童口周肌群失衡而产生牙颌畸形。

关键词: 腺样体; 扁桃体; 儿童; 静息舌位; 牙颌畸形

二、睡眠疾病临床诊治最新进展及趋势

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基于单导联心电图信号的睡眠分期及睡眠事件识别检测系统

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目的：多导睡眠监测（PSG）是睡眠监测的诊断“金标准”，但其难以推广应用于家庭化的睡眠监测。而心电图在一定程度上能有效反映睡眠结构和相关事件特征，能够起到辅助筛查作用。因此，本研究基于单导心电信号，开发一种能够自动分析睡眠分期和睡眠事件（包括呼吸暂停、觉醒和低通气）的系统，并通过实验验证其有效性。

方法：首先，本研究使用 NSRR 的 3 个公开数据库中 PSG 数据的单导心电信号，经滤波、去噪和归一化等预处理，分割成 30 秒信号帧构建数据集。其次，本研究使用一维残差神经网络 Net1D 作为基础网络，按照人以 6:2:2 划分为训练、验证和测试数据，以交叉熵函数作为损失函数，对睡眠分期和事件识别分别构建了五分类任务和多标签二分类任务训练模型。模型训练完成后，在测试集上验证。

结果：本研究提出的方法在 3 个公开数据集的测试集共 1318 例数据中，睡眠分期 5 分类的平均准确率为 61.2%，f1 分数为 0.608；在睡眠事件的识别任务中，觉醒的最佳阈值 AUC 为 0.793，呼吸暂停为 0.782，低通气为 0.680。本研究的算法系统为使用心电图监测睡眠提供了新的思路，并展示了其在便捷性和实用性上的潜力。

结论：本研究提出了一种基于单导心电的睡眠分期及睡眠事件识别系统，虽然精度不及传统 PSG 设备，但在监测和筛查中具有独特优势。该系统为未来的睡眠健康管理、家庭化使用可穿戴设备采集心电图进行睡眠监测和辅助诊断提供了较好的应用思路。

关键词：单导联心电图，睡眠分期，睡眠事件识别，可穿戴设备，家庭睡眠监测

Age-dependent associations between obstructive sleep apnea and fractures: a community-based study

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Background: Fractures and obstructive sleep apnea (OSA) are public health concerns worldwide, and are significantly associated with an increased risk of morbidity and mortality. However, the relationship between OSA and fractures in diverse age groups is unknown.

Methods: This cross-sectional study was conducted in China between 2021 and 2023, and 5657 participants were included. A wearable type-IV sleep monitor was used to monitor the sleep. OSA was defined as an oxygen desaturation index ≥ 5 .

Fracture history was self-reported based on the physician's diagnosis. Poor sleep quality was defined as a Pittsburgh Sleep Quality Index score > 5 .

Results: The mean age of participants was 52.7 years. The prevalence rates of OSA and total fractures were 43.3% and 12.9%, respectively.

Participants were divided into groups according to the tertiles of age.

In T3 group (58-91 years), OSA was only significantly associated with non-traumatic fractures (OR=3.16, 95%CI:1.63-6.14). Similar results were observed in the T2 group (48-57 years). OSA was not associated with fractures in the T1 group (18-47 years).

Moreover, OSA with poor sleep quality was significantly associated with traumatic fractures (OR=2.11, 95%CI:1.11-4.01) in the T3 group.

OSA with current drinking was significantly associated with non-traumatic fractures (OR=4.94, 95%CI:1.75-13.93). Interactions between OSA and age and between OSA and drinking on fractures were observed ($p < 0.05$).

Conclusions: Public health efforts should focus on preventive measures to reduce fracture risk in middle-aged and elderly individuals with OSA, especially those with poor sleep quality and alcohol consumption.

Keyword: fractures, obstructive sleep apnea, interactions, poor sleep quality, drinking

Association between triglyceride-glucose index and obstructive sleep apnea in the general population

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Background: Metabolic syndrome (MS) and insulin resistance are associated with worsened outcomes of obstructive sleep apnea (OSA). The triglyceride-glucose (TyG) index, a marker of metabolic dysfunction, is associated with both MS and insulin resistance. However, the relationship between the TyG index and OSA in the general population is unknown.

Methods: This cross-sectional study included 5019 participants. A wearable type-IV sleep monitor was used for sleep monitoring. An oxygen desaturation index ≥ 5 was used to define OSA. The TyG index was calculated as $\text{Ln} [\text{fasting triglyceride (mg/dL)} \times \text{fasting glucose (mg/dL)} / 2]$. MS was assessed according to the standards set by the International Diabetes Federation.

Results: The mean age of the participants was 52.7, and the overall prevalence of OSA was 43.6%. The TyG index was significantly associated with overall OSA (adjusted odds ratio (aOR)=1.13; 95% confidence interval (CI), 1.05 to 1.22) and moderate to severe OSA (aOR=1.17, 95%CI=1.05, 1.32). MS significantly mediated 97.1% of the association between the TyG index and OSA. The area under the receiver operating characteristic curve of the TyG index for MS diagnosis were and 0.87.

Conclusions: TyG index was significantly associated OSA in the general population. And MS could fully explain the association between TyG index and OSA. TyG index is a satisfactory measure of metabolic dysfunction with relevance to OSA. Public health efforts aimed at the improvement of IR might decrease the risk of OSA due to MS and the burden of OSA.

Keyword: Triglyceride-glucose (TyG) index, Insulin resistance, OSA, Metabolic syndrome

The prevalence of obstructive sleep apnea in southern China: a study based on diverse population

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Background: Obstructive sleep apnea (OSA) has become a worldwide public health concern. However, the prevalence of OSA has been mainly selectively studied in populations at risk for OSA. No data are available on the prevalence of OSA in the general population of southern China.

Methods: This is a cross-sectional study conducted between 2021 and 2023. The sleep monitoring test was performed using a wearable type-IV sleep monitor. OSA was defined as an oxygen desaturation index (ODI) ≥ 10 and an ODI ≥ 15 indicating moderate to severe OSA.

Results: A total of 6573 participants were included in the study. The prevalence of overall and moderate to severe OSA was 22.5% and 16.2%, respectively. The standardized prevalence of OSA was significantly higher in men than in women (14.7% vs. 5.8%, $P < 0.001$). Multiple regression analysis showed that minority ethnicity (vs. the Han population, OR = 1.46, 95%CI: 1.08 to 1.97), Hoklo (vs. Yao region, OR = 0.26, 95%CI: 0.16 to 0.43) and Hakka culture region (vs. Yao region, OR = 0.33, 95%CI: 0.19 to 0.55) were significantly associated with OSA. Other risk factors associated with OSA included older age, male sex, higher education, waist circumference, obesity, hypertension, and dyspnea during sleep.

Conclusions: OSA is a common problem in southern China. Special attention should be paid to minorities and specific cultural regions in China.

Keyword: Obstructive sleep apnea, prevalence, minority, culture region, Southern China

儿童阻塞性睡眠呼吸暂停的多面性：对患病率、严重程度和并存条件的认识

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目的：儿童阻塞性睡眠呼吸暂停（OSA）通常与多种疾病并存。本研究旨在全面分析儿童 OSA 的患病率、严重程度及共患疾病情况。

方法：评估 OSA 患病率、严重程度及 OSA 与共患疾病之间的关联。

结果：最终确诊 OSA 1480 人。高发年龄在 4-8 岁，12 岁后减少。性别分布存男性 1266 人（65.66%）明显高于女性 662 人（34.34%），（ $p=0.01$ ）。其中，正常鼾症 448 人（23.23%）；轻度 OSA 1148 人（59.54%）；中度 OSA 为 226 人（17.2%）；重度 OSA 106 人（5.49%）。儿童 OSA 最常见共患疾病包括变应性鼻炎 1052（54.6%），肥胖 199（10.3%），鼻窦炎 128（6.6%），哮喘 102（5.3%）。随着共患疾病增多，2 期（浅睡眠）比例显著升高（ $p<0.05$ ），3 期睡眠（深睡眠）显著下降（ $p<0.05$ ）；阻塞性呼吸暂停低通气指数（OAHI）越高（ $p=0.005$ ）；总睡眠时间内的氧减指数 ODI）越高（ $p<0.05$ ），快眼动期及非快眼动期 ODI 下降均显著（ $p=0.005$ ）。

结论：儿童以轻中度 OSA 最为常见，共患疾病最常见为过敏性鼻炎，肥胖；对于中重度 OSA，密切关注遗传代谢性疾病、神经肌肉疾病；大多数病例需要切除腺样体和扁桃体，合并肥胖，神经肌肉疾病，遗传代谢及面部发育异常儿童，还需要联合无创正压通气治疗。

关键词：阻塞性睡眠呼吸暂停；共患疾病；过敏性疾病；儿童

Cerebellar–Whole Brain Functional Connectivity in Obstructive Sleep Apnea: A Static and Dynamic Analysis for Diagnosis and Symptom Prediction

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Background and Purpose: Patients with obstructive sleep apnea (OSA) experience cerebellar ischemia and hypoxia, which are associated with reduced blood flow and consequent neurological dysfunction. Therefore, it is important to identify biomarkers that can differentiate patients with OSA from healthy controls at an early stage. This study aimed to differentiate patients with OSA from healthy individuals and predict clinical symptoms alterations using cerebellum–whole–brain static and dynamic functional connectivity (sFC and dFC, respectively), with the cerebellum as the seed region.

Methods: Sixty patients with OSA and 60 healthy controls (HC) were included. Using the Seitzman Atlas, 27 cerebellar regions of interest were extracted. sFC was assessed using full time–series correlation, whereas dFC was quantified via sliding–window seed–voxel correlation analysis, with the standard deviation of FC across windows as the dFC measure. The sFC and dFC values were then combined and used in multiple machine learning models to distinguish patients with OSA from HC and predict the sleep quality, mood, and cognition severity of patients with OSA.

Results: Patients with OSA showed increased dFC in the superior and middle temporal gyri and decreased dFC in the middle frontal gyrus. Conversely, increased sFC was observed in the cerebellar lobule VI, cingulate gyrus, middle frontal gyrus, inferior parietal lobules, superior marginal gyrus, insula, and superior temporal gyrus. Combined dynamic–static FC features demonstrated superior classification performance using a support vector machine over other models, yielding an accuracy of 0.79 ($p < 0.05$), and an area under the receiving operating characteristic curve of 0.89 for discriminating patients with OSA from HC. In clinical symptom prediction, FC alterations maximally contributed to 30.11% of cognitive impairment, 55.96% of excessive sleepiness, and 27.94% of anxiety and depression.

Conclusions: Aberrant dFC and sFC alterations reflect brain network reorganization in patients with OSA. The combination of static and dynamic connectomics effectively differentiated patients with OSA from HC, with the support vector machine providing optimal classification. These unique FC patterns may serve as neuroimaging biomarkers and offer new insights into the pathogenesis of OSA–related cognitive, sleep, and mood disorders.

Keyword: obstructive sleep apnea, fMRI, dynamic connectomics, functional connectivity, machine learning, cerebellum

The Impact of Auditory Closed-Loop Stimulation on the Extinction of Fearful Emotional Memories During Sleep: Mechanisms and Implications for PTSD Treatment

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This study investigates the effects of auditory closed-loop stimulation on extinguishing fearful emotional memories during sleep, offering a novel intervention for PTSD. Thirty healthy college students participated, with EEG and SCR data collected. The intervention involved presenting auditory cues during the ascending phase of slow-wave activity in a 90-minute nap. Results showed significant reductions in fear memory expression and correlated Delta wave activity in the frontal lobe. These findings provide new insights into memory processing during sleep and suggest potential PTSD treatments.

The formation and maintenance of fearful memories are central to anxiety disorders such as PTSD. Slow oscillation (SO) activity during sleep is crucial for memory consolidation. This study explores the impact of auditory closed-loop stimulation on extinguishing fearful emotional memories during sleep, using targeted memory reactivation with an auditory fear conditioning paradigm. Our goal is to provide a novel intervention method for PTSD patients.

Thirty healthy college students participated, signing informed consent forms and completing questionnaires to exclude factors affecting sleep and emotions. Using the NeuroScan 64-channel EEG system and an MP150 multi-channel physiological recorder, we collected EEG and SCR data. The experiment had three phases: fear memory acquisition, a 90-minute nap with auditory closed-loop stimulation, and fear memory expression testing. Auditory cues were presented during the ascending phase of slow-wave activity, with blank control stimuli presented randomly.

Behavioral results indicated that auditory closed-loop stimulation during sleep significantly reduced the expression of fearful memories. Electrophysiological data revealed significant negative wave activity within an 800ms window post-auditory cue exposure, primarily in the frontal lobe. Correlation analysis showed a significant positive relationship between Delta wave activity and the extinction of fearful memories.

This study confirms that auditory closed-loop stimulation during sleep effectively reduces fearful memory expression, associated with Delta wave activity. These findings enhance our understanding of memory processing during sleep and support the development of novel PTSD interventions. This approach could significantly improve PTSD treatment by mitigating traumatic memory impacts.

Keyword: Sleep, Auditory Closed-Loop Stimulation, Fearful Memory, Memory Extinction, PTSD, Intervention Strategy

原发性醛固酮增多症导致睡眠相关肺泡低通气 1 例并文献复习

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目的：分析 1 例因原发性醛固酮增多症导致的睡眠相关肺泡低通气在低钾血症及原醛治疗前后其多导睡眠监测、动脉血气分析及夜间经皮二氧化碳监测变化特点。为日后临床工作提供诊疗思路及参考。

方法：分析 1 例因原发性醛固酮增多症导致的睡眠相关肺泡低通气在低钾血症及原醛治疗前后其多导睡眠监测、动脉血气分析及夜间经皮二氧化碳监测变化特点。并进行文献回顾总结可能的发病机制。

结果：低钾纠正前后 PSG 参数及整夜经皮二氧化碳监测结果有明显差异。行左侧肾上腺切除术后血钾、高血压五项卧位大致正常。术后 2 个月及术后半年复查 PSG、整夜经皮二氧化碳监测及血气分析大致正常。

结论：本例低钾血症继发于原发性醛固酮增多症，在低钾及原醛治疗前后呼吸暂停低通气指数 AHI、经皮及动脉血气二氧化碳、24 小时动态血压、肾素及醛固酮结果均表现出明显不同。本文旨在指导临床在严重低钾血症出现呼吸肌麻痹日间临床表现之前可能已经存在夜间肺泡低通气，经皮二氧化碳监测有助于临床医生及早发现，避免病情迁延出现严重的呼吸衰竭危及生命。同时也为睡眠相关肺泡低通气的病因诊断提供新的思路。

关键词：原发性醛固酮增多症，睡眠相关肺泡低通气，低钾血症，气道正压通气

Endothelial-dependent vasodilation contributes to acute blood pressure variations driven by obstructive sleep apnea events: a cross-sectional, exploratory study

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Study Objectives: Mechanisms behind obstructive sleep apnea (OSA) event-triggered acute blood pressure (BP) variations are still being explored. We aimed to assess the association between local vasodilation function and event-triggered BP variation.

Methods: Brachial artery flow-mediated dilation (FMD) and nitroglycerine-induced vasodilation (NID) were measured to assess endothelial and smooth muscle function, respectively. Event-triggered BP variation parameters, including BP surges, nocturnal BP fluctuations (NBPFs), NBPF/apnea-hypopnea index (AHI), BP peaks and valleys were collected. Comparisons between subgroups, stepwise multiple regression, and ordinal logistic regression analysis were used to explore factors associated with event-triggered BP variation in specific populations.

Results: In total, 177 patients with severe OSA and without co-morbidities were studied. In patients with normal endothelial function ($FMD \geq 10$), NBPFs, NBPF/AHI, and BP surges were significantly associated with FMD (all $P < 0.05$). The relationship between nocturnal BP variations and vasodilation function (FMD and NID) were not significant in patients with impaired endothelial function ($FMD < 10$). However, sympathetic activity markers were independently associated with BP variations in both patient subgroups (all $P < 0.05$). In ordinal logistic regression analysis, severe nocturnal BP variation in the normal endothelial function group was associated with increased sympathetic activity and higher FMD and sleepiness. In the impaired endothelial function group, only elevated sympathetic tone was associated with an increased risk of high BP variation.

Conclusions: This study has discovered that sympathetic activity is independently associated with OSA event-triggered BP variations regardless of vasodilation function. In the subgroup with normal endothelial function, a higher BP variation may be partly attributed to endothelial-dependent dilation.

Keyword: Obstructive Sleep Apnea, Event-triggered BP variation, Endothelium function, VSM function

主客观失眠临床特征及诊疗的研究进展

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目的：近年我国失眠障碍患病率呈显著上升趋势，普通人群失眠患病率为 29.2%。根据主客观失眠程度是否一致，将失眠障碍分为主观性失眠和客观性失眠。目前，临床上较少对这两种失眠表型进行区分治疗，但是以往研究表明这两种失眠表型的临床特征存在差异，且临床常用药物对矛盾性失眠的治疗效果欠佳。本综述旨在系统论述主客观失眠障碍的临床特征及诊疗的研究现状。

本综述旨在对这两种失眠表型的临床特征进行分析讨论，为临床区分这两种表型提供依据。

方法：在中国知网和 Pubmed 数据库检索近十年研究主客观失眠的文献。

结果：（1）主观性失眠与皮层觉醒相关，而客观性失眠与应激系统激活相关。（2）主观性失眠患者将睡眠状态感知为清醒可能与 N3 期睡眠和 REM 期睡眠的变化有关，也有研究认为主观性失眠患者 N3 期睡眠无变化；而客观性失眠患者主要表现为睡眠总时间降低、NREM 期睡眠百分比增加以及 REM 期睡眠百分比降低。（3）主观性失眠患者主要表现为工作记忆损伤，而客观性失眠主要表现为注意力和执行功能损伤。（4）失眠的认知行为治疗对主观性失眠疗效更好。

结论：主观性失眠和客观性失眠存在不同的临床特征并适用不同的治疗手段。

关键词：主观性失眠，客观性失眠，临床症状，治疗手段

Case Report: Comorbidity of Narcolepsy Type 1 and Epilepsy

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Narcolepsy type 1 (NT1) is a rare sleep disorder, mainly characterized by cataplexy, excessive daytime sleepiness, sleep paralysis, and hypnagogic hallucination. Cataplexy is defined as a situation of sudden muscle tone decrease and falling down without unconsciousness, usually triggered by strong emotions such as laughter and excitement. In clinical diagnosis, cataplexy can easily confuse with atonic seizures of epilepsy. Asymmetrical loss of facial or limb muscle tone in patients with NT1 is often considered as convulsive seizures. Myoclonus and atonia are often diagnosed as cataplexy.

We reported a case of narcolepsy type 1 (NT1) and epilepsy comorbidity. A 20-year-old girl appeared unconsciousness and sudden limbs shaking after the diagnosis of NT1 for 5 years. The 24h video-electroencephalographic findings showed abnormal epileptic discharges and video-polysomnography showed central hypersomnolence. The hypocretin-1 concentration in the cerebrospinal fluid of this patient was decreased and HLA DQB1*0602 allele was positive. We reviewed the available literature with 15 reported cases, to analysis the rare comorbidity and discuss on the possible coexistence mechanism and treatments of NT1 and epilepsy.

Keyword: narcolepsy type 1, epilepsy, comorbidity

中国汉族人群 REM 相关 OSA 的流行病学、临床特征及遗传性状相关位点研究

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研究目的：探讨汉族人群 REM 相关 OSA 的流行病学、临床特征和遗传表型。

方法：11278 名成人接受整夜多导睡眠监测筛查。根据快速眼动睡眠期（ AHI_{REM} ）和非快速眼动睡眠（ AHI_{NREM} ）期的呼吸暂停低通气指数（AHI）对 REM 与 NREM 相关 OSA 进行一级分类：1) $TST_{REM} > 30$ 分钟，2) $AHI_{REM}/AHI_{NREM} \geq 2$ 。进一步二级分类：1) REM 相关 OSA 组以 $AHI_{NREM} \geq 15/h$ 为标准，2) NREM 相关 OSA 组以 $AHI_{NREM}/AHI_{REM} \geq 2$ 为标准。同时采集人体测量学及生理、生化指标，并以 AHI_{REM} 和 REM 相关 OSA 为特征表型进行全基因组关联研究（GWAS）。

结果：研究共纳入 4833 人（3631 例 OSA，1202 例非 OSA），GWAS 分析纳入 3793 人（3317 例 OSA，476 例非 OSA）。REM 相关 OSA 患病率为 18.09%，好发于年龄较小、肥胖指数较低、生化指标较好、OSA 严重程度及夜间缺氧程度较轻的成年女性。GWAS 分析分别鉴定出 36 个（ AHI_{REM} 表型）和 4 个（REM_rOSA 表型）显著相关的 SNP 位点，其中共表达的基因位点为 *TBXAS1*、*SLC05A1*、*ABCA1* 和 *ZNF603P*。

结论：超过 1/6 的汉族 OSA 患者为 REM 相关 OSA，本研究在全基因组范围内发现了显著的性状表型相关位点，这为 REM 相关 OSA 的遗传学研究提供了新的见解。

关键词：阻塞性睡眠呼吸暂停；快速眼动眼期；患病率；特征；全基因组关联研究

Comparison of efficacy and safety of dual orexin receptor antagonists Lemborexant and Daridorexant for the treatment of insomnia: A systematic review and meta-analysis

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Objective: To systematically evaluate the clinical efficacy of lemborexant (LEM) and daridorexant (DAR) for the treatment of insomnia, including the difference in efficacy and safety.

Methods: In this systematic review and meta-analysis, we searched the randomized controlled trials (RCTs) comparing the efficacy and safety of LEM and DAR in patients with insomnia in PubMed, Cochrane Library, Web of Science, EMBASE, and SCOPUS databases from database inception to Mar 16, 2024. We used Cochrane Risk of Bias risk assessment tools to evaluate the quality of studies. Besides, Revman 5.3 were used to perform the meta-analysis and detect publication bias.

Results: A total of 8 RCTs with 5077 patients were included in this study, including 2239 in the LEM treatment group, 1397 in the DAR treatment group, and 1441 in the placebo (PBO) control group. Both LEM and DAR significantly improved sleep outcomes compared to placebo. LEM was more effective in reducing the time of wake after sleep onset (WASO) and improving subjective sleep onset latency (sSOL) than DAR. In terms of dosing, DAR at 50 mg demonstrated superior efficacy compared to the 5 mg, 10 mg, and 25 mg doses, indicating a dose-dependent effect. The efficacy of LEM was consistent across the 5 mg and 10 mg doses. Safety profiles revealed that DAR treatment was associated with higher rates of treatment-emergent adverse events (TEAEs) compared to placebo, particularly at the 25 mg dose, while LEM showed no significant difference in TEAEs rates compared to placebo. However, LEM was associated with a higher risk of somnolence compared to DAR.

Conclusion: Both LEM and DAR are effective and generally safe options for the treatment of insomnia, with LEM showing greater efficacy in improving WASO and sSOL. The choice between LEM and DAR should consider individual patient needs, including the risk of daytime drowsiness and other adverse events. Further direct comparative trials are needed to confirm these findings and inform clinical decision-making.

Keyword: lemborexant, daridorexant, insomnia, efficacy, safety, meta-analysis

基于蛋白组学的阻塞性睡眠呼吸暂停的生物标志物研究

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目的：阻塞性睡眠呼吸暂停（OSA）是复杂异质性疾病，目前 OSA 的诊疗体系仍有很大的局限性。本研究旨在探讨 OSA 生物标志物的阶段异质性特征，并进一步为疾病风险评估、早期损伤预警和疗效预测提供新的方法。

方法：通过严谨的实验设计和研究（包括 90 个样本的发现集、225 个样本的内部验证集、208 个样本的持续气道正压[CPAP]治疗队列的验证集和 150 个样本的外部验证集作为系列验证），将横断面研究与队列研究相结合。根据血清样品的蛋白组学检测结果，利用生物信息学分析方法对 OSA 的生物标志物进行了探索。

结果：在蛋白组学研究中，我们发现 OSA 受试者的蛋白组合和蛋白表达在各 OSA 严重阶段和 CPAP 治疗阶段都不同，即存在阶段异质性特征。蛋白组学筛选的生物标志物对不同严重程度 OSA 的诊断具有较高的准确性。基于蛋白组学生物标志物进行了分子分型，反映了 CPAP 治疗后对 OSA 相关多系统损伤、血压改善反应性的不同易感性。

结论：本研究鉴定出 OSA 各严重程度阶段的生物标志物组合。生物标志物的组合可以高精度地进行疾病诊断和风险识别。基于此的分子分型为疾病风险评估、早期损伤预警和疗效预测提供了新的方法。

关键词：阻塞性睡眠呼吸暂停，生物标志物，蛋白组学

Cerebral Activation and Network Connectivity in Chronic Insomnia Patients During a Verbal Fluency Task: Insights from Multi-Channel Near-Infrared Spectroscopy

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Background: Patients with chronic insomnia exhibit varying degrees of cognitive dysfunction. Dynamic functional connectivity helps us understand potential cognitive processes in the cerebral cortex. However, this has not yet been studied in patients with chronic insomnia. This study aimed to elucidate the differences between brain activity patterns in patients with chronic insomnia and healthy controls (HCs) using a verbal fluency task (VFT).

Methods: We recruited 84 patients with chronic insomnia and 81 HCs. Oxy-haemoglobin (Oxy-Hb) concentrations in the brains of the participants were monitored using functional near-infrared spectroscopy (fNIRS) while performing the VFT.

Results: During the task period, no significant difference was observed between the VFT results of the two groups; patients with chronic insomnia showed significantly less cortical activation in haemodynamic responses of oxy-Hb at channels and brain regions mainly located in the prefrontal cortex compared to HCs (false discovery rate-corrected $p < 0.05$). Moreover, the average channel-to-channel connectivity strength of patients in the chronic insomnia group was lower than that of those in the HC group ($t = -6.717$, $p < 0.001$).

Conclusion: Our study provides neurological evidence for the dynamic detection of executive function in patients with chronic insomnia. Compared to HCs, patients with chronic insomnia exhibit weaker levels of brain activity and reduced task-related functional connectivity.

Keyword: Chronic insomnia; Verbal fluency task; Cognitive dysfunction; Oxy-haemoglobin; Functional near-infrared spectroscopy

构建基于 ResNet-18 的 1 型发作性睡病猝倒面容预测模型

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目的 应用深度学习图像识别网络 ResNet-18，基于临床拍摄视频，建立猝倒面容预测模型。
方法 收集 2020 年至 2023 年在南昌大学第二附属医院首诊未经治疗的 1 型发作性睡病患者 25 例及健康对照 25 例，图像预处理后，共获得 1180 张图片，其中 583 张猝倒面容，597 张正常面容。从中抽取 90% 作为训练集与验证集，随后数据扩增 5 倍，扩充后的数据集抽取 80% 作为训练集，20% 作为验证集，训练集与验证集用于训练参数建立模型，并通过五折交叉验证法进行训练，构建采用迁移学习方式的 ResNet-18 猝倒面容识别模型。原未扩增前图像抽取 10%（118 张）作为测试集，测试集数据不参与数据增强和模型训练，仅用于测试模型最终效果。最后将 ResNet-18 与 VGG-16、ResNet-34 和 Inception V3 深度学习模型进行比较，用受试者工作特征曲线评估 ResNet-18 图像识别网络在猝倒面容识别中的价值。
结果 ResNet-18 图像识别网络在测试集中的总体准确率为 90.9%，灵敏度为 96.4%，特异度为 85.2%，受试者工作特征曲线下面积为 0.99（95%CI：0.96~1.00）。ResNet-18 模型参数量为 11.69 M，浮点运算量为 1 824.03 M，单张图片识别时间为 5.9 ms。
结论 ResNet-18 图像识别网络在猝倒面容的识别上有较高的准确率。

关键词：发作性睡病；猝倒；人工智能；图像处理；横断面研究

Cell-based vs enzyme-linked immunosorbent assay for detection of anti-Tribbles homolog 2 autoantibodies in Chinese patients with narcolepsy

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Study Objectives: Narcolepsy type 1 is attributed to a deficiency in cerebrospinal fluid orexin and is considered linked to autoimmunity. The levels of anti-Tribbles homolog 2 (TRIB2) autoantibodies are elevated in the sera of some patients with narcolepsy with cataplexy. Additionally, injecting mice with serum immunoglobulin from patients with narcolepsy with positive anti-TRIB2 antibodies can induce hypothalamic neuron loss and alterations in sleep patterns. Consequently, we hypothesized the existence of a potential association between anti-TRIB2 antibodies and narcolepsy. To test this possibility, we used cell-based assays (CBAs) and enzyme-linked immunosorbent assays (ELISAs) to detect the presence of anti-TRIB2 antibodies in Chinese patients with narcolepsy. **Methods:** We included 68 patients with narcolepsy type 1, 39 patients with other central disorders of hypersomnolence, and 43 healthy controls. A CBA and a conventional ELISA were used to detect anti-TRIB2 antibody levels in patients' sera.

Results: CBA was used to detect serum anti-TRIB2 antibodies in Chinese patients with narcolepsy, and the results were negative. However, when the ELISA was used, only 2 patients with narcolepsy type 1 had TRIB2 antibody titers higher than the mean titer plus 2 standard deviations of the healthy controls.

Conclusions: In our study, ELISA identified TRIB2 autoantibodies in sera of patients with narcolepsy where CBA failed to demonstrate them. Contrary to our hypothesis, this intriguing finding deserves further research to elucidate the potential association between TRIB2 and narcolepsy type 1. Exploring the implications of TRIB2 autoantibodies in narcolepsy and disparate outcomes between ELISA and CBA could provide crucial insights.

Keyword: narcolepsy; Tribbles homolog 2; TRIB2; cell-based assay; CBA; enzyme-linked immunosorbent assay; ELISA; autoantibodies

Efficacy and Safety of Shugan Jieyu Capsules in Combination with Zolpidem for Insomnia Disorder with Depressive Symptoms: A Double-Blind Randomized Controlled Trial

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Objective: Individuals with insomnia with depressive symptoms (IDDS) are at high risk for depression, and timely intervention in IDDS effectively prevents the occurrence of depression. This study aimed to investigate the therapeutic efficacy and safety of combining zolpidem, a commonly used hypnotic, with Shugan Jieyu capsules, a traditional Chinese antidepressant with a good safety profile, for the treatment of IDDS.

Methods: This study was a double-blind, parallel-group randomized controlled trial. Participants with IDDS were randomized 1:1 to receive oral zolpidem and Shugan Jieyu (ZS), or zolpidem and placebo (ZP) for 8 weeks. The following assessments were done: Insomnia Severity Index (ISI), Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety Disorder 7 (GAD-7), Pittsburgh sleep quality index (PSQI), and Epworth Sleepiness Scale (ESS); objective sleep parameters by polysomnography (PSG), including sleep latency (SL), wake after sleep onset (WASO), sleep efficiency (SE), and total sleep time (TST); subjective sleep parameters by sleep diary, including subjective SL (sSL), subjective WASO (sWASO), subjective SE (sSE), and subjective TST (sTST). Furthermore, subgroup analysis was carried out on IDDS with sleep fragmentation defined as WASO ≥ 30 minutes.

Results: Fifty-nine patients (ZS = 30, ZP = 29) underwent all outcome measurements at 8 weeks. Both groups showed significant improvements in ISI, PSQI, ESS, GAD-7, and PHQ-9, without between-group differences ($p > 0.05$). In PSG, the ZS group maintained a significant decrease in WASO and increase in TST at 8 weeks ($p < 0.05$), while the ZP group did not ($p > 0.05$), without significant between-group differences. ZS (-53.7 ± 3.65) led to a significant decrease in sSL from baseline to the fourth week relative to ZP (-41.5 ± 3.65), which persisted at eighth-week follow-up for ZS (-55.8 ± 3.46), but not for ZP (-43.6 ± 3.46), with a significant between-group difference ($p < 0.05$). ZS, but not ZP, also had beneficial effects on sSL and sSE in subgroup analysis with sleep fragmentation. Both interventions were well-tolerated, with no serious adverse events.

Conclusion: The combination of Shugan Jieyu and zolpidem induced sleep more rapidly as evidenced by decreased sSL, and led to sustained within-group objective improvements in TST and WASO. In the subgroup of IDDS patients with sleep fragmentation, the combination regimen improved both sSL and sSE.

Trial Registration: ClinicalTrials.gov Identifier: NCT05764798

Keyword: Insomnia, Depression, Anxiety, Sleep Disorders, Polysomnography, TCM

温立新运用红外热成像技术诊治更年期失眠经验

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失眠是更年期女性的常见症状之一，因更年期女性心理情绪问题突出，常与失眠症状相互影响，增加了更年期失眠的治疗难度，温立新教授认为临床中当辨明其失眠症状、情绪症状的类型和严重程度，同时区分失眠症状与其自身情绪症状之间的关系；红外热成像技术可反映人体脏腑、经络、气血的功能状态，在更年期失眠临床实践中，综合四诊，结合直观的图像特征，整体把握病例资料，能更精准地制定个体治疗方案，注意中西医结合治疗，适时使用认知行为疗法，能取得较满意的治疗效果。

关键词：红外热成像，更年期失眠，辨证分型，认知行为治疗

更年期肝郁化火型不寐者红外热图像特征研究

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目的 研究更年期肝郁化火型不寐患者红外热成像特征，为临床辨证提供参考。**方法** 随机选取2022年1月-2023年6月于福建中医药大学附属三明中西医结合医院就诊的更年期不寐患者60例作为更年期组，其中属肝郁化火型30例，非肝郁化火型30例，另招募健康体检中心60例青年健康女性作为青年组，测量并比较不同组人群在红外热成像上的五脏相应体表区（肝区、心前区、胸膈区、胃脘区、左右腰区）及左右肋区的热值的差异。**结果** 更年期组左右腰区热值高于青年组($P<0.05$)；更年期失眠肝郁化火组肝区、左右肋区热值高于更年期失眠非肝郁化火组 ($P<0.05$)，胃脘区热低于更年期失眠非肝郁化火组 ($P<0.05$)。**结论** 更年期失眠女性比正常青年女性更容易出现肾阴虚的情况，更年期失眠肝郁化火型组与其他证型相比，更容易出现肝、胃功能失的情况，红外热成像能反映更年期肝郁化火型不寐患者五脏相应体表区热度差异，在指导临床辨证上具有参考意义。

关键词： 红外热成像技术，更年期失眠，肝郁化火，不寐

Genome-Wide, Integrative Analysis Implicates Exosome-Derived MicroRNA Dysregulation in Chronic Insomnia

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Abstract

Background and Objectives

Insomnia, characterized by difficulty in initiating and sustaining sleep or waking prematurely without the ability to return to sleep, affects approximately 30% of the population. The underlying mechanisms of insomnia remain unclear and the objective diagnostic measures are scarce. It is an opportunity to explore the roles of peripheral blood exosomal miRNAs in insomnia patients.

Methods

Exosomal miRNAs were isolated from 20 insomnia patients and an equal number of healthy individuals. A comprehensive genome-wide miRNA expression analysis was conducted to identify differential miRNAs between the two groups. To evaluate the diagnostic potential of these miRNAs, receiver operating characteristic (ROC) curves were employed. Furthermore, Gene Ontology (GO) enrichment analysis and Kyoto Encyclopedia of Genes and Genomes (KEGG) pathway analysis were performed on the target genes of differential exosome miRNA to explore their regulated signaling pathways and molecular functions.

Results

We identified 51 differentially expressed miRNAs. Among these, miR-182-5p and miR-451a were markedly downregulated in patients as evidenced by their area under the curve (AUC) values. The areas under the ROC curves and 95% confidence intervals (CI) of miR-182-5p and miR-451a in predicting the possibility of chronic insomnia patients were 0.863 (95% CI, 0.75 - 0.97) and 0.813 (95% CI, 0.68 - 0.95). Coexpression network analysis and enrichment analysis of miRNA target genes shed light on the molecular pathophysiology of insomnia, including autophagy and mitophagy.

Discussion

Our pioneering findings pave the way for non-invasive diagnostics in insomnia, potentially revolutionizing its clinical management.

Keyword: Sleep disorders, Exosomes, MicroRNAs, Biomarkers.

个体化神经导航重复经颅磁刺激治疗慢性失眠的疗效：一项随机对照研究

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目的：探讨基于个体化结构核磁共振定位的背外侧前额叶（DLPFC）作为神经导航靶点的重复经颅磁刺激（rTMS）治疗慢性失眠（CID）的疗效及安全性。

方法：本研究共纳入 50 例 CID 受试者，随机分为个体化导航 rTMS 治疗组和等待治疗组，每组各 25 例。个体化导航 rTMS 治疗组接受为期 4 周，每周 5 次的基于个体化结构核磁共振定位右侧 DLPFC（MNI 坐标为：31, 42, 24）作为神经导航靶点的 1Hz rTMS 治疗，等待治疗组观察期间不接受任何治疗。两组患者均在基线期及完成试验后进行匹兹堡睡眠质量指数（PSQI）、失眠严重程度量表（ISI）、日间嗜睡量表（ESS）、焦虑自评量表（SAS）以及抑郁自评量表（SDS）评分。

结果：个体化导航 rTMS 治疗组与等待治疗组人口学特征及基线临床评估无显著差异（ $P>0.05$ ）。等待组治疗前后各项指标均无明显变化（ $P>0.05$ ）。个体化神经导航 rTMS 组治疗后 PSQI、ISI、ESS、SAS 和 SDS 总分明显降低（ $P<0.05$ ），根据 ISI 评分结果，个体化神经导航 rTMS 组的总体响应率为 68.18%，临床缓解率为 50%。两组治疗期间无明显不良事件发生。

结论：基于个体化结构核磁共振定位的低频 rTMS 刺激右侧 DLPFC 可以明显改善 CID 患者的睡眠障碍，缓解焦虑、抑郁等情绪障碍。值得临床进一步推广及探讨其机制。

关键词：失眠, 神经调控, 个体化, 经颅磁刺激

加味芍药甘草汤治疗原发性不宁腿综合征的临床疗效观察

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目的：观察加味芍药甘草汤治疗原发性不宁腿综合征（RLS）的临床疗效。方法：将2020年6月—2022年4月就诊于重庆市中医院的69例原发性RLS患者随机分为西药对照组、中药治疗组和中西医结合治疗组，各23例。治疗前后进行国际不宁腿综合征评分量表（IRLS）、匹兹堡睡眠质量指数（PSQI）、失眠严重指数（ISI）、焦虑自评量表（SAS）、抑郁自评量表（SDS）评分和安全性评价。结果：治疗后，中西医结合组IRLS和PSQI总分显著降低（ $P<0.05$ ），中药治疗组改善不宁腿严重程度和日间功能效果最佳（ $P<0.01$ ）。3组受试者治疗后ISI、SAS、SDS评分均下降，组内比较差异有统计学意义（ $P<0.05$ ）。3组受试者治疗后总有效率中西医结合组[86.96%（20/23）]较西药对照组[60.87%（14/23）]显著升高（ $P<0.05$ ）。治疗过程中未见不良反应。结论：加味芍药甘草汤及盐酸普拉克索片联合使用治疗原发性RLS优于单用西药，且安全性高，值得临床推广。

关键词：不宁腿综合征；加味芍药甘草汤；盐酸普拉克索片；睡眠；量表

中至重度阻塞性睡眠呼吸暂停风险预测模型研究

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研究目的:

本研究利用睡眠门诊患者的临床数据建立中重度 OSA 的风险预测模型, 并进行内部和外部验证。

研究方法:

南方医科大学南方医院的 841 名患者按 7:3 的比例随机分为训练集和内部验证集, 十堰市太和医院的 130 名患者为外部验证集。根据 AHI 将患者分为非中重度 OSA 组和中重度 OSA 组。通过 Lasso 回归筛选预测变量, 二元 Logistic 回归建立预测模型并绘制列线图。使用 ROC 曲线确定模型的最佳截断值并评价模型区分度。Calibration 曲线和 DCA 评价模型的准确性和临床效能。

研究结果:

预测模型共纳入 8 个预测变量: 年龄、性别、BMI、颈围、高血压史、打鼾、目击到的呼吸暂停和 PSQI 得分。除 PSQI 得分外, 其余变量均与中重度 OSA 风险正相关。预测模型区分中重度 OSA 的最佳截断值在训练集、内部验证集和外部验证集中的灵敏度分别为 83.8%、76.5% 和 60.4%, 特异度分别为 80.2%、76.8% 和 85.4%。ROC 曲线的曲线下面积分别为 0.888、0.872 和 0.880。Calibration 曲线和 DCA 表明模型在训练集和内、外部验证集中均具有较好的准确性和临床效能。

研究结论:

本研究建立的中重度 OSA 风险预测模型展现出较好的性能, 可用于临床实践。

关键词: 睡眠障碍, 阻塞性睡眠呼吸暂停, 临床预测模型

A cross-sectional study of physicians' knowledge, attitude, and practice associated with cognitive behavioral therapy for insomnia

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Objective: Cognitive behavioral therapy for insomnia (CBT-I) is recommended as the firstline treatment for insomnia disorders. However, the clinical application rate of CBT-I is 1% - 29%. The present study assessed physicians' knowledge, attitudes, and practices regarding CBT-I. **Method:** A cross-sectional study was conducted from May 8 to 26, 2021. Data were collected using an anonymous structured self-administered questionnaire with 19 questions on the knowledge, attitude, and practices about CBT-I. Multivariable logistic regression analysis was performed to identify factors contributing to physician practices regarding CBT-I. **Results:** The sample comprised 1494 physicians. Of these, 27.2% knew CBT-I core components, 86.1% believed it to be a first-line treatment for patients, and 64.1% had recommended CBT-I. Multivariable logistic regression analysis indicated that physicians who were female (odds ratio [OR], 0.76; 95% confidence interval [CI], 0.57 - 0.99; $p = 0.045$), aged 31 - 40 years (OR, 2.62; 95% CI, 1.59 - 4.31; $p < 0.001$), Bachelor's degree or below (OR, 1.36; 95% CI, 1.01-1.82; $p = 0.043$), unknown about stimulus control (OR, 0.67; 95% CI, 0.50-0.91; $p = 0.01$), subjective unknown about CBT-I (OR, 0.09; 95% CI, 0.07-0.11; $p < 0.001$) and negative attitude to CBT-I (OR, 0.37; 95% CI, 0.26 - 0.54; $p < 0.001$) were associated with motivating patients to engage in CBT-I. **Conclusions:** Physicians have positive attitudes and perceptions of CBT-I practice. Nevertheless, their knowledge about promoting CBT-I application should be improved.

Keyword: Knowledge, Attitude, Practice, Cognitive behavioral therapy for insomnia

Case series and literature review on phenotypic variants of restless legs syndrome (RLS): a chapter of the typical RLS?

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Objective: The knowledge on the variant restless legs syndrome (RLS) is not well-known so far. We aimed to explore the clinical features and potential diagnostic indicator of variant RLS through eight cases and the relevant literature review.

Methods: Eight patients with variants RLS were collected from the sleep medicine center of West China Hospital and followed up till February 2024. Demographic and clinical information were documented in medical recordings. Questionnaires were used to rate the severities of RLS symptoms (International RLS Rating Scale), sleep disturbance (Insomnia Severity Index and Pittsburgh Sleep Quality Index), and daytime dysfunctions (Hamilton Anxiety Scale, Hamilton Depression Scale-17, and Epworth Sleepiness Scale). Polysomnography and blood tests (e.g., iron metabolism) were conducted in partial cases. A systematic review was performed and the above-mentioned comparable data in literature cases were analyzed.

Results: A total of eight cases (57.0 ± 15.7 years, 5 females) were enrolled, and 50% were classified as early-onset subtype. Six cases reported isolated abnormal sensation and the most affected region was abdomen, then two cases had scattered paresthesias involved legs. The results of questionnaire assessments showed severe symptoms of variant RLS, night sleep disturbance, and anxiety symptom in most cases. Dopaminergic agents were effective in improving the discomforts in seven cases. There were 62 studies containing 430 cases of variant RLS analyzed, and a female preponderance and the most affected region in arms were found. Then, the results in 70 literature cases proved the divergent symptoms and early-onset feature in variant RLS. More importantly, the periodic limb movement index (PLMI) in two thirds of the variant RLS cases were greater than 15 events/h, but the value in leg-free cases was still lower than those involved legs (9.67 ± 11.04 vs. 36.33 ± 14.36 , $p < 0.01$).

Conclusions: The clinical features and dopamine responsiveness of variant RLS were highly in accordance with the typical RLS. It indicates that the diagnostic criteria and therapeutic measures of typical RLS may have comparable values for the variant phenotypes in clinical practice. Notably, PLMI might act a role in predicting the spreading and progression of the variant RLS, which implies the possibility of symptoms developing to the legs.

Keyword: Restless legs syndrome (RLS), variant, periodic limb movement index (PLMI), diagnosis, paresthesia

eCBT-I 治疗失眠障碍伴焦虑抑郁的临床疗效及其影响因素分析

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目的 观察数字化失眠认知行为疗法（eCBT-I）治疗失眠障碍伴焦虑抑郁患者的临床疗效，并探讨可能影响临床疗效的因素，为 eCBT-I 在临床大规模推广应用提供科学依据。

方法 收集 2022 年 12 月至 2023 年 12 月就诊于内蒙古自治区精神卫生中心门诊的失眠障碍伴焦虑抑郁患者，随机分为 eCBT-I 组和在线睡眠卫生教育（eSHE）组。治疗共四阶段，治疗周期为四周。基线时采集人口学信息，评定匹兹堡睡眠质量、失眠严重程度指数量表、汉密尔顿焦虑、抑郁量表，同时采用重复性成套神经心理状态测验评估认知功能，分别在治疗结束时（访视期 1）、治疗结束后第 1 个月（访视期 2）、治疗结束后第 3 个月（访视期 3）进行随访评估。本研究主要采用重复测量方差分析、Logistic 回归分析， $P < 0.05$ 表示有统计学意义。

结果: eCBT-I 组 PSQI、ISI、HAMA、HAMD 量表总分在访视期 1、2、3 结束时低于 eSHE 组，RBANS 测验总分在访视期 1 结束时高于 eSHE 组。减药率在访视期 1、2、3 结束时高于 eSHE 组。治疗技术和文化程度对疗效的影响有统计学意义（ $P < 0.05$ ）。

结论:（1）相比于 eSHE，eCBT-I 能更好地帮助失眠障碍伴焦虑抑郁患者改善失眠症状，提高主观睡眠质量，减轻焦虑抑郁情绪，改善认知功能、减少催眠药物的使用，且疗效至少维持 3 个月，应在临床大力推广应用。

（2）治疗技术、文化程度是影响临床疗效的因素。

关键词: 数字化认知行为疗法；失眠障碍；焦虑抑郁；疗效

An in- depth analysis of postoperative insomnia in elderly patients and its implications on rehabilitation

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Study Objective: Postoperative insomnia in the elderly has been neglected, and its long-term outcomes are unclear. Our study aimed to (1) assess the incidence of postoperative insomnia; (2) identify the risk factors for postoperative insomnia before exposure to surgery; and (3) explore the impact of postoperative insomnia on rehabilitation.

Methods: We conducted a study with 132 participants aged ≥ 65 years undergoing spine interbody fusion. We collected the basic data of demography, Numeric Rating Scales (NRS), Pittsburgh Sleep Quality Index (PSQI), Geriatric Depression Scale (GDS), etc. We measured Quality of Recovery 40 (QoR-40), GDS, PSQI, etc. on the first and the third nights post-surgery, followed by QoR-40 and NRS assessments two weeks after surgery. Complications, length of hospital stay, length of postoperative hospital stay, and hospital expenses were also recorded. Subjects were required to keep a sleep diary throughout the study.

Results: The cases of postoperative insomnia on the first, the third, and two weeks nights after surgery were 81 (61.36%), 72 (54.55%), and 64 (48.48%), and type of insomnia had no difference ($P = 0.138$). Sleep efficiency on the first night was $49.96\% \pm 23.51$. On the first night of postoperative insomnia, 54 (66.67%) cases were depression or anxiety, and PSQI was higher than the group without anxiety or depression ($P < 0.001$). PSQI, GDS, and the time of surgery were related factors for postoperative insomnia (PPSQI < 0.001 , PGDS = 0.008, PTime = 0.040). Postoperative rehabilitation showed differences between the insomnia and non-insomnia groups ($P < 0.001$).

Conclusion: Our findings revealed that the prevalence of postoperative insomnia was high, and sleep efficiency was low. PSQI, GDS, and the time of surgery were related factors for postoperative insomnia. Our results indicated that postoperative insomnia had a significant correlation with postoperative rehabilitation. Intervention in risk factors may reduce the incidence of postoperative insomnia and warrant future research.

Keyword: Sleep loss, Spine interbody fusion, Risk factor, Postoperative rehabilitation

Study on Gamma sensory flicker for Insomnia

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ABSTRACT Objectives: Insomnia has been the subject of much systematic research because it is a risk factor for a variety of diseases. There is some evidence that gamma sensory stimulation therapy has also been demonstrated to improve sleep quality for people with Alzheimer's disease. However, it is unclear whether this method is effective for treating insomnia. The principal objective of this project was to investigate the efficacy and safety of gamma sensory flicker in improving the sleep quality of insomnia patients. **Methods:** Thirty-seven participants with insomnia were recruited for this prospective observational study. For a duration of 8 weeks, participants were exposed to flicker stimulation through a light and sound device. **Results:** During the main phase of the study, adherence rates averaged 92.21%. Additionally, no severe adverse events were reported for flicker treatment. Analysis of sleep diaries indicated that 40Hz flickers can enhance sleep quality by reducing sleep onset latencies, and arousals, and increasing total sleep duration. **Conclusions:** Gamma sensory flicker improves sleep quality in people suffering from insomnia.

Keyword: insomnia; gamma sensory flicker; sleep quality; adherence; feasibility trial

Quality of Sleep Data Validation From the Multimodal Sleep and Respiratory Monitoring System Against Polysomnography: Comparison Study

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Background: In recent years, portable sleep monitors have become popular because they are more convenient than polysomnography (PSG). Although most studies have evaluated these devices for sleep staging and breathing events, these devices are insufficient for the diagnosis of sleep disorders.

Objective: In this study, we compared the performance of a portable sleep monitor, the multimodal sleep and respiratory monitoring system (MSRMS), against that of polysomnography in people with sleep disorders. We measured total sleep time (TST), sleep onset latency (SOL), wake after sleep onset (WASO), sleep efficiency (SE), N1 percentage, N2 percentage, N3 percentage, REM percentage, the apnea-hypopnea index (AHI) and the periodic leg movement during sleep index (PLMSI). Each record was then analyzed by automatic algorithms to diagnose sleep disorders.

Methods: People who participated in a polysomnography study at a sleep unit were enrolled. In total, 30 adults with sleep disorders were tested on two nonconsecutive nights in a sleep laboratory with PSG and MSRMS.

Results: Overall, the MSRMS was able to distinguish the TST, N1 percentage, N2 percentage, AHI and PLMSI. It significantly overestimated the SOL and REM percentage. In addition, it underestimated the SE ($P=.003$), WASO ($P<.001$), and N3 percentage ($P=.02$). Additionally, Bland–Altman analysis comparing these parameters determined by MSRMS to those determined by PSG revealed good agreement. Moreover, the MSRMS was used in the diagnosis of obstructive sleep apnea (OSA), with an accuracy of 83% and substantial agreement ($\kappa=0.729$) with PSG. There was an accuracy of 83% and moderate agreement ($\kappa=0.444$) in the diagnosis of periodic leg movement during sleep (PLMS).

Conclusions: The MSRMS can potentially be used to monitor sleep in homes, community hospitals and nursing homes. Moreover, the use of MSRMS could promote the early diagnosis of sleep disorders and reduce the risk of other important comorbidities.

Keyword: sleep measurement; automatic diagnosis; wearable device; polysomnography.

发作性睡病临床表型的相关研究进展

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目的：发作性睡病是一种睡眠觉醒维持困难的疾病。传统所认识的临床表现包括日间过度思睡、猝倒、睡眠瘫痪及睡眠幻觉。但是发作性睡病临床表型复杂，临床变异大。随着对本病研究和认识的加深，近几年关于表现的研究进展进行综述，以提高对本病的识别。

方法：使用“narcolepsy phenotype”或者“narcolepsy clinical manifestation”作为关键词在 PUBMED、Web of science 中进行搜索，并对相关文献进行综述。

结果：异常的快速眼动（REM）睡眠在 1 型发作性睡病 (Narcolepsy type 1, NT1) 中的发现为理解发作性患者的睡眠和睡眠异常提供了有价值的见解。最近的研究集中在确定发作性睡病不同表型，H1N1 感染后的 NT1 在未服药的青少年中显示出高患病率的 ADHD 症状。另外，发作性睡病儿童患者体重快速增加表型的特征，揭示潜在的代谢意义。此外，有研究探讨了发作性睡病中 HLA-DQB1*06:02 与脑脊液食欲素水平的相关性。然而，2 型发作性睡病表型多变，可靠的生物标志有限。

结论：综上所述，REM 睡眠行为异常、快速体重增加、H1N1 感染、HLA-DQB1*06:02 与发作性睡病，尤其是 NT1 有高度相关性。未来的研究需要进一步阐明在不同病程时间点上的发作性睡病表型。

关键词：

经颅直流电刺激在失眠障碍伴焦虑中的作用研究

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目的:

本研究应用经颅直流电刺激 (tDCS) 对失眠伴焦虑患者进行干预, 评估 tDCS 对失眠伴焦虑的治疗作用。

方法:

收集 30 例于我院神经内科睡眠中心首诊的失眠伴焦虑患者作为病例组, 收集 30 例年龄、性别相匹配的健康志愿者作为健康对照组。收集所有受试者的一般临床资料、失眠及焦虑相关量表、PSG 参数、促肾上腺皮质激素释放激素 (CRH) 水平及动态脑血流调节功能 (CA) 参数。病例组患者接受 14 天连续的 tDCS 治疗, 每天 20 分钟, 电流为 1.1mA。治疗结束后再次评估病例组患者的上述指标, 评估 tDCS 治疗后患者失眠症状、焦虑症状、自主神经功能是否改善。应用 SPSS27.0 统计软件分析数据。

结果:

- 1、tDCS 治疗后, 病例组患者 PSG 显示患者睡眠效率较治疗前显著提高, 睡眠潜伏期较治疗前缩短, N2 期睡眠百分比较治疗前缩短。
- 2、tDCS 治疗后, 病例组患者的血清 CRH 较治疗前下降。
- 3、将 30 个病例组患者按照 HAMA 分数分为失眠伴轻度焦虑组 (14 分 \leq HAMA $<$ 21 分)、失眠伴中度焦虑组 (21 分 \leq HAMA $<$ 29 分)、失眠伴重度焦虑组 (HAMA \geq 29 分)。tDCS 治疗后, 失眠伴重度焦虑组患者大脑半球相位差较治疗前增高。

结论:

- 1、tDCS 可以提高失眠伴焦虑患者的睡眠效率, 缩短睡眠潜伏期。
- 2、tDCS 可以降低失眠伴焦虑患者血清 CRH 水平。
- 3、tDCS 可以改善失眠伴重度焦虑患者动态脑血流调节功能。

关键词: 失眠障碍伴焦虑, 经颅直流电刺激, 促肾上腺皮质激素释放激素, 动态脑血流调节功能

阻塞性睡眠呼吸暂停低氧负荷与高血压发病关联性:一项大规模横断面研究

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目的:

阻塞性睡眠呼吸暂停(OSA)与高血压的发生发展具有双向性。既往研究表明,低氧负荷(HB)可以更好地量化OSA严重程度、评价并发症风险。本研究旨在通过大样本横断面研究,阐述HB在预警OSA中高血压发病的优势及临床意义。

材料与方

本研究收集在我院睡眠实验室进行检查的疑似OSA患者。通过共线性诊断调整潜在混杂因素,以评估HB和OSA与高血压的关联性。根据是否诊断OSA及OSA严重程度进行分层,分别根据HB四分位数,利用logistic回归模型评估HB在高血压发病中的作用。

结果:

共纳入4287例OSA(其中轻度840例、中度841例、重度2606例)及821例单纯鼾症(PS)患者。HB增大与OSA组($p < 0.001$)及PS组($p < 0.05$)的高血压发生率升高正相关,在OSA组中 $58.22 \leq HB < 137.69$ 、 $137.69 \leq HB < 281.05$ 和 $HB > 281.05$ 的患者高血压发生率较 $HB < 58.22$ 的患者分别增高61.2%、81.2%和97.0%(all $p < 0.001$),在PS组中 $HB > 14.21$ 比 $HB \leq 3.07$ 的患者更容易出现高血压($p < 0.05$)。按OSA严重程度分层后,HB与高血压的显著关联在中度和重度OSA中更为显著($p \leq 0.001$)。

结论:

HB与OSA患者高血压发生率呈正性剂量依赖性关联。HB的影响受OSA严重程度的调节。HB可能与OSA患者表现出的心血管疾病风险增加有关。

关键词:阻塞性睡眠呼吸暂停;低氧负荷;高血压;发病率

The Multifaceted Impact of Obstructive Sleep Apnea and Insomnia: A Comprehensive Analysis of Clinical Manifestations, Comorbidities, Sleep Monitoring, and Blood Markers

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Objective: This study aims to explore the impact of obstructive sleep apnea (OSA) and its comorbidity with insomnia (COMISA) on demographics, clinical features, comorbidities, polysomnography (PSG), and blood test.

Methods: This cross-sectional study included 903 participants divided into four groups: healthy controls, insomnia without OSA, OSA without insomnia, and COMISA. All participants underwent clinical assessment and PSG. Insomnia was diagnosed according to ICSD-3 criteria, and OSA was diagnosed based on an apnea-hypopnea index ≥ 5 events/hour. Chi-square test and Mann-Whitney U test were used to analyze differences in categorical and numerical variables, respectively.

Logistic regression and generalized linear regression were used to analyze associations between different groups. $P < 0.05$ was considered statistically significant.

Results: Significant differences were observed in demographics, clinical features, comorbidities, scale evaluations, PSG, and blood tests among those with OSA. Higher probabilities of OSA were found in males (OR=2.12, 95% CI: 1.42-3.18), age (OR=1.04, 95% CI: 1.03-1.06), body mass index (OR=1.18, 95% CI: 1.10-1.26), and snore (OR=2.73, 95% CI: 1.90-3.91). The OSA group had lower probabilities of using sleeping pills (OR=0.54, 95% CI: 0.37-0.78) and experiencing work-related impacts (OR=0.60, 95% CI: 0.44-0.82) but higher incidences of nocturia (OR=1.58, 95% CI: 1.20-2.08), hypertension (OR=3.07, 95% CI: 2.27-4.15), heart disease (OR=1.79, 95% CI: 1.22-2.64), diabetes (OR=1.99, 95% CI: 1.30-3.04), and cerebrovascular diseases (OR=1.45, 95% CI: 1.03-2.04). PSG results showed that the OSA group had significantly increased N1% ($\beta=1.79$, 95% CI: 1.22-2.64), wake after sleep onset ($\beta=0.56$, 95% CI: 0.47-0.64), and arousal index ($\beta=0.53$, 95% CI: 0.45-0.60), while N2% ($\beta=-0.06$, 95% CI: -0.08- -0.03), N3% ($\beta=-0.18$, 95% CI: -0.32- -0.05), sleep onset time ($\beta=-0.20$, 95% CI: -0.34- -0.06), and sleep efficiency ($\beta=-0.17$, 95% CI: -0.22- -0.11) were significantly reduced. Blood tests revealed that the OSA group had significantly lower white blood cell counts ($\beta=-0.98$, 95% CI: -1.11- -0.86), while neutrophil count ($\beta=0.08$, 95% CI: 0.03- 0.13), alanine aminotransferase ($\beta=0.34$, 95% CI: 0.26- 0.42), alanine aminotransferase ($\beta=0.07$, 95% CI: 0.00- 0.14), total bilirubin ($\beta=0.07$, 95% CI: 0.01- 0.21), direct bilirubin ($\beta=0.13$, 95% CI: 0.05- 0.21), creatinine ($\beta=0.15$, 95% CI: 0.10-0.20), urea nitrogen ($\beta=0.09$, 95% CI: 0.05-0.13), creatine kinase ($\beta=0.41$, 95% CI: 0.29- 0.52), and uric acid ($\beta=0.17$, 95% CI: 0.12- 0.21) were significantly elevated.

Conclusion: This study indicates that OSA significantly affects various health parameters, highlighting the importance of comprehensive evaluation of sleep

disorders in clinical practice, especially for patients with comorbid OSA, to develop and implement personalized treatment plans.

Keyword: obstructive sleep apnea, insomnia, polysomnography, blood test

肠道菌群在阻塞性睡眠呼吸暂停综合征相关肝脏脂肪变性中的作用

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目的：肥胖及其并发症是阻塞性睡眠呼吸暂停综合征（OSA）和代谢紊乱的重要危险因素，肠道菌群能通过下游代谢物影响肝脏组织，但肠道菌群在 OSA 相关肝脏脂肪变性中的确切作用尚不清楚。

方法：纳入 2022 年 6 月—2023 年 12 月就诊于山东大学齐鲁医院的耳鼻咽喉科的 381 名患者，并行睡眠监测，收集其临床资料、生化指标、粪便等。然后，普通和高脂饮食（HFD）喂养的小鼠分别接受慢性间歇性低氧（CIH）处理 8 周，并与常氧对照组进行比较。采用 16S rRNA 扩增子测序、非靶向液相色谱-串联质谱法以及肝脏的组织学评估来研究 CIH 条件下微生物组、代谢组和肝脏脂肪变性之间的相关性。

结果：OSA 患者丙氨酸氨基转移酶水平显著升高，肝脏脂肪变性的定量诊断指标—CAP 也显著升高；16S rRNA 基因测序结果显示，OSA 患者肠道菌群 β 多样性显著降低，与对照组相比，OSA 组 *Clostridium* 菌等 7 个关键菌种显著上调，1 个关键菌种显著下调。动物实验发现，CIH 能够调节肠道微生物（如 *Akkermansia muciniphila.*, *Clostridium* spp.）和功能代谢物（如色氨酸、游离脂肪酸、支链氨基酸和胆汁酸）的丰度，CIH 显著诱导 *Clostridium* spp. 丰度的上调与脂肪酸代谢功能密切相关。

结论：OSA 患者肝脏脂肪变性程度较高，且 OSA 通过对肠道菌群及宿主代谢产生不利影响导致肝脏脂肪变性。

关键词：阻塞性睡眠呼吸暂停, 肠道菌群, 肝脏脂肪变, *Clostridium*

Causal Effects of CSF Metabolites on Rapid Eye Movement Sleep Behavior Disorder Risk

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Objectives: Metabolic disturbances are hallmark features of sleep disorders. Metabolite and rapid eye movement sleep behavior disorder (RBD) studies have yielded mixed results, and evidence of causal relationships between cerebrospinal fluid (CSF) metabolites and RBD is lacking. Therefore, the metabolite phenotypes associated with RBD should be identified.

Methods: We extracted 338 CSF metabolites from published genome-wide association studies (GWASs) and conducted comprehensive Mendelian randomization (MR) analyses to evaluate the associations between metabolites and RBD. The Cochran Q test, MR-Egger intercept test, MR-PRESSO, Steiger test, and leave-one-out method were used to test robustness. Extended analysis was performed using three major clinical manifestations of RBD from independent data sources. Multivariate MR (MVMR), LDSC and metabolite pathway analyses were used to evaluate the independent effects of exposure factors and enhance our understanding of the related genetics.

Results: Genetically predicted CSF metabolites were causally associated with RBD, with 7 protective and 6 harmful candidate CSF metabolites. After the FDR test, N-acetylglucosamine/N-acetylgalactosamine (GlcNAc/GalNAc) (PFDR= 0.013) and 5-methylcytidine (PFDR= 0.014) were still significant candidates. Sixteen potentially relevant candidates were found in extended analyses, including 2 repeatedly reported metabolites. After adjusting for 6 common RBD risk factors using MVMR, 10 metabolites remained significant. Metabolite pathway analyses supported the critical role of arginine biosynthesis. Reverse MR and sensitivity analyses confirmed the robustness of these associations.

Conclusion: This study highlights the potential beneficial or detrimental causal effects of alterations in CSF metabolites on RBD risk, providing novel evidence and insights into the mechanisms underlying RBD and its associations with neurodegenerative diseases. These findings may contribute to the prevention, early diagnosis, and precise treatment of RBD.

Keyword: Rapid eye movement sleep behavior disorder; Mendelian randomization; Cerebrospinal fluid; Metabolites

虚拟现实技术对睡眠障碍患者负面情绪及睡眠质量的影响

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目的：探讨虚拟现实技术（VR）对睡眠障碍患者负面情绪及睡眠参数的影响。方法：选取池州市第三人民医院 2022 年 11 月至 2024 年 3 月收治的睡眠障碍患者 86 例，采用随机数字表法随机分为对照组和试验组，各 43 例；对照组主要接受常规药物治疗和健康宣教，试验组在常规治疗基础上行 VR 治疗，5 次/周，共 8 周。在治疗前和治疗后，对所有患者应用汉密尔顿焦虑量表（HAMA）和汉密尔顿抑郁量表（HAMD）评估患者负面情绪状况，利用心肺耦合睡眠质量评估便携设备 CPC 评估睡眠状况。结果：①治疗前两组患者 HAMA 评分、HAMD 评分、总睡眠时间、熟睡时间、潜睡时间、睡眠效率方面，无统计学差异。②与治疗前相比，两组患者 HAMA 评分和 HAMD 评分均明显降低；与对照组相比，实验组 HAMA 评分及 HAMD 评分降低更为明显，差异具有统计学意义（ $P < 0.05$ ）。③与治疗前相比，两组患者总睡眠时间、熟睡时间、潜睡时间、睡眠效率均有改善；与对照组相比，实验组总睡眠时间、熟睡时间、潜睡时间、睡眠效率方面改善更为明显，差异具有统计学意义（ $P < 0.05$ ）。结论：在常规治疗基础上辅以 VR 治疗可以帮助改善睡眠障碍患者负面情绪，提升睡眠质量。

关键词：虚拟现实技术；睡眠障碍；焦虑；抑郁

急性缺血性脑卒中合并 OSA 患者生物学标志物研究

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目的：研究急性缺血性脑卒中合并不同程度阻塞性睡眠呼吸暂停低通气综合征（OSA）患者血清纤维蛋白原、E-选择素、组织型纤溶酶原激活物（t-PA）的表达，以及其在诊断急性缺血性脑卒中合并 OSA 的诊断价值。

方法：我们收集 2023 年 1 月至 2023 年 12 月就诊于吉林大学第一医院神经内科的急性缺血性脑卒中患者，最终 60 例患者在发病 7 天内完成 NIHSS 量表、ESS 量表、STOP-Bang 量表和多导睡眠监测，分为非暴露组 15 例（急性缺血性脑卒中不伴 OSA），暴露组 45 例（急性缺血性脑卒中伴 OSA）。采用酶联免疫吸附法检测纤维蛋白原、E-选择素和 t-PA 的血清水平。

结果：急性缺血性脑卒中合并 OSA 患者多导睡眠监测中觉醒指数和氧减指数增加（ $P < 0.001$ ），最低及平均血氧饱和度降低（ $P < 0.001$ ）。中-重度暴露组患者血清纤维蛋白原，E-选择素 和 t-PA 水平显著高于非暴露组（ $P < 0.001$ ），并与 OSA 严重程度呈正相关。血清中纤维蛋白原、E-选择素和 t-PA 含量分别与 PSG 做诊断试验评价的 ROC 曲线结果显示，FIB、E-选择素和 t-PA 的敏感性分别为 84.4%、80%、82.2%；FIB、E-选择素和 t-PA 的特异性分别为 60%、66.7%、66.7%。

结论：急性缺血性脑卒中合并 OSA 患者血清纤维蛋白原、E-选择素和 t-PA 的表达均升高，并与 OSA 的严重程度有直线相关性。

关键词：急性缺血性脑卒中，纤维蛋白原，E-选择素，t-PA

慢性失眠的舌象特征研究

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目的：探讨慢性失眠患者舌象特征。方法：纳入慢性失眠患者 211 例，先与健康人 110 名进行舌象 指标分析；再把失眠者辨为 4 种证型，比较各证型的舌色、舌象纹理及舌苔指数指标。结果：与健康组比较，失眠组舌质、舌苔 S、a、b、Cr、ASM 值更高，舌质 I、Y、Cb 及舌质、舌苔的 CON、ENT、MEAN，Per-all 更低（ $P<0.05$ ）。与痰热扰心、心脾两虚证比，肝火扰心、心肾不交证舌质 a 值更高，舌质、舌苔 L 值更低；Per-all 值 更低。痰热扰心证舌质 CON、ENT，舌苔 MEAN 高于心肾不交、心脾两虚证（ $P<0.05$ ）。结论：慢性失眠者舌质 更红、舌色更暗、饱和度更高，舌纹理更细腻，舌苔面积较小。肝火扰心、心肾不交证舌质更红。痰热扰心、心脾两虚证舌质、舌苔亮度较高，舌苔面积更大。痰热扰心证舌质、舌苔纹理更粗糙。

关键词：舌诊；舌象图像；慢性失眠；四诊信息化；中医证型

中药复方对不同证型慢性失眠患者舌象图像 指标的影响

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目的：探讨辨证运用中药复方对痰热扰心证、心肾不交证慢性失眠患者舌象图像指标的影响。方法：于2021年1月1日—12月31日上海市黄浦区香山中医医院收集慢性失眠患者31例，其中，痰热扰心证13例，心肾不交证18例。各服用中药复方8周，分别检测服药前及服药第2、4、6、8周的舌象图像，以及服药前、服药第4和8周匹兹堡睡眠质量（PSQI）量表并分析。结果：痰热扰心证慢性失眠患者服药后第2、8周，舌质、舌苔S值较服药前显著增高（ $P<0.01$ ），L值显著降低（ $P<0.01$ ）；服药后第2、6、8周，舌苔CON、ENT、MEAN值显著降低（ $P<0.05$ ， $P<0.01$ ）；心肾不交证慢性失眠患者服药后第4、6、8周，舌质a值较服药前显著降低（ $P<0.05$ ， $P<0.01$ ）。整体变化呈线性趋势（ $P<0.05$ ）。结论：辨证运用中药对不同证型慢性失眠舌象图像指标有影响。舌象客观指标应用于中药治疗失眠的疗效评价具有可行性。

关键词：舌诊；慢性失眠；四诊信息化；疗效评价；不寐；痰热扰心；心肾不交

矛盾性失眠的睡眠结构特征—基于多导睡眠图的系统分析研究

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目的: 矛盾性失眠 (Paradoxical insomnia, PI) 又叫睡眠感知障碍或假性失眠, 其特征是患者在主观上存在睡眠感知偏差, 多表现为高估睡眠潜伏期和入睡后清醒时间以及低估总睡眠时间和睡眠效率。多导睡眠图 (PSG) 在临床诊断 PI 中具有重要作用, PSG 客观参数与主观睡眠参数之间的差异是诊断 PI 的金指标。睡眠纺锤波与睡眠障碍、神经系统疾病以及多种精神疾病密切相关。本研究系统评估了 PI 研究中 PSG 特征结构以及纺锤波的密度特征, 为临床诊断 PI 的 PSG 特征判别提供可靠依据。

方法: 本研究文献检索涉及 6 个数据库 (PubMed, Web of Science, Cochrane Library, Embase, Scopus 和 PsycINFO), 检索日期至 2023 年 11 月 20 日。文献筛选、数据提取和质量评价由两人独立完成。使用 R 软件进行数据统计分析。

结果: 本研究共统计了 12 个睡眠特征和 PSG 参数 (客观入睡潜伏期、主观入睡潜伏期、客观入睡后清醒时间、主观入睡后清醒时间、客观总睡眠时长、主观总睡眠时长、睡眠效率、N1%、N2%、N3%、REM%以及纺锤波密度)。Meta 结果显示, 与健康对照组相比, PI 组 N2%、REM%和睡眠纺锤波密度显著增加, N3%显著降低。

结论: 本研究结果表明, PI 与健康对照相比 PSG 具有显著特征, 主要表现为睡眠结构和纺锤波密度等参数的差异, 该结果可为 PI 诊断提供重要依据。

关键词: 矛盾性失眠, 多导睡眠图, 纺锤波, Meta 分析

节律疗法对晚睡时型个体睡眠质量及睡眠模式的干预疗效研究

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目的: 晚睡时型个体表现为入眠时间显著晚于社会常规时间, 存在睡眠不足对身体健康不利。本研究旨在评估节律疗法对晚睡时型个体睡眠质量及睡眠模式的改善作用。

方法: 本研究为自身前后对照试验, 纳入了 43 例晚睡时型个体 (25.93±7.98 岁, 51%为女性), 应用节律疗法进行干预, 包括早晨光照、夜间避光和规律作息等措施。经配对样本 t 检验, 评估干预对晚睡时型个体的睡眠质量和睡眠模式的影响。

结果: 研究发现晚睡时型个体经干预后的睡眠效率得到显著改善 (70.01±18.50%vs. 83.43±10.02%, $t=5.349$, $P<.001$)。在睡眠模式方面, 干预后个体的入睡潜伏期 (135.2±101.0minvs. 54.6±51.0min, $t=-5.372$, $P<.001$)、入睡时间 (2:48±1:43vs. 1:03±1:48, $t=-4.901$, $P<.001$)、睡醒时间 (9:34±2:27vs. 8:39±1:33, $t=-2.642$, $P=0.012$)、起床时间 (10:26±2:17vs. 9:19±1:46, $t=-4.258$, $P<.001$) 明显提前。但个体上床时间在干预前后无明显差异 (0:33±1:19vs. 0:08±1:45, $t=-1.310$, $P=0.197$)。

结论: 本研究提示了节律疗法可显著提高晚睡时型个体睡眠效率, 缩短入睡潜伏期明显, 入睡时间、睡醒时间以及起床时间明显提前。

关键词: 晚睡时型, 节律疗法, 睡眠质量, 睡眠模式, 干预

不同睡眠期阻塞性睡眠呼吸暂停患者的夜间血压变化及影响因素研究

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摘要 目的 观察阻塞性睡眠呼吸暂停（OSA）患者快速眼动（REM）、非快速眼动（NREM）睡眠期血压变化的特征，分析不同睡眠期阻塞性呼吸事件对血压的影响。方法 选取于华西第四医院耳鼻喉科确诊为OSA的患者1219例，分析OSA患者在不同睡眠期血压波动的特点以及阻塞性呼吸事件对血压波动的影响。结果 随着OSA病情的加重，患者不同睡眠期的SBP、DBP均呈现上升趋势。SBP、DBP、平均呼吸暂停时间（MAT）、平均低通气时间（MHT）、最低血氧饱和度（LSpO₂）、氧减指数（ODI）指标在不同睡眠期的差异有统计学意义（ $P < 0.05$ ）。经多元线性回归分析，REM睡眠期的SBP与LSpO₂、呼吸暂停低通气指数（AHI）呈负相关，与ODI呈正相关（ $P < 0.05$ ）；DBP与LSpO₂、AHI、MHT呈负相关（ $P < 0.05$ ），与ODI呈正相关（ $P < 0.05$ ）。NREM睡眠期的SBP、DBP与LSpO₂独立相关（ $P < 0.05$ ）。结论 随OSA病情的加重，患者不同睡眠期的血压值随之升高，OSA患者REM睡眠期的血压水平高于NREM睡眠期，LSpO₂与患者不同睡眠期间的血压变化密切相关，AHI、ODI、MHT与患者REM睡眠期的血压变化密切相关。

关键词：快速眼动相关阻塞性睡眠呼吸暂停；非快速眼动相关阻塞性睡眠呼吸暂停；高血压；平均低通气时间

简易的血液学指标与儿童 OSAHS 病情严重程度相关性分析

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目的

探讨简易的血液学指标,包括血常规、生化及其组合指标与 OSAHS 患儿病情严重程度的相关性。

方法

选择 2017 年 1 月-2022 年 6 月因打鼾和/或张口呼吸在我院就诊并进行 PSG 的患儿,收集各患儿 PSG 结果及简易血液学检查的结果,计算组合指标的值。应用 SPSS26.0 进行统计学分析。

结果

1、学龄前期组中,中重度 OSAHS 组的 WBC、NE、LY、MO、hs-CRP、MLR、AISI、SIRI、WMR 均明显高于单纯鼾症组。

学龄期组中,中重度 OSAHS 组的 WBC、NE、hs-CRP、WMR 均明显高于轻度 OSAHS 组,中重度 OSAHS 组的 MPV、PDW、hs-CRP、HCAR 均明显高于单纯鼾症组。

2、学龄前期组 OSAHS 患儿:WBC、NE、WMR、SIRI、AISI 与 OAH1、ODI 正相关,NE、AISI 与 LSpO₂ 负相关。

学龄期组 OSAHS 患儿:WBC、NE、PDW、hs-CRP、WMR、HCAR 与 OAH1、ODI 正相关,与 LSpO₂ 负相关。

3、ROC 曲线:学龄前期组 WMR 的 AUC 值为 0.6392,灵敏度 67.8%,特异度 58.3%,学龄期组 PDW 的 AUC 值为 0.6458,灵敏度 48.1%,特异度 78.8%。

结论

1、简易的血液学指标可作为 OSAHS 患儿评估病情严重程度及缺氧程度的辅助指标。

2、WMR 升高是学龄前期儿童 OSAHS 的独立危险因素,PDW 升高是学龄期儿童 OSAHS 的独立危险因素。

关键词:阻塞性睡眠呼吸暂停低通气综合征;儿童;白细胞/平均血小板体积比值;血小板分布宽度

阻塞性睡眠呼吸暂停和肥胖对夜间血压的影响效应

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目的 分析阻塞性睡眠呼吸暂停 (Obstructive sleep apnea, OSA) 与夜间血压的关系, 并对肥胖在这种联系中的可能效应进行评价, 为进一步探索 OSA 相关高血压的发生机制研究提供基础。**方法** 随机选取 2021 年 8 月~2022 年 12 月于四川大学华西第四医院睡眠医学中心, 因“打鼾、呼吸暂停”等原因就诊, 且均完成多导睡眠监测 (polysomnography, PSG) 后, 诊断为 OSA 的 753 例成人患者作为研究对象。收集患者一般资料、PSG 相关数据、夜间血压相关指标等。采用相关分析、结构方程模型, 分析 OSA 和肥胖对夜间血压的影响作用。**结果** OSA 患者 AHI 和 SBP、DBP 均呈正相关 ($r=0.297$ 、 0.222 , $P<0.001$), 与 BMI 呈正相关 ($r=0.443$, $P<0.001$); BMI 和 SBP、DBP 呈正相关 ($r=0.313$ 、 0.260 , $P<0.001$)。结构方程模型结果提示, 肥胖在 OSA 对夜间 SBP、DBP 的影响中存在中介作用。标准化中介效应值分别为 0.063 (95%CI: $0.035\sim0.090$), 0.059 (95%CI: $0.032\sim0.087$); 中介效应占比分别为 21.72%、26.22%。**结论** OSA 可直接影响患者血压, 与此同时肥胖在 OSA 对 SBP、DBP 的影响中存在中介作用。

关键词: 阻塞性睡眠呼吸暂停; 肥胖; 夜间血压; 中介效应

Pre-COVID-19 short sleep duration and eveningness chronotype are associated with incident suicidal ideation during COVID-19 pandemic in medical students: a retrospective cohort study

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Introduction: Cross-sectional evidence suggests that sleep problems increased the risk of suicide during the 2019 coronavirus disease (COVID-19) pandemic. However, a lack of longitudinal studies examined the relationship between pre-COVID-19 sleep duration, chronotype and incident suicide during the COVID-19 pandemic. Thus, we examined these associations in a longitudinal study of medical students.

Methods: From the Shantou College Student Sleep Cohort, a total of 333 first and second grade medical students (age 19.41 ± 0.82 years, female 61.26%), without suicidal ideation (SI) at pre-COVID-19 period, were followed up during the COVID-19 pandemic. Incident SI was defined by their response to the 9th question from the Beck Depression Inventory. Short sleep duration was defined as less than 7h/night. The Morningness-Eveningness Questionnaire was used to evaluate the participants' chronotype. Logistic regression with adjusted odds ratios (AOR) and 95% confidence intervals (95% CI) was used to examine the association between sleep and SI.

Results: The incidence of SI during the COVID-19 pandemic was 5.71%. Logistic regressions with confounding factors adjustment showed that both short sleep duration (AOR=4.91, 95% CI=1.16 - 20.74) and eveningness (AOR=3.80, 95% CI=1.08 - 13.30) in the pre-COVID-19 period were associated with increased risk of incident SI during the COVID-19 pandemic.

Conclusion: Pre-COVID-19 short sleep duration and eveningness predict incident SI during the COVID-19 pandemic in medical students. Prolonging sleep duration may help to decrease SI during major public health crises.

Keyword: short sleep duration, chronotype, suicidal ideation, COVID-19, medical students

Stability of symptom-based cluster analysis of moderate to severe OSA patients across ethnic groups

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Objectives: Previous studies have shown that OSA is a heterogeneous disease with multiple clinical subtypes. However, the results were pertinent to the specific ethnical study cohorts evaluated with OSA. The aim of our research was to further understand individual differences of clinical subtypes within and between ethnic groups with OSA patients.

Methods: Two Chinese cohorts were collected: one from Peking University people's hospital (PKUPH) and the other from other China sites in SAGIC (Sleep Apnea Global Interdisciplinary Consortium) study cohort. Caucasians were recruited from 8 western sites in the SAGIC cohort (Iceland, Berlin, Ohio, Sydney, Upenn, Brazil, Germany and Perth). A latent class analysis was performed using data on 18 self-reported sleep symptoms variables and 3 comorbidities. We also compared each cluster with prevalence of comorbidities and PSG variables to see if there were potential pathophysiological mechanisms behind.

Results: 1960 patients were collected in our analysis, five cluster solutions (labeled "disturbed sleep", "minimal symptoms", "excessive sleepiness with upper airway symptoms", "upper airway symptoms dominant" and "sleepiness dominant") were optimal in both cohorts from PKUPH and the other China sites. The optimal classifications of symptom-based subtype in China was consistent with Caucasian and same as research before in moderate to severe OSA identified in SAGIC study. The prevalence of cardiovascular comorbidities was significantly higher in excessive sleepiness clusters, PSG physiology variables always showed extremely high burden of hypoxia.

Conclusions: The optimal five subtypes of clinical symptoms can be reproduced both in Chinese and Caucasians with OSA patients, which may provide a basis for personalized treatment of OSA in the future.

Keyword: Chinese, Caucasian, obstructive sleep apnea, symptom subtype, latent cluster analysis

Compromised Dynamic Cerebral Autoregulation in Patients with Restless Legs Syndrome

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Background: Restless legs syndrome (RLS) is a prevalent sensorimotor nervous system disorder in patients accompanied with insomnia, blood pressure fluctuation, and sympathetic dysfunction. These symptoms may disrupt cerebral hemodynamics. Dynamic cerebral autoregulation (dCA) describes the temporary response of cerebrovascular system to abrupt fluctuations in blood pressure, which keep cerebral blood flow stable and serve as a marker of cerebrovascular system ability. **Objective:** This research aimed to assess dCA in RLS patients. **Methods:** In this study, RLS patients were recruited and subsequently classified into four groups (mild, moderate, severe, and very severe) based on the International RLS Rating Scale (IRLS). Healthy controls matched for age and sex were enrolled. All participants were evaluated dCA by assessing phase difference (PD). A portion of patients with RLS was reassessed for dCA after one month of medication therapy (pramipexole [0.125 mg/day] and gabapentin [300 mg/day]). **Results:** There were altogether 120 patients with RLS and 30 controls completed the polysomnography and dCA assessment. PD was lower in the moderate, severe, and very severe RLS groups than that in the controls and mild RLS groups. Periodic limb movement index (PLMI), arousal index, and IRLS all showed a linear correlation with PD in RLS patients. Additionally, PD increased in RLS patients after therapy. **Conclusion:** The dCA was compromised in moderate, severe, and very severe RLS patients and was negatively correlated with the IRLS, arousal index, and PLMI. After 1 month of therapy, dCA improved in RLS patients.

Keyword:

The changed nocturnal sleep structure and higher anxiety, depression, and fatigue in patients with narcolepsy type 1

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Purpose: This study aimed to evaluate nocturnal sleep structure and anxiety, depression, and fatigue in patients with narcolepsy type 1 (NT1). **Methods:** Thirty NT1 patients and thirty-five healthy controls were enrolled and evaluated using the Epworth sleepiness scale (ESS), Generalized Anxiety Disorder-7, Patient Health Questionnaire-9, Fatigue Severity Scale (FSS), polysomnography, multiple sleep latency test, and brain function state monitoring. Statistical analyses were performed using SPSS Statistics for Windows, version 23.0. Benjamini-Hochberg correction was performed to control the false discovery rate. **Results:** Apart from typical clinical manifestations, patients with NT1 are prone to comorbidities such as nocturnal sleep disorders, anxiety, depression, and fatigue. Compared with the control group, patients with NT1 exhibited abnormal sleep structure, including increased total sleep time ($P_{adj}=0.007$), decreased sleep efficiency ($P_{adj}=0.002$), shortening of sleep onset latency ($P_{adj}<0.001$), elevated wake after sleep onset ($P_{adj}=0.002$), increased N1% ($P_{adj}=0.006$), and reduced N2%, N3%, and REM% ($P_{adj}=0.007$, $P_{adj}<0.001$, $P_{adj}=0.013$). Thirty-seven percent of patients had moderate to severe obstructive sleep apnea-hypopnea syndrome. And sixty percent of patients were complicated with REM sleep without atonia. Patients with NT1 displayed increased anxiety propensity ($P_{adj}<0.001$), and increased brain fatigue ($P_{adj}=0.020$) in brain function state monitoring. FSS scores were positively correlated with brain fatigue ($P_{adj}<0.001$) and mean sleep latency was inversely correlated with FSS scores and brain fatigue ($P_{adj}=0.013$, $P_{adj}=0.029$). Additionally, ESS scores and brain fatigue decreased after 3 months of therapy ($P=0.012$, $P=0.030$). **Conclusion:** NT1 patients had abnormal nocturnal sleep structures, who showed increased anxiety, depression, and fatigue. Excessive daytime sleepiness and fatigue improved after 3 months of treatment with methylphenidate hydrochloride prolonged-release tablets in combination with venlafaxine.

Keyword: narcolepsy, sleep structure, excessive daytime sleepiness, anxiety, depression, fatigue

Anxiety and Depression among Patients with Insomnia During the First Wave and the Release of the COVID-19 in the Northeast China: A Cross-Sectional Survey

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Objectives: The global coronavirus disease 2019 (COVID-19) epidemic has seriously affected people's lives. We aimed to evaluate the anxiety and depression among patients with insomnia in the northeast China during the first wave and the release of the COVID-19, providing a basis for the clinical diagnosis and treatment of insomnia.

Methods: We enrolled 4211 patients with insomnia from January 2016 to February 2020, August 2020 to February 2022, August 2022 to December 2022, and January 2023 to February 2023, from Neurology Department, the First Hospital of Jilin University. Athens Insomnia Scale, Insomnia Severity Index (ISI), and Pittsburgh sleep quality index (PSQI) were used to evaluate sleep quality, Hospital anxiety and depression scale (HAD), Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety Disorder (GAD-7) and Fatigue Scale-14 (FS-14) were used to evaluate mood disorder and fatigue.

Results: The prevalence of insomnia with depression increased after COVID-19 outbreak compared to before the epidemic (12.8% vs. 15.3%, $P < 0.05$). The age of insomnia with anxiety and depression decreased compared to before the epidemic [(50.2 ± 15.2) vs. (47.5 ± 16.8) , $P < 0.05$]. The number of patients with insomnia and severe depression increased compared to before COVID-19 (20.3% vs. 25.3%, $P < 0.05$). Patients with insomnia for more than 2 years have a higher proportion of depression ($P < 0.05$). After the epidemic was opening, the proportion of young patients and male patients with insomnia disorders increased (young patients: 55.2% vs. 37.0%; male patients: 41% vs. 27.4%, $P < 0.05$, respectively), The proportion of patients with insomnia with anxiety and depression increased (53.8% vs. 51.8%, $P < 0.05$), the proportion of insomnia patients with moderate to severe anxiety increased (7.6% vs. 13.5%, $P < 0.05$), and insomnia patients with moderate and severe depression decreased (moderate: 25.6% vs. 19.1%, severe: 25.8% vs. 20.3%, $P < 0.05$, respectively) compared to during the epidemic. The distribution of high scores of sleep latency, habitual sleep efficiency, subjective sleep quality, and use of sleep medications of PSQI in middle-aged and elderly patients were larger than that in young patients ($P < 0.05$). The PSQI score was positively correlated with the PHQ-9 score ($r = 0.526$), GAD-7 score ($r = 0.563$), and FS-14 score ($r = 0.316$) ($P < 0.05$).

Conclusion: The proportion of insomnia with depression increased during the COVID-19 outbreak. The age of the insomnia with anxiety and depression was younger than before the epidemic, and patients with insomnia for more than 2 years had a higher proportion of depression. After the release of epidemic, the proportion of patients with insomnia with anxiety and depression increased compared to the epidemic period. the proportion of insomnia with anxiety increased compared to the epidemic period, and the degree worsened. The proportion of insomnia with depression decreased compared to the epidemic period, and the degree alleviated. The proportion of young male patients with insomnia increased compared to the epidemic period. Middle aged and elderly patients with

insomnia have poor sleep quality, which was positively correlated with anxiety, depression, and fatigue.

Keyword: COVID-19, insomnia disorder, anxiety, depression

Objective, but Not Subjective, Excessive Daytime Sleepiness is Associated with Mortality in Obstructive Sleep Apnea

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Obstructive sleep apnea (OSA) with objective excessive daytime sleepiness (EDS) has been proposed as the severe phenotype of the disorder associated with cardiovascular morbidity. In this study, we investigated the association between OSA with objective or subjective EDS and all-cause or cardiovascular mortality in a large general population sample, with a median follow-up duration of 8 years. We studied 238 participants with OSA and 540 participants with non-OA. Objective EDS was defined by the multiple sleep latency (MSL) ≤ 8 min measured with the Multiple Sleep Latency Test. Subjective EDS was defined by Epworth Sleepiness Scale (ESS) >10 . After adjusting for potential confounders, participants with OSA and MSL ≤ 8 min were associated with 1.93-fold increased hazard of all cause mortality (hazard ratio [HR]=1.929, 95% confidence interval [95%CI]=1.063-3.499), 2.80-fold increased hazard of cardiovascular mortality (HR=2.801, 95%CI=1.010-7.769) compared to participants with non-OA and MSL >8 min. Whereas participants with OSA and MSL >8 min (HR=1.044, 95%CI=0.576-1.892) or participants with non-OA and MSL ≤ 8 min (HR=1.042, 95%CI=0.583-1.863) were not significantly associated with increased hazard of all cause or cardiovascular mortality compared to participants with non-OA and MSL >8 min. In addition, participants with OSA and ESS >10 were not significantly associated with increased hazard of all cause or cardiovascular mortality. Our findings further support that OSA with objective EDS is the more severe phenotype of the disorder associated with higher all cause and cardiovascular mortality and objective EDS may be a useful marker of the biological severity of OSA in clinical practice.

Keyword: Obstructive Sleep Apnea, Objective Excessive Daytime Sleepiness, Mortality, Multiple Sleep Latency Test

Clinical features, polysomnography, and genetics association study of restless legs syndrome in clinic based Chinese patients: A multicenter observational study

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Study objectives: To systemically describe the clinical features, polysomnography (PSG) finding, laboratory tests and single-nucleotide polymorphisms (SNPs) in a clinic based Chinese primary restless legs syndrome (RLS) population.

Methods: This observational study, conducted from January 2020 to October 2021 across 22 sleep labs in China, recruited 771 patients diagnosed with RLS following the 2014 RLSSG criteria. Clinical data, PSG testing, and laboratory examination and SNPs of patients with RLS were collected. A total of 32 SNPs in 24 loci were replicated using the Asian Screening Array chip, employing data from the Han Chinese Genomes Initiative as controls.

Results: In this study with 771 RLS patients, 645 had primary RLS, and 617 has DNA available for SNP study. Among the 645 primary RLS, 59.7% were women. 33% had a family history of RLS, with stronger familial influence in early-onset cases. Clinical evaluations showed 10.4% had discomfort in body parts other than legs. PSG showed that 57.1% of RLS patients had periodic leg movement index (PLMI) of >5/h and 39.1% had PLMI >15/h, respectively; 73.8% of RLS patients had an Apnea-Hypopnea Index (AHI) > 5/h, and 45.3% had an AHI >15/h. The laboratory examinations revealed serum ferritin levels <75 ng/ml in 31.6%, and transferrin saturation

(TSAT) of <45% in 88.7% of RLS patients. Seven new SNPs in 5 genes showed a significant allelic association with Chinese primary RLS, with one previously reported (BTBD9) and four new findings (TOX3, PRMT6, DCDC2C, NOS1).

Conclusions: Chinese RLS patients has specific characters in many aspects. A high family history with RLS not only indicates strong genetic influence, but also reminds us to consider the familial effect in the epidemiological study. Newly developed sequencing technique with large samples remains to be done.

Keyword: Restless legs syndrome, Polysomnography, SNPs

Serum metabolomics study of narcolepsy type 1 based on ultra-performance liquid chromatography-tandem mass spectrometry

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Narcolepsy is a chronic and underrecognized sleep disorder characterized by excessive daytime sleepiness and cataplexy. Furthermore, narcolepsy type 1 (NT1) has serious negative impacts on an individual's health, society, and the economy. Currently, many sleep centers lack the means to measure orexin levels in the cerebrospinal fluid. We aimed to analyze the characteristics of metabolite changes in patients with NT1, measured by ultra-performance liquid chromatography-tandem mass spectrometry. A principal component analysis (PCA), an orthogonal partial least square discriminant analysis (OPLS-DA), t-tests, and volcano plots were used to construct a model of abnormal metabolic pathways in narcolepsy. We identified molecular changes in serum specimens from narcolepsy patients and compared them with control groups, including dehydroepiandrosterone, epinephrine, N-methyl-D-aspartic acid, and other metabolites, based on an OPLS-loading plot analysis. Nine metabolites yielded an area under the receiver operating curve >0.75 . Meanwhile, seven abnormal metabolic pathways were correlated with differential metabolites, such as metabolic pathways; neuroactive ligand-receptor interaction; and glycine, serine, and threonine metabolism. To our knowledge, this is the first study to reveal the characteristic metabolite changes in sera from NT1 patients for the selection of potential blood biomarkers and the elucidation of NT1 pathogenesis.

Keyword: Narcolepsy type 1, Metabolite profile, Serum samples, Principal component analysis, Enrichment pathways

长期 CPAP 后减重对肥胖的阻塞性睡眠呼吸暂停患者的疗效

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目的

本研究旨在探究减重对长期接受 CPAP 治疗的肥胖 OSA 患者的疗效。重点关注通过减重实现 CPAP 停机的可行性。

方法

所有受试者在基线时均已接受了至少 12 个月的 CPAP 治疗。研究期间，他们将继续维持 CPAP 治疗。同时，干预组受试者额外采用为期 3 个月的极低碳水化合物饮食方案减重。受试者在基线及终点时的 OSA 病情相关数据通过多导睡眠监测获取，身体成分数据利用生物电阻抗分析原理采集，使用 ESS 量表、ISI 量表和 PSQI 量表量化受试者的睡眠质量。

结果

51 位受试者（干预组 29 人，对照组 22 人，49 位男性）的平均年龄为 45.1 岁，基线时平均 AHI 为 50.1 次/小时，中值 BMI 为 28.8kg/cm²。为期 3 个月的干预结束时，干预组受试者 AHI 下降 12.0 次/小时，对照组受试者 AHI 下降 4.3 次/小时。两组受试者的体重分别减轻了 7.3kg 和 1.1kg。干预组中有 8 人（60.00% 的中度 OSA 患者和 10.53% 的重度 OSA 患者）不再需要 CPAP 治疗。与对照组相比，干预组受试者的 VFA 与 ESS 显著改善。

结论

序贯饮食干预减重可能减少了腹部内脏脂肪的堆积，从而使 OSA 患者的病情得到改善。肥胖且 CPAP 长期依从性良好的中度 OSA 患者可能通过接受科学的体重管理实现 CPAP 停机。但这些患者撤机后的长期健康结局、序贯减重的疗程与适宜人群仍需要进一步的研究探索。

关键词：阻塞性睡眠呼吸暂停, 长期 CPAP, 减重, 序贯疗法, 随机对照试验

Efficiency and safety of continuous theta burst stimulation for primary insomnia: A randomized clinical trial

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Background: Primary insomnia is a substantial public health burden, but current treatments for this disorder have limited effectiveness and adherence. Herein, we aimed to investigate the efficacy and safety of continuous theta burst stimulation (cTBS) for the treatment of primary insomnia.

Methods: This two-armed, randomized, sham-controlled trial was conducted at Peking University Sixth Hospital and local community clinics. A total of 46 patients with primary insomnia were recruited and randomly allocated to either the cTBS group or sham group. Forty-one patients completed 10 sessions of cTBS or sham intervention and follow-up assessments.

Results: After the intervention, the severity of insomnia was significantly lower in the cTBS group than in the sham group, with a large effect size (Cohen's $d = -1.938$). Additionally, 52.4% of patients in the cTBS group achieved a response (Insomnia Severity Index score reduction ≥ 8), whereas only 4% of patients in the sham group achieved a response. The duration of objective total sleep time and slow-wave sleep higher in the cTBS group than in the sham group. The degree of anxiety was lower in the cTBS group than in the sham group. There were no significant differences in depression, sleepiness, or cognitive function between the cTBS and sham groups. During follow-up, the sleep quality of the cTBS group significantly improved and remained stable at the 6-month follow-up.

Conclusion: In this randomized clinical trial, cTBS improved insomnia symptoms and was generally well tolerated, thus supporting the further development of cTBS for the treatment of primary insomnia.

Keyword: Primary insomnia, Continuous theta burst stimulation

Rasch analysis of the pre-sleep arousal scale in patients with acute insomnia disorder

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Background: Hyperarousal plays an essential role in the initiation and maintenance of insomnia, highlighting the need for a tool that measure the hyperarousal state during the early course of insomnia. Pre-sleep Arousal Scale (PSAS) is a self-report questionnaire to evaluate subjective pre-sleep arousal of insomnia. The aim of this study was to examine the psychometric properties of the PSAS among patients with acute insomnia disorder (AID) using Rasch analysis. **Methods:** Totally 170 patients with AID from 31 public hospitals in China were recruited and completed the test. The psychometric properties of the PSAS were tested using Rasch analysis by Winsteps v5.4.1.0, including unidimensionality, local item independence, item fit, category diagnostics, reliability, item-person maps and differential item functioning (DIF) by age and gender. **Results:** According to Rasch analysis, somatic and cognitive subscales were unidimensional and basically demonstrated good item-fit statistics. 4-point Likert scale may be more appropriate for PSAS. All items have a good reliability and separation. No gender and age bias were detected for the scale. However, the person arousal level is not well matched to item difficulty. **Conclusion:** The present study further reveals appropriate psychometric properties of the PSAS in patients with AID and provides suggestions for refinements and supplements to the PSAS.

Keyword: Psychometrics; Pre-sleep Arousal Scale; Acute insomnia disorder; Rasch analysis.

The Clinical and Hemodynamic Characteristics of Pulmonary Hypertension in Patients with OSA-COPD Overlap Syndrome

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Abstract

Background: Our study aimed to assess the clinical and hemodynamic characteristics of pulmonary hypertension (PH) in patients with overlapping obstructive sleep apnea (OSA) and chronic obstructive pulmonary disease (COPD), referred to OSA-COPD overlap syndrome (OS).

Methods: We enrolled a total of 116 patients with OS, COPD, or OSA who underwent right heart catheterization (RHC) due to suspected pulmonary hypertension (PH). We conducted a retrospective analysis of the clinical and hemodynamic characteristics of these patients.

Results: Among the three groups (OS Group, n=26; COPD Group, n=36; OSA Group, n=54), the prevalence of PH were higher in the OS group (n=17, 65.4%) compared to OSA group (n=26, 48.1%) and COPD group (n=20, 55.6%). Among three groups with PH, the superior vena cava pressure (CVP) and right ventricular pressure (RAP) were higher in the OS group than in the OSA group (P<0.05). Patients in the OS and COPD groups had higher pulmonary artery wedge pressure (PAWP) than in the OSA group (14.88±4.79 mmHg, 13.45±3.68 mmHg vs. 11.00±3.51 mmHg, respectively, P<0.05). OS patients with PH exhibited higher respiratory event index (REI), time spent with SpO₂<90%, oxygen desaturation index (ODI), minimal SpO₂ (MinSpO₂) and mean SpO₂ (MSpO₂) compared to OS patients without PH. After adjusting for potential covariates, we found that MinSpO₂ (OR 0.937, 95% CI 0.882-0.994, P=0.032), MSpO₂ (OR 0.805, 95% CI 0.682-0.949, P=0.010), time spent with SpO₂<90% (OR 1.422, 95% CI 1.137-1.780, P=0.002), FEV₁% pred (OR 0.977, 95% CI 0.962-0.993, P=0.005) were related to the development of PH.

Conclusions: Patients with OSA-COPD overlap syndrome showed higher prevalence of PH, along with higher PAWP, CVP and RAP. Worse nocturnal hypoxemia was found in OS patients with PH.

Keyword: pulmonary hypertension; RHC; nocturnal hypoxemia; OSA-COPD overlap syndrome

Shallow Hypoxic Burden Emerges as a Predictor of Mortality in the Sleep Heart Health Study

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Aims: The impact and the potential prognostic values of shallow desaturations, resulted from have not been be examined. This study aims to use Sleep Heart Health Study (SHHS) data to explore the associations between shallow desaturations associated hypoxic burden derived from the oximetry (SHBoxi) and all-cause mortality risk.

Method: SHBoxi was defined as the area of desaturation resulting from a 2% drop in oxygen saturation divided by the total recording time. Cox proportional hazards models were employed to estimate the adjusted hazard ratios (HR) for SHBoxi, after adjusting for demographic factors, smoking status, total sleep time, chronic obstructive pulmonary disease, prevalent cardiometabolic diseases and total hypoxic burden.

Result: Among 4980 participants, 1156 deaths occurred over an average of 10.68 years of follow-up. After adjusting for age, gender, race, body mass index, and apnea-hypopnea index, higher SHBoxi values were still associated with lower sleep efficiency ($r = -0.07$, $P < 0.001$). Individuals with SHBoxi in the highest quartile exhibited HR of 1.32 [95% confidence interval 1.10 - 1.56] for mortality compared to those in the lowest quartile. This conclusion remained unchanged when SHBoxi was analyzed as a continuous variable, with a 10% increase in HR per 1 standard deviation (SD) increase in SHBoxi. This relationship was consistent across both genders, with a 13% increase in HR per 1 SD in women ($p = 0.02$) and a 9% increase in men ($p = 0.04$). Further sensitivity analyses revealed that SHBoxi defined by oxygen desaturation thresholds of 2~3%, 2~4%, or 2~5% were also significantly associated with all-cause mortality.

Conclusions: SHBoxi, a readily obtainable metric derived from oximetry, serves as a predictor of mortality in both men and women. Individuals with higher SHBoxi may be predisposed to waking after sleep and lower sleep efficiency that increase the likelihood of adverse health outcomes.

Keyword: obstructive sleep apnea, mortality, shallow hypoxic burden

Association between post-COVID-19 sleep disturbance and neurocognitive function: A comparative study using a propensity score matching approach

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Background: Despite that sleep disturbance and poor neurocognitive performance are common complaints among coronavirus disease 2019 (COVID-19) survivors, few studies have focused on the effect of post-COVID-19 sleep disturbance (PCSD) on cognitive function.

Objective: This study aimed to identify the impact of PCSD on neurocognitive function and explore the associated risk factors for the worsening of this condition. This cross-sectional study was conducted via the web-based assessment in mainland China.

Methods: This cross-sectional study was conducted via the web-based assessment in mainland China. Neurocognitive function was evaluated by the modified online Integrated Cognitive Assessment (ICA) and the Number Ordering Test (NOT). Propensity score matching (PSM) was utilized to match the confounding factors between individuals with and without PCSD. Univariate analyses were performed to evaluate the effect of PCSD on neurocognitive function. The risk factors associated with worsened neurocognitive performance in PCSD individuals were explored using binary logistic regression.

Results: A total of 8692 individuals with COVID-19 diagnosis were selected for this study. Nearly half (48.80%) of the COVID-19 survivors reported sleep disturbance. After matching by PSM, a total of 3977 pairs (7954 individuals in total) were obtained. Univariate analyses revealed that PCSD was related to worse ICA and NOT performance ($P < 0.050$). Underlying disease, upper respiratory infection, loss of smell or taste, severe pneumonia, and self-reported cognitive complaints were associated with worsened neurocognitive performance among PCSD individuals ($p < 0.050$). Furthermore, aging, ethnicity (minority), and lower education level were found to be independent risk factors for worsened neurocognitive performance in PCSD individuals ($P < 0.050$).

Conclusions: PCSD was related to impaired neurocognitive performance. Therefore, appropriate prevention and intervention measures should be taken to minimize or prevent PCSD and eliminate its potential adverse effect on neurocognitive function.

Keyword: Post-COVID-19; Sleep disturbance; Neurocognitive function; Digital assessment

失眠共病阻塞性睡眠呼吸暂停的药物治疗与研究进展

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失眠 (insomnia) 和阻塞性睡眠呼吸暂停 (obstructive sleep apnea, OSA) 是两种最常见的睡眠障碍, OSA 在成年人中的发病率有 9-38%, 失眠的发病率为 10-30%, 其中 39%-58% 的 OSA 患者同时伴有失眠症状, 29%-67% 的失眠患者同时伴有 OSA 症状, 这两种疾病经常相互作用, 加重了疾病的严重程度。1973 年 Guilleminault 等研究学者首次发现并报道失眠共病阻塞性睡眠呼吸暂停 (comorbid insomnia and sleep apnea, COMISA), 然而, 在过去的 10-15 年里, COMISA 才开始受到越来越多的关注。与单一的失眠和 OSA 这两种疾病相比, COMISA 患者的发病率更高。对于这两种疾病, 临床上一般建议认知行为治疗 (cognitive behavioral therapy, CBT) 和持续正压通气治疗 (continuous positive airway pressure, CPAP), 但是由于共病的影响, 失眠会降低 COMISA 患者对 CPAP 治疗的依从性, 而 OSA 则会影响 CBT 治疗的疗效。因此 COMISA 的临床诊断和治疗更加复杂, 并可能导致抑郁、日间功能下降、睡眠质量和生活质量下降等不良后果。本文总结了 COMISA 的发病机制及临床特征, 并探索药物治疗在 COMISA 的可行性, 以期 COMISA 的诊疗提供新的思路。

关键词: 失眠共病阻塞性睡眠呼吸暂停; 药物治疗; 研究进展; 下丘脑-垂体-肾上腺轴

Combination of acute intermittent hypoxia and intermittent transcutaneous electrical stimulation in obstructive sleep apnea: a randomized controlled crossover trial

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Intermittent hypoxia (IH) and intermittent transcutaneous electrical stimulation (ITES) might benefit patients with obstructive sleep apnea (OSA). However, the therapeutic value of combined IH and ITES in OSA is unknown. In this prospective, randomized, controlled crossover study, normoxia (air exposure for 50 min before sleep and sham stimulation for 6 h during sleep), IH (5 repeats of 5 min 10–12% O₂ alternating with 5 min air for 50 min, and sham stimulation for 6 h), ITES (air exposure for 50 min and 6 repeats of 30 min transcutaneous electrical stimulation alternating with 30 min of sham stimulation for 6 h), and IH&ITES (10–12% O₂ alternating with air for 50 min and transcutaneous electrical stimulation alternating with sham stimulation for 6 h) were administered to patients with OSA over four single-night sessions. The primary endpoint was difference in OSA severity between the interventions according to apnea-hypopnea index (AHI) and oxygen desaturation index (ODI). The efficacy was response to IH, ITES, IH&ITES defined as a $\geq 50\%$ reduction in AHI compared with normoxia. Twenty participants (17 male, 3 female) completed the trial. The median (IQR) AHI decreased from 14.5 (10.8, 17.5) events/h with normoxia to 6.9 (3.9, 14.8) events/h with IH ($p=0.020$), 5.7 (3.4, 9.1) events/h with ITES ($p=0.001$), and 3.5 (1.8, 6.4) events/h with IH&ITES ($p=0.001$). AHI was significantly different between IH and IH&ITES ($p=0.042$) but not between ITES and IH&ITES ($p=0.850$). For mild-moderate OSA ($n=17$), IH, ITES, and IH&ITES had a significant effect on AHI ($p=0.013$, $p=0.001$, $p=0.001$, respectively) compared with normoxia, but there were no differences in post hoc pairwise comparisons between intervention groups. No serious adverse events were observed. In conclusion, IH, ITES, and IH&ITES significantly reduced OSA severity. IH&ITES showed better efficacy in mild-moderate OSA than IH and was comparable to ITES. Our data do not support recommending IH&ITES over ITES for OSA.

Keyword: Keywords: Intermittent hypoxia; intermittent transcutaneous electrical stimulation; obstructive sleep apnea

Correlation between obstructive sleep apnea and hypoperfusion in patients with acute cerebral infarction

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Purpose: To explore the relationship between obstructive sleep apnea (OSA) and hypoperfusion during ultra-early acute cerebral infarction.

Patients and methods: Data were retrospectively collected from patients admitted to our hospital with acute cerebral infarction between January 2020 and January 2022, who underwent comprehensive whole-brain computed tomography perfusion imaging and angiography examinations within 6 h of onset. The F-stroke software automatically assessed and obtained relevant data (Tmax). The patients underwent an initial screening for sleep apnea. Based on their Apnea-Hypopnea Index (AHI), patients were categorized into an AHI ≤ 15 (n = 22) or AHI > 15 (n = 25) group. The pairwise difference of the time-to-maximum of the residue function (Tmax) > 6 s volume was compared, and the correlation between AHI, mean pulse oxygen saturation (SpO₂), oxygen desaturation index (ODI), percentage of time with oxygen saturation $< 90\%$ (T90%), and the Tmax > 6 s volume was analyzed.

Results: The Tmax > 6 s volume in the AHI > 15 group was significantly larger than that in the AHI ≤ 15 group [109 (62-157) vs. 59 (21-106) mL, p = 0.013]. Spearman's correlation analysis revealed Tmax > 6 s volume was significantly correlated with AHI, mean SpO₂, ODI, and T90% in the AHI > 15 group, however, no significant correlations were observed in the AHI ≤ 15 group. Controlling for the site of occlusion and Multiphase CT angiography (mCTA) score, AHI ($\beta = 0.919$, p < 0.001), mean SpO₂ ($\beta = -0.460$, p = 0.031), ODI ($\beta = 0.467$, p = 0.032), and T90% ($\beta = 0.478$, p = 0.026) remained associated with early hypoperfusion in the AHI > 15 group.

Conclusion: In patients with acute cerebral infarction and AHI > 15 , AHI, mean SpO₂, ODI and T90% were associated with early hypoperfusion. However, no such relationship exists among patients with AHI ≤ 15 .

Keyword: obstructive sleep apnea, apnea-hypopnea index, mean pulse oxygen, hypoperfusion, acute cerebral infarction

高精度经颅直流电刺激对慢性失眠患者的睡眠促进

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慢性失眠影响个体的正常生活和学习，增加罹患各种健康问题的风险。因此，有效治疗慢性失眠很有必要。

研究选取 50 名慢性失眠患者，随机分为真刺激组和假刺激组。真刺激组被试接受连续 10 天清醒期静息状态高精度经颅直流电刺激，刺激靶点是背内侧前额叶皮层，刺激模式阳极，电流强度 2.0mA，刺激时间 30min。假刺激组被试仅刺激开始和结束 30 秒接受逐渐上升和下降的电流，中间电流强度为 0mA，其余治疗参数及过程均与真刺激组相同。被试在刺激前

(T0)、刺激 10 天后 (T1) 完成整夜多导睡眠监测 (PSG)、睡眠测量。

结果：由于 5 例被试不能完成 10 天治疗周期的刺激，被去除分析，最终纳入 45 例。与干预前 (T0) 相比，真刺激组被试在干预后 (T1) PSG 中睡眠潜伏期、入睡后清醒时间显著减少，睡眠总时间和睡眠效率明显提高；另一方面，主观睡眠质量测评分数显著降低，模糊决策功能显著提高，假刺激组 PSG 测量得到的睡眠参数及主观睡眠质量测评分数治疗前后均无明显改变，且真、假刺激两组间 PSG 测量得到的睡眠潜伏期、入睡后清醒时间和睡眠效率及主观睡眠质量测评分数方面均有组间交互效应。

结论：针对慢性失眠患者背内侧前额叶皮层的清醒期高精度经颅直流电刺激干预能提高睡眠质量，未来该技术有望作为药物和认知行为疗法的补充治疗方式应用于慢性失眠患者。

关键词：慢性失眠；高精度经颅直流电刺激；睡眠质量

Retrieval-extinction procedure disrupts trauma memory reconsolidation in humans

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[Objective] The high presence of a risk situation in terms of traumatic symptomatology evidenced the dramatic impact of trauma events on mental health. Memory retrieval can result in the destabilization of trauma memory, the retrieval-extinction procedure is ideally placed to enable memories to be updated with new information. This study aims to investigate the effects of retrieval-extinction procedure for the treatment of trauma memory.

[Methods] Sixty-four participants with mental symptoms and trauma memory were randomly assigned to retrieval-extinction group and extinction group. When randomized to retrieval-extinction group, participants received the 3-min exposure to trauma cues for memory retrieval 10-minute before the 11-min exposure to trauma cues (memory extinction). Patients who were randomized to extinction group, received the 3-min exposure to neutral cues 10-minute before the 11-min exposure to trauma cues (memory extinction). The primary outcomes included the reaction of the trauma cues, including trauma cue-induced fear, valence, arousal, and tolerance scores, at post intervention and the 4 weeks follow-up assessments. The secondary outcomes were changes in mental symptoms including anxiety, depression, insomnia, acute stress/PTSD symptoms.

[Results] Compared with extinction, retrieval-extinction decreased the fear and arousal responses for trauma cues, and increased the tolerance response for trauma cues at post intervention and the 4 weeks follow-up. In addition, the mental symptoms, including anxiety, depression, insomnia, acute stress/PTSD symptoms, were significantly reduced in retrieval-extinction group than extinction group.

[Conclusion] These findings demonstrate that retrieval-extinction procedure prevents the fear of trauma cues and may have clinical potential for treating trauma-related disorders.

Keyword: retrieval-extinction, trauma memory, insomnia

Sleep efficiency and disturbance is associated with cardiovascular risk in non-obese sleep disordered breathing: The Guangdong sleep health study

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Objectives: Obesity was an important risk factor for sleep disordered breathing (SDB). However, the majority of SDB in the community was non-obese. This study was set to figure out the risk factors for cardiovascular disease (CVD) in the participants with non-obese SDB.

Methods: This was a cross-sectional study. Community residents in Guangdong were investigated. Sleep study were conducted with a type IV sleep monitoring. 10-years and life-time cardiovascular risk was assessed by the China-PAR risk equations.

Results: 6520 participants were included. 1983 (30.4%) were diagnosed as SDB. In the participants with SDB, 7.6% were obese, and 92.4 were non-obese. 1429 participants with non-obese SDB and 117 with obese SDB had all the data for China-PAR risk calculation. 270 (18.9%) were with high risk of CVD in the participants with non-obese SDB, while 33 (28.2%) in the obese SDB. In the participants with non-obese SDB, the Pittsburgh sleep quality index (PSQI) was higher in those with high risk of CVD comparing with those with low risk of CVD ($P=0.013$). While there was no significant difference in the participants with obese SDB. Habitual sleep efficiency and sleep disturbance were independently associated with high risk of CVD in participants with non-obese SDB (OR =1.339, $P=0.006$; OR =1.521, $P=0.002$, respectively). Comparing with a normal habitual sleep efficiency, the probability for high CVD risk increased 158% in non-obese SDB with a habitual sleep efficiency $\leq 64\%$. Comparing with no sleep disturbance, the probability for high CVD risk increased 128% in non-obese SDB with fairly bad sleep disturbance.

Conclusions: The majority of SDB was non-obese in the community in Guangdong. CVD risk was increased in non-obese SDB. A bad habitual sleep efficiency and sleep disturbance increased the probability of high CVD risk. Treatment improving the sleep quality may decrease the risk of CVD in non-obese SDB.

Keyword: sleep disordered breathing, cardiovascular disease, sleep efficiency, sleep disturbance

高原周期性呼吸相关中枢性睡眠呼吸暂停一例

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主诉：睡眠打鼾1年伴眠差3月。

现病史：见文章内容；

体格检查：一般生命征正常；专科检查：一般情况可，神清，口唇稍发绀，双侧扁桃体I度肿大，软腭低垂，舌体肥大，咽腔狭小。

辅助检查：肝功能、甲状腺功能、传染病四项、电解质、空腹葡萄糖无明显异常；

睡眠监测示呼吸暂停低通气指数(AHI)：38.0次/小时，整夜呼吸暂停299次(中枢性呼吸暂停104次，以N2期为主，阻塞性呼吸暂停73次，低通气122次；中枢性呼吸暂停指数13.2次/小时)，最长呼吸暂停时间22s，平均血氧饱和度89%；最低血氧饱和度75%。

诊断：高原周期性呼吸相关中枢性睡眠呼吸暂停

诊疗经过：治疗上予以呼吸机治疗纠正阻塞性呼吸暂停事件，并以低浓度氧气(2L/min)吸入，纠正低氧；以促眠改善患者夜间睡眠，辅以认知行为治疗纠正患者睡眠不良作息习惯。经治疗，患者睡眠及精神状况改善。

病例分析：该病例患者临床表现典型，有明确的高原居住史，于杭州低海拔地区到昆明长期居住，夜间鼾声明显，睡眠质量一般，白天精神一般，思睡明显，多导睡眠监测是评估患者是否存在周期性呼吸事件和中枢性呼吸事件的客观检查。结合患者病史病情情况，患者存在高海拔周期性呼吸所致中枢性睡眠呼吸暂停的诊断明确。

目前对于高海拔周期性呼吸所致中枢性睡眠呼吸暂停的治疗，目前尚无特效治疗，以对症支持治疗为主，局限于药物和夜间氧疗等方面，药物治疗以乙酰唑胺和地塞米松对症处理为主。

关键词：高海拔, 中枢性呼吸暂停, 治疗, 周期性呼吸

静电治疗对失眠患者睡眠稳定性的研究

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目的：本研究旨在观察静电治疗在对失眠患者药物治疗后睡眠稳定性的疗效，为失眠患者防止复发提供一种良好的治疗方法，减轻药物副作用。方法：选取住院失眠患者，经治疗后睡眠稳定患者，受试者入组前予睡眠监测，PSQI，ESS 睡眠量表评估主客观睡眠质量情况，符合入组条件的予患者使用静电敷贴治疗。1 周后复测，从患者的睡眠质量，入睡时间，睡眠持续时间等相关睡眠参数的评估，从而分析静电治疗前后睡眠改善情况。所得数据采用 SPSS 统计软件进行分析处理。结果：1、一般情况分析：（1）女性在失眠障碍的发病比男性要高很多；（2）成年人失眠障碍的发生率高，这和成年人面临着较大的生活，工作，情绪压力等等有关系。2、睡眠质量和情绪分析（见文章）；结果表明：静电治疗一周后，睡眠质量提高，稳定性增加。抑郁情绪有改善，焦虑情绪无变化。3、睡眠监测指标的分析：结果表明，受试者在静电治疗后睡眠客观指标没有变化。结论：1、静电治疗可以改善患者的睡眠质量，提高睡眠稳定性。2、静电治疗后，患者的抑郁情绪有所改善，但是焦虑情绪没有变化，提示治疗对患者的睡眠稳定性有帮助，考虑与患者的睡眠改善相关；3、静电治疗前后睡眠监测提示其睡眠结构，睡眠参数指标没有变化。可能与治疗时间较短相关。

关键词：静电治疗, 睡眠质量, 睡眠监测, 焦虑抑郁情绪

经颅近红外光刺激治疗抑郁障碍患者的试验性研究

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经颅近红外光刺激（tNIRS）是一种新型的无创神经调控技术。抑郁障碍是目前临床上一类高复发，高致残性的精神疾病，其发病机制中存在着功能网络连接异常。经颅磁刺激同步脑电图（TMS-EEG）是一种可以反应不同脑区兴奋性和动态连接改变的方法。本研究旨在探索通过 tNIRS 左侧额极皮层是否能改善抑郁障碍患者症状，绘制时变脑网络图证实该治疗是否能纠正患者的异常网络连接。本研究纳入 11 例抑郁障碍患者，进行了连续 14 天的 tNIRS。分别在治疗前，治疗结束时，治疗后 2 周、4 周和 8 周使用 HAMD-17, HAMA, PSQI 对其临床症状的严重程度进行评估。同时对 5 例抑郁障碍患者在治疗前和治疗结束时以及 5 例健康对照采集 TMS-EEG 数据，通过自适应定向传递函数方法绘制时变脑网络图进行分析。11 例抑郁障碍的患者在治疗结束时的 HAMD-17 项, HAMA 和 PSQI 量表评分均较治疗前有明显下降。在完成长期随访的 5 例患者中，有 4 例患者在治疗结束后 8 周时仍能达到治疗有效的标准，其中有 3 例患者为临床缓解状态。时变脑网络图提示抑郁障碍患者在治疗之后信息流动强化和弱化的脑区逐渐接近于健康对照，且左侧额极和左侧后颞区可能为其发病机制中的重要网络节点。本研究提示 tNIRS 抑郁障碍患者的左侧额极皮层可以明显改善患者的症状，治疗效果可以持续至 2 个月。时变脑网络图也提示该治疗能改善异常网络连接。

关键词：经颅近红外光刺激；抑郁障碍；TMS-EEG；时变脑网络图

The effect of micronutrient on sleep apnoea risk: a Mendelian randomization study

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Objective: Previous research has hinted at a connection between micronutrient status and sleep apnoea, yet there remains a paucity of observational studies and randomized controlled trials investigating this relationship specifically in the context of sleep apnoea. To address this research void, we employed Mendelian randomization (MR) analysis to examine the impact of serum concentrations of 15 micronutrients—Copper, Selenium, Zinc, Folate, Carotene, Potassium, Iron, Magnesium, Calcium, Vitamin A, Vitamin B6, Vitamin B12, Vitamin C, Vitamin D, and Vitamin E—on the risk of sleep apnoea.

Methods: Two-sample MR was conducted using publicly available summary statistics from independent cohorts of European ancestry. For the three infections, we used data from UK Biobank and FinnGen. For 15 micronutrients, we used data from UK Biobank. For sleep apnoea, we used data from FinnGen. Inverse variance-weighted MR analyses were performed, together with a range of sensitivity analyses. A significance threshold of $P < 0.05$ was deemed to be of nominal importance, whereas the Bonferroni-adjusted statistical significance threshold (for 15 exposures) was established at $P < 0.05/15 = 3.33 \times 10^{-3}$.

Results: We found a suggestive association between circulating levels of magnesium and risk of sleep apnoea, where a one standard deviation increase in blood levels of magnesium was associated with an odds ratio of sleep apnoea of 0.85 (95% confidence interval 0.75, 0.97, $P = 0.01$) (Figure 1). This finding was robust in extensive sensitivity analyses. There was no clear association between the other micronutrients and the risk of sleep apnoea.

Conclusions: Our findings strongly support a protective role for magnesium in sleep apnoea susceptibility, which may help in better use of micronutrients to prevent sleep apnoea and require further verification by further studies.

Keyword: sleep apnoea, micronutrient, Mendelian randomization

经颅直流电刺激对日间过度思睡患者主观思睡状态和警觉性的疗效研究

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研究目的：通过开展随机对照试验（randomized controlled trial, RCT）研究，探索经颅直流电刺激（transcranial direct current stimulation, tDCS）在日间过度思睡（excessive daytime sleepiness, EDS）患者中应用的疗效和安全性，为 tDCS 在 EDS 临床治疗的应用进一步提供证据。

研究方法：收集 2023~2024 年空军军医大学第二附属医院神经内科门诊就诊的 EDS 患者，连续两天先后分别应用 tDCS 治疗和假刺激治疗，探索单次 tDCS 治疗 EDS 的疗效和安全性。

研究结果：研究纳入 20 例 EDS 患者，统计分析结果发现，与假刺激相比，tDCS 治疗可以显著降低 EDS 患者 KSS、SSS、VAS 量表得分，也可以显著改善患者 PVT 测量结局指标。tDCS 治疗过程中未出现严重不良事件。

研究结论：tDCS 可以有效改善 EDS 患者的主观思睡状态和警觉性，未来需要进一步探索 tDCS 的作用机制并优化 tDCS 治疗参数，评估其在不同病因的 EDS 人群中长期疗效和安全性。

关键词：经颅直流电刺激；日间过度思睡；临床疗效；

光疗影响睡眠质量(systematic review)与 meta 分析

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光是调节身体昼夜节律的最重要的授时因子，在平衡觉醒与睡眠之间起着至关重要的作用。因此本系统回顾与荟萃分析旨在探讨强光疗法(BLT)在治疗失眠症状方面的机制及有效性。两名研究者独立检索了三个电子数据库: PubMed、Web of Science 和 EMBASE, 检索时间截至 2023 年 3 月。共纳入了 10 项随机对照试验(RCTs), 研究对象总数为 346 名患者。本研究通过匹兹堡睡眠质量指数(PSQI)和失眠严重程度指数(ISI)评估主观睡眠质量, 并记录了睡眠日记和体动记录仪上的一系列睡眠参数。结果发现 BLT 可以显著改善睡眠质量, 表现为 PSQI 平均变化得分为-2.89 (95% CI = -4.80 至-0.97), ISI 平均变化得分为-2.16 (95% CI = -4.23 至-0.08)。此外, 通过体动记录仪观察到总睡眠时间显著增加 16.78 分钟 (95% CI = 0.67 至 32.89), 而睡眠起始后觉醒时间显著减少 12.91 分钟 (95% CI = -25.62 至-0.20)。结果表明, BLT 可作为改善失眠症状的一种有效手段, 且副作用较少。然而, 该结论仍需在更大样本量的未来临床试验中进一步验证。

关键词: 失眠; 光疗; 系统回顾; meta 分析

蓝光阻挡眼镜治疗失眠的系统回顾

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目的：本研究旨在探索蓝光阻挡眼镜（BBG）在治疗失眠方面的有效性与安全性，为临床应用提供科学依据。

方法：我们通过检索 Pubmed、中国知网等数据库，对国内外研究报道的 BBG 治疗失眠的研究进行了回顾性分析。

结果：目前，在评估蓝光阻挡眼镜（BBG）的干预效果时，研究者们普遍采用了将主观与客观测量措施相结合的方法。BBG 显著提升了患者的主观睡眠质量，但在客观睡眠参数的改善上，其效果却相对有限，甚至出现无改善的情况。这种主客观结果之间的不一致，可能归因于两个主要因素：一是失眠患者自身对睡眠状态的感知可能存在偏差，导致主观评价与实际状况有所出入；二是体动记录仪在区分长时间的静止状态与深度睡眠，以及捕捉睡眠中的细微活动变化（如不安稳和夜间醒来）方面，存在一定的技术局限性。

结论：尽管 BBG 的应用还有一定局限性，但它作为治疗失眠的一种低成本、不良反应的失眠自我管理的新兴手段，对单纯失眠和由精神疾病导致的失眠都有一定作用。但目前 BBG 治疗失眠的研究数量及样本量较少、质量不高，并且评估睡眠的客观方法还不够敏感。因此，未来仍需要在更大规模的试验中证实它对失眠的机制及疗效。

关键词：蓝光阻挡眼镜；失眠；系统回顾

阻塞性睡眠呼吸暂停与炎症反应相关的研究进展

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阻塞性睡眠呼吸暂停（Obstructive Sleep Apnea，OSA）是夜间睡眠过程中反复发生的完全或部分性上气道梗阻，导致发作性呼吸暂停和低通气、引起机体间歇性缺氧的睡眠呼吸障碍疾病。据中国睡眠研究会调查报告显示，目前我国 24.6%的居民有睡眠问题，超 2 亿居民患有失眠障碍，睡眠呼吸暂停高危人群已达到约 1.76 亿。现研究普遍认为 OSA 是一种全身性疾病，睡眠时反复发生慢性间歇性低氧及低氧后再氧合是其最具特征性的病理生理变化。近年来研究发现，炎症反应在 OSA 的发生发展过程中发挥重要作用。OSA 患者夜间反复呼吸暂停出现的组织缺氧，从而引起的缺氧应激反应以及炎性细胞（T 淋巴细胞和单核细胞）的活化，导致一系列的病理生理过程。了解相关炎症蛋白水平与 OSA 之间的关系，有助于研究 OSA 的发病机制及后续开发新的治疗方法。本文基于 OSA 炎症相关致病机制，综合 OSA 与炎症反应及氧化应激的关系进展，进一步阐明炎症反应在 OSA 发病中的病理机制，从而指导临床。

关键词：阻塞性睡眠呼吸暂停；间歇性缺氧；炎症反应；炎症指标

Bibliometric analysis of the research status and hot trends of restless leg syndrome in China

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Background

Restless legs syndrome (RLS) is also known as Willis-Ekbom disease (WED). It is a sensory-motor disorder of the nervous system characterized by indescribable discomfort of the lower limbs (numbness, soreness, ant-walking sensation, etc.) in the resting state, which forces the patient to relieve by activity or walking, especially at night.

In the past 40 years, restless legs syndrome has been widely concerned by Chinese scholars, and more and more scholars have carried out research on restless legs syndrome. However, each scholar involves in different professional fields, and there is a lack of overall analysis of the research on restless legs syndrome in China. Therefore, this study aims to conduct a visual analysis of bibliometrics on the research status, research hotspots, frontiers, and development and evolution trends of RLS in China, explore the development direction of RLS in the future, and provide reference for future research in this field.

Methods

CiteSpace 6.2.R4 software was used for visual analysis. The threshold setting (Selection Criteria) was g-index (parameter k=10-20, the larger the value of k, the more detailed the relevant network). "Author", "keyword" and "Institution" were selected as node types for clustering and highlight analysis.

Results

1. The development process of restless legs syndrome in China is divided into three stages from two nodes.

The first phase was the clinical analysis period (1993-2009). The characteristics of RLS were summarized through a large number of case reports. The second stage was the diagnosis and treatment stage (2010- 2016). Chinese scholars paid attention to the diagnosis and treatment of RLS and summarized the coexistence of RLS and other diseases.

In the third stage (from 2016 to present), the research began to involve more areas such as mechanism research, sleep disorders, sleep quality, quality of life of different populations (pregnant women, the elderly, etc.), and treatment options.

2. Five research hotspots were formed.

Focus 1 The comprehensive impact of restless legs on sleep: #0sleep disorder, #0 sleep disorder, #1 sleep quality, #6 sleep apnea, #8 insomnia, ;

Focus 2 The relationship between restless legs syndrome and other diseases: #0 hemodialysis, #2 uremia, 2 cognitive function, #4 Parkinson's disease;

Focus 3 Clinical manifestations and diagnosis of restless legs: #1 meta-analysis, #3 diagnosis, #6 clinical analysis, #7 mortality, #9 cross-sectional study, #10 lower limb dimensions;

Focus 4 Treatment and intervention of restless legs: #4 acupuncture, #4 pramipexole, #11 exercise;

Focus 5 Pathological mechanisms and causes of restless legs syndrome: #3 genetic risk factors, #6 iron deficiency, #8 gray matter volume, #9 dopamine;

Keyword: Restless legs syndrome; Bibliometric analysis; Citespace

The relationship between education level and the prevalence and health seeking behavior of Sleep-Disordered Breathing

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Background: Sleep-Disordered Breathing (SDB) is a heavy burden, with many risk factors, and the impact of educational level on the incidence of SDB is still unclear.

Objective: This study aims to explore the relationship between different levels of education and the prevalence of SDB, as well as their impact on medical behavior.

Methods: This study conducted a survey on the current situation of residents in two cities and five districts. The research includes basic demographic information, education level, lifestyle, disease history, snoring situation, medical behavior, disease awareness, oxygen deficiency index, and minimum nighttime blood oxygen saturation. Exploring the relationship between education level and SDB, as well as its impact on medical behavior.

Results: A total of 3830 people in the community were surveyed for sleep monitoring. The incidence rates of SDB in the five groups were 29.7%, 33%, 29.2%, 30.5%, and 31.5%, respectively, based on education levels of illiteracy, primary school, junior high school, high school, university and above, with no significant difference ($p=0.580$). Further regression analysis showed that age, gender, education level, BMI, neck circumference, smoking, comorbidity diabetes or hypertension were related to the prevalence of SDB. The higher the education level, the higher the risk of SDB, but the relationship between education level and SDB after gender stratification is not significant ($p>0.05$). The SDB visit rates for five groups with different educational levels were 2.8%, 4.4%, 3.7%, 3.7%, and 3.9%, respectively, with no significant difference ($p=0.981$). Further regression analysis showed that gender, minimum oxygen saturation, disease awareness, comorbidity diabetes or insomnia were related to the health seeking behavior of SDB patients, and the relationship between education level and health seeking behavior was not significant ($p>0.05$).

Conclusion: The relationship between education level and the incidence of SDB is not significant, and there is not much difference in the health seeking behavior of SDB between different education levels. It is suggested that SDB educational intervention should be carried out equally in people with different education levels.

Keyword: education level, Sleep-Disordered Breathing, prevalence, influence factor, health seeking behavior

持续气道正压对阻塞性睡眠呼吸暂停患者呼吸努力的影响

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目的: 肥胖是 OSA 的独立危险因素, 胸壁增厚及腹压增高使膈肌上移等原因增加 OSA 患者的吸气负荷。一定压力的 CPAP, 可打开塌陷的上气道软组织、支撑胸壁, 使 OSA 患者的膈肌下降至顺应性更佳的位置, 改善肺泡充盈的顺应性, 降低吸气努力。然而, CPAP 压力过高可增高呼吸中枢驱动, 增加呼吸努力, 影响睡眠, 压力过低又无法有效消除夜间 OSA 事件。呼吸肌电是反映呼吸努力的指标, 本研究采集 OSA 患者膈肌及腹横肌体表肌电, 结合主观感受性, 寻找不引起呼吸负荷及呼吸困难的最适 CPAP 治疗压力。

方法: 以随机双盲的研究方法, 纳入 33 名 OSA 患者 (表 1), 先予 12 cmH₂O CPAP 适应性戴机 10 分钟后, CPAP 0 - 20 cmH₂O 共 10 个压力, 每个压力随机戴机 3 分钟, 每 2 个压力之间休息 1 分钟, 期间以自主设计的主观问卷, 询问患者呼吸困难感受性。采集其中 16 名患者体表膈肌及腹横肌肌电, 客观反映不同 CPAP 压力下患者的呼吸努力。

结果: 当 CPAP 压力超过 10 cmH₂O 时, OSA 患者体表膈肌肌电显著增高 ($P < 0.05$, 图 1-A), 体表呼气肌电直到 CPAP 14 cmH₂O 以上时开始明显增加 ($P < 0.05$, 图 1-B)。患者呼吸困难主观感受性于 CPAP 12 cmH₂O 以上时显著增加 ($P < 0.05$, 图 2)。

结论: CPAP 10 cmH₂O 及以下水平, 不会引起 OSA 患者呼吸努力和呼吸困难感受性的增加。

关键词: 持续气道正压; OSA; 体表膈肌肌电; 体表腹横肌肌电; 呼吸中枢驱动

Covariance patterns between sleep health domains and distributed intrinsic functional connectivity

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Sleep health is both conceptually and operationally a composite concept containing multiple domains of sleep. In line with this, high dependence and interaction across different domains of sleep health encourage a transition in sleep health research from categorical to dimensional approaches that integrate neuroscience and sleep health. Here, we seek to identify the covariance patterns between multiple sleep health domains and distributed intrinsic functional connectivity by applying a multivariate approach (partial least squares). This multivariate analysis reveals a composite sleep health dimension co-varying with connectivity patterns involving the attentional and thalamic networks and which appear relevant at the neuromolecular level. These findings are further replicated and generalized to several unseen independent datasets. Critically, the identified sleep-health related connectome shows diagnostic potential for insomnia disorder. These results together delineate a potential brain connectome biomarker for sleep health with high potential for clinical translation.

Keyword: Sleep health; Dimensional approach; resting-state functional connectivity; Classification; Attentional and thalamus networks

Nucleus Tractus Solitarii Leptin Receptor Neurons Modulate Exercise-Induced Sleep

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Quality sleep is essential for overall health, with exercise emerging as an effective, non-pharmacological intervention for the rising prevalence of sleep disorders and their associated cardiovascular and psychological impacts. However, the effects of exercise on sleep and the mechanisms involved remain unclear. Here, we analyze the association between physical activity and sleep in Chinese adults and, by constructing a mouse moderate exercise model, observe changes in sleep duration post-exercise, confirming the sleep-promoting phenomenon of exercise and elucidating its underlying neural mechanisms. We demonstrate that exercise positively impacts sleep quality, reducing the time to fall asleep and sleep disorders, and improving sleep efficiency, through multinomial logistic regression analysis of 24,836 participants using the International Physical Activity Questionnaire (IPAQ-7) and the Pittsburgh Sleep Quality Index (B-PSQI). In a mouse exercise model, we show that 3 hours of exercise lead to reduced wakefulness and increased NREM sleep and activates nucleus tractus solitarii leptin receptor (NTS^{LepRb}) neurons. Inhibition of these neurons reduces the sleep-inducing effect of exercise, while chemogenetic activation of the NTS^{LepRb}-LPB pathway specifically extends NREM sleep duration. Ablation of this pathway reduces the sleep-promoting effect of exercise. Overall, our findings reveal that moderate exercise increases the duration of sleep in mice, primarily mediated by the NTS^{LepRb}-LPB neural pathway.

Keyword: Exercise, Sleep, Nucleus tractus solitarius, LepRb neurons, Neural circuit

疏肝健脾养心方对失眠模型小鼠食欲素 A 及其受体的干预作用

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目的：探讨疏肝健脾养心方下调食欲素 A (OXA) 及食欲素受体 1 (OX1R)、食欲素受体 2 (OX2R) 的表达对失眠模型小鼠的干预作用。方法：利用腹腔注射 PCPA 建立失眠小鼠模型，50 只 BALB/c 小鼠随机分为空白组、模型组、右佐匹克隆组(0.13 mg·kg⁻¹)、疏肝健脾养心方低、高剂量组(8.4、33.6 g·kg⁻¹)，治疗 14 d。监测小鼠体质量变化，进行 Morris 水迷宫、戊巴比妥钠协同睡眠实验，免疫组化检测下丘脑 OXA 的表达；酶联免疫吸附测定法检测下丘脑、血清、脾脏组织中 OXA、5-羟色胺 (5-HT) 含量；实时荧光定量聚合酶链式反应 (Real-time PCR) 检测下丘脑 OXA 及其受体 OX1R、OX2R mRNA 表达。结果：与空白组比较，模型组小鼠体质量降低 ($P<0.01$)，逃避潜伏期、睡眠潜伏期延长、睡眠持续时间减少 ($P<0.01$)，下丘脑、血清、脾脏组织中 OXA、5-HT 含量降低 ($P<0.05$)，下丘脑中 OXA 及其受体 mRNA 含量升高 ($P<0.01$)。与模型组比较，疏肝健脾养心方低、高剂量组小鼠体质量升高，逃避潜伏期、睡眠潜伏期缩短，睡眠持续时间增加 ($P<0.01$)，下丘脑、血清、脾脏组织中 OXA 含量降低、5-HT 含量升高。结论：疏肝健脾养心方具有镇静、催眠作用，其治疗失眠的机制与增加脑中 5-HT 的含量，抑制下丘脑中 OXA 及其受体的表达有关。

关键词：疏肝健脾养心方；失眠；食欲素 A (OXA)；5-羟色胺 (5-HT)；

阻塞性睡眠呼吸暂停综合征通过肠道菌群介导睡眠障碍的机制研究

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研究背景：阻塞性睡眠呼吸暂停综合征（obstructive sleep apnea syndrome, OSAS）是常见的睡眠障碍类型，可引起认知障碍，然而其机制目前尚不十分清楚。OSAS 患者睡眠结构紊乱，伴有肠道屏障功能受损，肠道通透性增高，肠道环境紊乱，肠道菌群失调，然而肠道菌群是否介导 OSAS 引起的认知障碍，目前尚不十分清楚。

研究方法：构建抗生素小鼠，采用间歇低氧模型构建 OSAS 小鼠模型，探究 OSAS 是否通过肠道菌群影响认知功能；根据 OSAS 小鼠以及对照组肠道菌群变化，筛选出差异菌种，进一步探究其介导认知障碍的机制。

研究结果：我们发现，OSAS 小鼠肠道菌群紊乱，厚壁菌门和变形菌门（F:B）比率降低，乳酸杆菌显著减少，臭味杆菌增加），肠道和血屏障功能破坏以及外周炎症因子的表达上调，同时出现认知功能下降，而无菌小鼠则无该变化。把 OSAS 鼠的粪移植给正常小鼠，也发现类似表现，这表明肠道菌群参与了 OSAS 之后的认知行为。通过 16s 检测，提示 OSAS 小鼠肠道菌群中乳酸杆菌显著减少。补充乳酸杆菌改善认知功能，其机制可能是通过乳酸杆菌代谢产生短链脂肪酸（丁酸），通过 TLR4/NF- κ B 信号通路改善认知障碍。

研究结论：该研究发现肠道菌群介导 OSAS 诱导的认知障碍，其机制可能是通过短链脂肪酸（丁酸）介导的 TLR4/NF- κ B 信号通路，为进一步探究睡眠障碍与认知的关系提供更多理论依据。

关键词：睡眠障碍，认知障碍，肠道菌群

NLRP3 介导的细胞焦亡在间歇性低氧诱导肺泡上皮细胞 EMT 中的作用及机制初探

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目的

初探 NLRP3 介导的细胞焦亡在间歇性低氧诱导肺泡上皮细胞 EMT 中的作用及机制

方法

将 A549 细胞随机分为常氧 (RA) 组和间歇性低氧 (IH) 组。采用光学显微镜观察、蛋白免疫印迹、免疫荧光和 ELISA 评估细胞 EMT 改变及 NLRP3 炎症小体介导的焦亡通路相关分子表达。使用 siNLRP3 干扰技术特异性抑制 NLRP3 表达, 将 A549 细胞分为 RA 组、IH 组、siNLRP3+IH 组, 使用 qRT-PCR 评估干扰效果, 检测细胞 EMT 改变及 NLRP3 炎症小体介导的细胞焦亡通路。

结果

光镜下可见, RA 组细胞呈立方状、边界清晰、排列整齐, IH 组细胞两端细长、极性消失、排列紊乱。免疫荧光和蛋白免疫印迹结果显示, 与 RA 组比较, IH 组 E-钙黏蛋白表达明显减少, 波形蛋白、 α -SMA、NLRP3、半胱天冬酶-1 前体、半胱天冬酶-1 和 GSDMD 表达显著增加 ($P < 0.05$)。ELISA 结果显示, IH 组与 RA 组比较, IL-1 β 释放显著升高 ($P < 0.05$)。特异性抑制 NLRP3 后, siNLRP3+IH 组细胞波形蛋白、 α -SMA、NLRP3、半胱天冬酶-1 前体、半胱天冬酶-1 和 GSDMD 表达明显低于 IH 组, E-钙黏蛋白表达高于 IH 组 ($P < 0.05$)。

结论

IH 可能通过激活 NLRP3 介导的细胞焦亡致肺泡上皮细胞 EMT 改变, 抑制 NLRP3 的表达可下调 NLRP3 介导的细胞焦亡信号通路活性, 从而减轻 IH 诱导的肺泡上皮细胞 EMT 的程度。

关键词: 间歇性低氧, NLRP3 介导的细胞焦亡, 肺泡上皮细胞, 上皮-间充质转化

Astrocytes participate in regulating circadian rhythms of seizure susceptibility

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The time-of-day factor is known to influence the occurrence of seizures. It has been widely reported in human patients and animal epileptic models that, the susceptibility of seizure onsets could exhibit circadian rhythms. However, the underlying mechanisms remain unrevealed. In the current study, we characterized the role of astrocytes in mediating the circadian rhythm of seizure susceptibility in a chemogenetics-induced epileptic mouse model. We induced seizure onsets by intraperitoneally injecting Clozapine N-oxide (CNO) at ZT 3 or ZT 15 respectively in mice expressing hm3Dq in hippocampal glutamatergic neurons. CNO i.p. injection could induce II-V levels of seizure onsets mimicking the clinical temporal lobe seizures. We observed that the same dosage of CNO generates significantly more severe seizure onsets when given at ZT 3 (light-on phase) versus at ZT 15 (light-off phase). Activation of hippocampal astrocyte hm4Di instead of hm3Dq via chemogenetic approaches at ZT 3 delayed the first onset of seizure post CNO injection, and significantly reduced the prevalence of II-III levels seizure as compared with controls. The current study established a CNO-induced epileptic model to present the circadian rhythms of seizure susceptibility. It also indicates that astrocytes could participate in regulating circadian rhythms of seizure susceptibility, probably via Gi signaling pathway.

Keyword: Astrocytes, chemogenetics, circadian rhythms, seizure susceptibility

OSA 免疫相关生物标志物及免疫浸润特征研究

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目的:

阻塞性睡眠呼吸暂停综合征 (OSA) 是一种常见的睡眠呼吸障碍类疾病, 可引起多器官系统功能障碍。OSA 的确切机制尚未完全阐明, 早期诊断的重要性被低估, 对免疫系统的影响无法准确预测。本研究旨在识别 OSA 的免疫标志物并揭示其作用机制。

材料与amp;方法:

从 GEO 和 ImmPort 数据库下载 OSA 相关数据集 (GSE38792) 和免疫相关基因 (IRGs), 交互后获得 OSA 中差异表达的免疫相关基因 (DEIRGs)。采用 GO、KEGG、GSEA 等富集分析方法探讨 DEIRGs 的生物学功能。CIBERSORT 分析免疫相关细胞和免疫浸润调节关系。构建 ROC 曲线评估 DEIRGs 的诊断准确性。利用 NetworkAnalyst 数据库构建转录因子、microRNA 和药物共调控网络, 并通过 Cytoscape 进行可视化。采用 RT-qPCR 检测验证临床标本中 DEIRGs 的表达水平。

结果:

GSE38792 中存在 175 个差异表达基因, 与 IRGs 相匹配后获得 11 个 DEIRGs。其基因调控网络包含 128 个 miRNA, 40 个转录因子和 172 个药物/化合物靶点。临床样本验证中 IL33、EIF2AK2、ANGPTL1、IL10RB 高表达与数据集分析结果一致。

结论:

本研究发现, IL33、EIF2AK2、IL10RB 和 ANGPTL1 在 OSA 中高表达, 可作为 OSA 的免疫相关生物标志物和治疗靶点。

关键词: 阻塞性睡眠呼吸暂停综合征; 生物信息学分析; 免疫浸润; 免疫细胞

青少年发作性睡病的认知信息加工特征

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目的 了解基于 PASS 理论建立的认知评估 (DN:CAS) 系统对发作性睡病青少年认知过程的评价情况 **方法** 采用 DN:CAS 评估系统对 35 例发作性睡病青少年及其年龄、性别相匹配 35 例健康对照组进行测评, 比较两组测验表分结果的差异。 **结果** 发作性睡病组与健康对照组的 DN:CAS 4 个分测验中的计划测验 [85.00 (75.00, 96.00) 分比 92.00 (90.00, 98.00) 分, $z=-3.478, P<0.01$]、注意测验 [88.00 (77.00, 94.00) 分比 94.00 (88.00, 100.00) 分, $z=-2.343, P<0.05$] 以及总分 [99.00 (89.00, 108.00) 分比 105.00 (100.00, 111.00) 分, $z=-2.428, P<0.05$] 的量表分差异均有统计学意义。其中计划测验中的数字匹配 $z=-2.279, P<0.05$ 、注意测验中的数字检测 $z=-1.977, P<0.05$ 以及接受性注意 $z=-2.497, P<0.05$ 的量表分差异均有统计学意义。发作性睡病组与健康对照组的计划测验量表分、注意测验量表分及总量表分的百分等级分布差异均有统计学意义 (P 均 <0.05)。 **结论** 发作性睡病青少年存在认知过程缺陷, 以计划功能和注意功能缺陷为主要特征。

关键词: 青少年发作性睡病 Das-Naglieri 认知评估系统 认知加工特征

Glymphatic System Dysfunction and Sleep deprivation May Contribute to the Pathogenesis and Progression of Cognitive impairment

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The glymphatic system functions most optimally to remove extracellular brain solutes during sleep and therefore sleep deprivation may be a crucial progression factor as well as a risk factor. The purpose of this study was to look at how the glymphatic system functions in relation to sleep deprivation-induced cognitive impairment. In this investigation, we first employed electroencephalography (EEG) to confirm that sleep deprivation had been successfully established. Then, by identifying aquaporin-4 (AQP4), a crucial component of glymphatic system activity, we confirmed the functional relevance of the glymphatic system in cognitive impairment brought on by sleep deprivation. Finally, we altered the AQP4 to see if sleep-deprived mouse's cognitive function had changed. The modulation of AQP4 may play a role in the loss in cognitive performance that sleep deprivation causes. In light of this, we hypothesize that sleep deprivation impairs the glymphatic system by lowering AQP4, which has an impact on cognitive behavior, particularly learning and memory. So, we conclude that the glymphatic system plays a very important functional role in cognitive impairment caused by sleep deprivation. To determine whether AQP4 might be regarded as a risk factor for cognitive impairment and to better understand the regulatory mechanisms of this protein, more research is nevertheless required.

Keyword: Glymphatic system, Meningeal lymphatic vessels, sleep deprivation, AQP4

自噬通过 p-PERK-ATF4-CHOP 通路调控内质网应激在间歇性低氧诱导 PC12 细胞凋亡中的机制研究

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目的：本实验通过构建 IH 细胞模型，采用激活与抑制 ERS 与自噬、抑制激活转录因子 4 (ATF4) 的方法，对比各组细胞形态变化和细胞活性，检测基因和蛋白的表达，探究 ERS 与自噬对 IH 诱导的 PC12 细胞凋亡的影响，探究自噬调控 ERS 在 IH 诱导的 PC12 细胞凋亡中的机制。

方法：本实验用 PC12 细胞代替神经元，通过建立 IH 细胞模型模拟 OSAHS 的病理生理机制，用 ERS 激动剂毒胡萝卜素 (thapsigargin, Tg)、ERS 抑制剂 4-苯基丁酸 (4-phenylbutyrate acid, 4-PBA)、自噬激动剂雷帕霉素 (rapamycin, Rap)、自噬抑制剂 3-甲基腺嘌呤 (3-methyladenine, 3-MA)、ATF4 抑制剂 ISRIB 分别处理 PC12 细胞。

结果：(1) 内质网应激增加 IH 诱导的 PC12 细胞凋亡 (2) 自噬减轻 IH 诱导的 PC12 细胞凋亡 (3) 自噬可通过 p-PERK-ATF4-CHOP 通路调控内质网应激，减轻 IH 诱导的 PC12 细胞凋亡。

结论：(1) 内质网应激增加 IH 诱导的 PC12 细胞凋亡 (2) 自噬减轻 IH 诱导的 PC12 细胞凋亡 (3) 自噬可通过 p-PERK-ATF4-CHOP 通路调控内质网应激，减轻 IH 诱导的 PC12 细胞凋亡。

关键词：间歇低氧, 内质网应激, 自噬, 细胞凋亡

1 型发作性睡病的 DNA 甲基化特征及可能致病机制

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研究目的：基于表观遗传学机制，探索 1 型发作性睡病（narcolepsy type 1, NT1）的 DNA 甲基化特征及可能发病机制。

研究方法：纳入 2022 年 1 月至 2023 年 1 月在我科睡眠中心就诊的 NT1 患者 3 例，健康对照组 4 例，且两组年龄相仿、性别一致，进行 DNA 甲基化相关分析。

研究结果：①筛选出的差异甲基化位点能够较好区分两组，尤其是前 20 个差异甲基化位点（其中高甲基化位点 10 个，低甲基化位点 10 个）；②基因组上的分布主要集中在基因间区，而不是 CpG 岛，且差异位点所在的 CpG 区域主要在 open sea 区，推测开放区域的甲基化可能会导致转录异常；③GO 富集分析发现差异甲基化基因功能主要集中在脂肪酸氧化代谢、单羧酸代谢、神经肽分泌、抗原加工和递呈过程及核糖体组成等方面；④KEGG 富集分析发现，差异化基因主要参与机体免疫过程和核糖体翻译蛋白质过程两条通路，具体基因为 HLA-DRB1、PRG2、RPL17 和 RPL17-C18orf32。

研究结论：NT1 中的差异甲基化基因功能主要富集在脂肪酸氧化代谢、单羧酸代谢、神经肽分泌、抗原加工和递呈过程及核糖体组成等方面。

关键词：发作性睡病，DNA 甲基化

衰老过程中睡眠变化对记忆的影响

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良好的睡眠对于巩固记忆、促进学习至关重要。睡眠期间大脑会重新激活并强化白天学习到的信息促进长期记忆形成，并进行全脑突触重整以维持突触稳态。然而随着年龄的增长，老年人的睡眠宏观和微观结构发生了一系列的变化，这可能与大脑生理性衰老有关。其中，老年人慢波活动、慢振荡和纺锤波的受损被证实与其记忆下降显著相关。使用睡眠期间的非侵入性神经刺激技术（如电刺激、感官刺激）可以有效调控睡眠结构，具有老年人记忆改善的潜力。

关键词：睡眠，记忆，衰老，记忆巩固，非侵入性神经刺激

The value of using ELISA to detect orexin-A in cerebrospinal fluid in the diagnosis of narcolepsy

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Purpose: Orexin in cerebrospinal fluid (CSF) is a neuropeptide synthesized by a cluster of neurons in the lateral hypothalamus. It mainly functions to maintain arousal, regulate feeding, and participate in reward mechanisms.

Radioimmunoassay (RIA) and enzyme-linked immunosorbent assay (ELISA) can detect CSF orexin. At present, RIA is widely used but is limited by various conditions, which is not conducive to its widespread development. We aimed to determine whether ELISA can replace RIA in detecting orexin in CSF.

Patients and Methods: We investigated the results of 20 patients with central disorders of hypersomnolence, including 11 with narcolepsy type 1, two with narcolepsy type 2, five with idiopathic hypersomnia, and two with other causes of somnolence. RIA and ELISA were used to detect CSF orexin, and p values < 0.05 were considered to be significant.

Results: In the narcolepsy and non-narcolepsy type 1 groups, there was no correlation between the RIA and ELISA results ($P > 0.05$). In the narcolepsy type 1 group, the ELISA and RIA results were significantly different ($P < 0.05$), but this was not observed in the non-narcolepsy type 1 group ($P > 0.05$). The accuracy of ELISA to detect CSF orexin was lower than that of RIA ($P < 0.05$).

Conclusion: ELISA cannot replace RIA in the measurement of CSF orexin, and RIA is recommended as the first choice when narcolepsy is suspected.

Keyword: narcolepsy; neuropeptide; radioimmunoassay; enzyme-linked immunosorbent assay; Orexin

1 型发作性睡病认知功能障碍的研究进展

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认知障碍是 1 型发作性睡病（Narcolepsy Type 1, NT1）的常见症状之一，严重影响患者的学习工作。目前研究表明，NT1 患者在注意力、记忆、执行功能等认知领域存在显著障碍。NT1 认知障碍具体机制不明确，动物研究显示脑脊液食欲素分泌缺乏与认知障碍密切相关，同时近些年来神经影像学已结合不同的研究方法应用于 NT1 认知障碍机制的研究，能反映相关结构和功能异常。1 型发作性睡病的认知障碍治疗至今仍缺乏有循证依据的治疗手段。本文对 1 型发作性睡病的认知障碍进展做一综述。

关键词：1 型发作性睡病；认知功能；食欲素；功能磁共振

基于倾向性评分匹配法探讨阻塞性睡眠呼吸暂停患者糖脂代谢紊乱关联性研究

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目的 比较阻塞性睡眠呼吸暂停（OSA）患者与健康体检人群之间以及不同严重程度 OSA 患者间血糖、血脂水平。**方法** 选择 2023 年 6 月—2024 年 3 月期间在克拉玛依市中心医院经多导睡眠监测（PSG）确诊的成年 OSA 患者 251 例，同期选择体检中心无慢性病史及其他病史的健康体检人群 550 例，获取一般临床相关资料及血常规、血脂、尿酸等相关指标。对 OSA 患者与健康人群间的影响因素进行倾向性评分匹配，根据呼吸暂停低通气指数（AHI）将 OSA 分为轻、中、重度三组，比较不同严重程度 OSA 患者组间及 OSA 人群与健康人群间血脂水平的差异。**结果** 共匹配 148 对。1. 匹配后 OSA 人群与体检健康人群间比较：两组间在 BMI、血糖、尿酸、高密度脂蛋白、低密度脂蛋白、红细胞计数、血红蛋白间差异存在统计学意义。2. OSA 人群男、女性间比较：两组间在尿酸、甘油三酯、高密度脂蛋白、红细胞计数、血红蛋白间差异存在统计学意义。3. OSA 人群不同严重程度组间比较：显示轻度 OSA 患者高密度脂蛋白高于中、重度 OSA 患者，其余指标无差别。**结论** OSA 患者存在尿酸、糖、脂类代谢紊乱，且男性 OSA 患者高于女性 OSA 患者，但与 OSA 严重程度关系尚不明确，值得进一步研究。

关键词：阻塞性睡眠呼吸暂停, 脂代谢紊乱, 体检人群, 倾向性评分匹配

CPAP 治疗阻塞性睡眠呼吸暂停低通气综合征合并孕高症 1 例

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1, 病例报告

患者，女，30岁，主因“孕20周，发现血压升高1天”，于2023年3月5日来我院就诊。查体：血压181/105mmHg, 肥胖体型，颈围48cm, 双肺呼吸音低，腹膨隆，胎心正常，双下肢水肿。入院后诊断为：孕20周 孕高症，给予硝苯地平控释片30mg口服，每天1次，口服3天，血压170/95mmHg。同病房病友告知患者夜间睡眠打鼾，有呼吸暂停，白天嗜睡。睡眠呼吸监测：AHI 95.8, 符合重度阻塞性睡眠呼吸暂停低通气综合征，给予CPAP治疗2天，血压141/85mmHg。定期随访，患者在家继续佩戴无创呼吸机治疗睡眠呼吸暂停，血压在正常范围。

2, 讨论

总的来说，孕高症降压药物很多，有阻塞性睡眠呼吸暂停低通气综合征并孕高症的患者口服降压药效果差，联合CPAP治疗可明显改善患者睡眠质量，有效控制血压，也可减少降压药使用量。

关键词：高血压 孕高症 CPAP

阻塞性睡眠呼吸暂停（OSA）合并高血压患者夜间血压波动及其相关因素分析

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目的：探讨阻塞性睡眠呼吸暂停(OSA)合并及未合并高血压患者夜间血压波动的特点及其相关影响因素。**方法：**2023年3-12月间,我们对在克拉玛依市中心医院呼吸睡眠病区住院的353例OSA患者进行睡眠监测,比较汉族、维吾尔族及男、女性OSA合并高血压患者夜间血压波动情况及其相关因素。**结果：**研究共纳入353例中、重度OSA患者,其中OSA合并高血压患者143例,平均年龄(53±12)岁,AHI(39.4±24.3)次/小时,未合并高血压的OSA患者210例,男性260例,女性93例,汉族310例,维吾尔族43例,OSA合并高血压与未合并高血压组间民族、性别构成无统计学差异。年龄、AHI相匹配的OSA合并与未合并高血压患者组间在BMI,平均收缩压、平均舒张压、NPBF指数差异有统计学意义。男、女性OSA合并高血压组间在年龄、BMI、平均氧饱和度、平均舒张压、NPBF指数差异有统计学意义,汉、维吾尔族OSA合并高血压组间在BMI、平均舒张压差异有统计学意义。皮尔逊相关性分析提示NPBF与年龄、性别,AHI有相关性,统计学差异有显著性(P<0.05)。**结论：**OSA合并高血压患者夜间血压波动(NPBF)均高于OSA未合并高血压的患者,汉族OSA合并高血压患者平均舒张压高于维吾尔族,男性OSA合并高血压患者平均舒张压、NPBF高于女性OSA合并高血压患者,NPBF与年龄、性别和呼吸紊乱相关。

关键词：阻塞性睡眠呼吸暂停(OSA),持续气道正压通气(CPAP),脉搏传导时间(PTT),夜间血压波动(NBPF)

人工压力滴定对阻塞性睡眠呼吸暂停合并高血压患者的降压疗效及相关性分析

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目的 探讨整夜人工压力滴定 (overnight manual pressure titration, OMPT) 对阻塞性睡眠呼吸暂停 (obstructive sleep apnea, OSA) 合并高血压患者的即时疗效及相关临床表型分析。方法 研究对象来自于河北医科大学第三医院呼吸睡眠科的 88 例 OSA 合并高血压患者, 将患者分为降压显著组 (all decrease 组, All-Dcr 组; n=28) 和不显著组 (non decrease 组, Non-Dcr 组; n=60)。分析 OMPT 对 OSA 合并高血压患者是否具有即时降压疗效, 探讨相关影响因素。结果 在 All-Dcr 组和 Non-Dcr 组患者中, OMPT 后 Δ N3 比例 (Δ =OMPT 后-OMPT 前) ($r=0.343$, $P<0.01$)、 Δ REM 比例 ($r=0.275$, $P<0.05$) 与 OMPT 降压疗效呈正相关; Δ ArI ($r=-0.225$, $P<0.05$) 与 OMPT 降压疗效呈负相关。 Δ LSaO₂ ($r=0.271$, $P<0.05$) 与 OMPT 降压疗效呈正相关; Δ AHI ($r=-0.262$, $P<0.05$) 及 Δ ODI ($r=-0.225$, $P<0.05$) 与 OMPT 降压疗效呈负相关。结论 OMPT 对于 OSA 合并高血压患者的即时降压疗效与治疗过程中睡眠结构、觉醒状态及呼吸暂停严重度具有明显相关性。

关键词: 整夜人工压力滴定;阻塞性睡眠呼吸暂停;高血压

饮食干预对便秘患儿睡眠质量的影响

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摘要：目的：分析对便秘患儿提供饮食干预的意义。方法：对研究样本进行收录的时间范围制定为2022年10月至2023年10月，对研究样本对象制定为50例便秘患儿，利用电脑抽号法的形式对患儿进行分组处理，以研究组、常规组作为两组的命名，各25例，分别对其提供饮食干预、常规干预，对比两组患儿的差异性。结果：研究组患儿的排便间隔时间更短，患儿的排便困难评分、睡眠质量评分更低，患儿的护理效果更佳（ p 均 <0.05 ）。结论：对于便秘患儿而言，给予其饮食干预进行指导，对患儿的排便间隔时间、排便困难评分、睡眠质量等方面均具有积极地改善作用，并且能够提高患儿的护理效果。

关键词：饮食干预；便秘患儿；睡眠质量

基于随机森林算法构建并验证治疗后中枢性睡眠呼吸暂停预测模型

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目的 基于随机森林（RF）算法构建并验证治疗后中枢性睡眠呼吸暂停（TECSA）预测模型，为临床预判此类患者的疾病风险、无创呼吸机的模式选择及治疗效果提供参考依据。

方法 采用回顾性研究分析进行多导睡眠监测（PSG）和持续气道正压通气（CPAP）治疗的阻塞性睡眠呼吸暂停（OSA）患者 220 例，采用 R-studio 软件将研究对象按 7：3 比例随机分为训练集和验证集。根据患者进行 CPAP 压力滴定后是否出现 TECSA 将患者分为 TECSA 组和非 TECSA 组，对影响因素进行单因素分析，然后将 $p < 0.05$ 的因素纳入模型，通过训练集进行随机森林模型构建。测试集数据进行模型验证，选取最优节点值和决策树数目，对各变量的重要性进行排序，利用 AUC、准确度、灵敏度、特异度等指标评价模型预测性能。

结果 单因素分析发现年龄、性别、BMI、AHI、MAI、CAI、ArI、MSpO₂ 在 TECSA 组与非 TECSA 组均具有统计学意义。随机森林模型最佳节点值为 2、最佳决策树数目为 200。模型中预测因子前五位重要性排序依次为：MAI、CAI、AHI、年龄、ArI。模型预测的准确度为 87.69%，灵敏度为 76.47%，特异度为 91.67%，AUC 为 0.958。

结论 随机森林分类算法确定的重要预测因子可为预测 OSA 患者出现 TECSA 风险提供有用的信息，模型预测性能良好。

关键词： 治疗后中枢性睡眠呼吸暂停, 阻塞性睡眠呼吸暂停, 持续气道正压通气, 随机森林, 预测模型

发作性睡病患者肥胖程度与嗜睡程度的关联性研究

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研究目的

本研究目的是观察在不同 BMI 水平组的发作性睡病患者中，PSQI 得分与 ESS 评分是否存在差异，以及 ESS 得分与 BMI 指数的关联性。

研究方法

本研究选取自 2023.3-2024.5 就诊于山东省千佛山医院神经内科且诊断明确的发作性睡病患者共 40 例，其中伴有肥胖（BMI \geq 24）的患者 24 名，不伴有肥胖（BMI $<$ 24）的患者 16 名

（以下简称组 2）；两组年龄均介于 13-40 岁之间，且组间平均年龄及性别比例不存在统计学差异。我们采集受试者基本信息，包括出生年月日、身高体重等，对其进行 PSQI 及 ESS 两项量表评估，采用标准多导睡眠监测+小睡实验以明确诊断发作性睡病。对所收集来的上述数据，应用 SPSS 26 软件，经 Levene's 方差齐性检验进行分析。

研究结果

研究显示，在 PSQI 得分方面，两组间无统计学差异（ $P=0.299$ ）。而在 ESS 得分方面，组 1 与组 2 相比评分更高（ $P=0.004$ ）。而简单线性回归结果提示 ESS 得分与 BMI 指数之间存在线性相关（ $R=0.265$ ， $P=0.001$ ），ESS 得分与 BMI 的回归关系可表示为

$$ESS = (0.47 * BMI) + 3.662$$

研究结论

上述结果提示，在发作性睡病患者中，肥胖组（BMI $>$ 26）的平均 ESS 得分要显著高于对照组，且 ESS 得分与患者 BMI 水平存在线性相关关系。这一发现有助于对患者的嗜睡程度进行初步估计，也为后续探索相关损害的机制提供研究方向。

关键词：发作性睡病，嗜睡程度，肥胖，ESS 量表

WHR、IR 和 OSA 的多因素关系：一项大样本横断面研究

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目的：阻塞性睡眠呼吸暂停（OSA）相关的并发症是 OSA 的预后和复杂病因的主要关注点，本研究通过大样本横断面观察性研究，利用复杂的统计方法探讨 OSA 的代谢并发症之间的相互关系，期望阐述 OSA 的复杂性。

方法：本研究共纳入了 5,326 个研究对象并收集了详细的临床资料，包括血糖、血脂、血压等生化指标，标准睡眠多导参数和人体测量学数据的详细记录。通过验证性因子分析（CFA）分析了 OSA 与高血压、IR、血脂、肥胖之间的相关性，通过调节分析和中介分析分别定义了 IR、WHR 和 OSA 之间的关系。

结果：CFA 显示 IR 和肥胖强相关（loading = 0.73, $P < 0.001$ ）。OSA 与肥胖和 IR 均有关（loading = 0.57; loading = 0.46, P 均 < 0.001 ）。调节分析显示，WHR 和 IR 之间的交互作用 AHI 有显著影响（系数 = -2.451; $P = 0.023$ ），中介分析显示，WHR 作为中介变量解释了 IR 与 AHI, ODI 和 MAI 之间关系，其间接效应分别占总效应的 14.93%, 14.02% 和 13.10%，但当 IR 作为中介变量时，其间接效应只在 AHI 与 ODI 中有意义，仅占 1.74% 和 1.86%。

结论：IR、WHR 和 OSA 指标之间存在明显的多因素、非单调的相互关系，表明 OSA 及其相关的并发症是复杂且互相影响的。

关键词：阻塞性睡眠呼吸暂停；胰岛素抵抗；腰臀比；验证性因子分析；调节效应；中介效应

原发性不宁腿综合征患者伴发阻塞性睡眠呼吸暂停及危险因素的初步研究

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目的：苯二氮卓类药物虽不是不宁腿综合征（RLS）的一线治疗药物，但常作为 RLS 疗效不佳时的添加治疗。这给合并 OSA 的 RLS 患者治疗带来一定挑战。本研究拟探索原发性 RLS 患者 OSA 的发病危险因素，以期在临床实践中予以重视。

方法：本研究纳入 2021.8-2022.1 本中心住院行多导睡眠监测的连续的原发性 RLS 患者。

结果：本研究纳入 15 例原发性 RLS 患者（男性 5 例，女性 10 例），其中 5 例（33.3%）合并 OSA，均为轻度 OSA，平均 AHI 8.92 ± 3.73 次/h。相比不伴 OSA 者，伴有 OSA 的 RLS 患者 NREM 睡眠比例有增多趋势、而 REM 睡眠比例有减少趋势（ $P=0.075$ ），两组在睡眠效率、入睡潜伏期、1 期睡眠比例、2 期睡眠比例、3 期睡眠比例、PLMS 指数、睡眠微觉醒指数方面无显著差异（ $P>0.05$ ）。伴有 OSA 的 RLS 患者年龄略大（ $P=0.05$ ）、RLS 发病年龄更大（ $P=0.023$ ）、BMI 更高（ $P=0.007$ ），而在性别、RLS 病程、RLS 家族史、RLS 严重程度、外周铁代谢指标、吸烟、饮酒等方面与不伴 OSA 者无显著差异（ $P>0.05$ ）。

结论：本组原发性 RLS 患者中，1/3 合并 OSA，均为轻度。合并 OSA 的 RLS 患者 NREM 睡眠比例增多、REM 睡眠比例有减少趋势。年龄、RLS 发病年龄和 BMI 可能同 RLS 伴发 OSA 相关。但本研究样本量较少，需进一步扩大样本量证实结论。

关键词：不宁腿综合征，阻塞性睡眠呼吸暂停

菌群紊乱在腺样体肥大的发生发展中的机制研究

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我们之前的研究表明儿童阻塞性睡眠呼吸暂停 (OSA) 可能与腺样体表面的微生态失调有关。然而, 腺样体表面菌群结构的变化与腺样体肥大的发生发展之间的机制探索较少。

本研究纳入 20 例经多导睡眠图检测证实患有腺样体肥大的 OSA 患儿和 25 例不伴有腺样体肥大的对照组儿童。运用宏基因组测序的手段检测腺样体表面的微生物结构与丰度。通过丰度分析以及 LDA 分析筛选差异菌株后, 采用分子生物学方法探讨差异菌株在腺样体肥大发生发展中的作用。

与对照组儿童相比, OSA 患儿腺样体表面的菌群结构和功能发生了显著变化。通过 LDA 分析确定了 OSA 患儿和对照组儿童腺样体表面的差异菌种, 其中具核梭杆菌可能在儿童 OSA 的发生发展中发挥作用。具核梭杆菌可能通过刺激 NLRP3 的表达与激活来促进腺样体原代细胞中 IL1 β 的产生。

与对照组儿童相比, OSA 患儿腺样体表面的微生物结构和功能发生了显著变化。两组儿童之间腺样体表面的具核梭杆菌丰度存在显著差异。具核梭杆菌可能通过刺激 NLRP3 的表达与激活从而加剧儿童 OSA 的炎症反应, 在儿童 OSA 的发生发展中发挥重要作用。

关键词: 儿童阻塞性睡眠呼吸暂停, 菌群, 腺样体肥大

三、睡眠和生物节律基础研究 的新进展和新方法

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Automatic Diagnosis of Obstructive Sleep Apnea and Sleep Stage Classification in Children Using a Deep Learning Model Based on Millimeter-wave Radar

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Objective: To evaluate the agreement and feasibility of a deep learning model based on millimeter wave radar technique for automatic diagnosis of obstructive sleep apnea and sleep stage classification in children.

Methods: Two hundred and eighty-one children, aged 1 to 18 years, undergoing sleep monitoring at the Sleep Center of Beijing Children's Hospital, affiliated with Capital Medical University, between August 2023 and November 2023 were recruited. All enrolled children underwent sleep monitoring by PSG and the millimeter wave radar-based QSA600 device simultaneously at the sleep center. QSA600 recordings were automatically analyzed, and PSG was manually scored according to recommended guidelines.

Results: The OAHl values obtained from the radar-based device and PSG demonstrates a high level of agreement with an ICC of 0.945 (95% CI: 0.93 to 0.96). Bland-Altman analysis indicates that the mean difference between radar-based device-OAHl and PSG-OAHl is -0.10 events/h (95% CI: -11.15 to 10.96), with 95.0% (267/281) of the data points located within the limits of agreement. When the diagnostic cutoff is 1, 5 or 10 of OAHl separately, the sensitivity is 0.818, 0.843, or 0.897, respectively, while the specificity is 0.905, 0.953, or 0.971, respectively. The area under the receiver operating characteristic (ROC) curve is 0.923, 0.955, or 0.988, respectively. As for sleep classification, the Cohen's Kappa coefficient was 0.781, with an accuracy of 0.848 for wake, light sleep, deep sleep, and REM sleep. The Kappa coefficient was 0.734, with an accuracy of 0.797 for wake, N1, N2, N3, and REM sleep.

Conclusions: The millimeter wave radar-based device has demonstrated high agreement with PSG in diagnosing OSA and classifying sleep stages in children. In addition, the device is portable, low-impact and suitable for sleep monitoring in children, especially in young children. Further studies are warranted to test its utility in community-based settings and its application to special populations of children.

Keyword:

(Published) Abnormal dynamic functional connectivity and topological properties of cerebellar network in male obstructive sleep apnea

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Purpose

To investigate dynamic functional connectivity (dFC) within the cerebellar-whole brain network and dynamic topological properties of the cerebellar network in obstructive sleep apnea (OSA) patients.

Methods

Sixty male patients and 60 male healthy controls were included. The sliding window method examined the fluctuations in cerebellum-whole brain dFC and connection strength in OSA. Furthermore, graph theory metrics evaluated the dynamic topological properties of the cerebellar network. Additionally, hidden Markov modeling validated the robustness of the dFC. The correlations between the abovementioned measures and clinical assessments were assessed.

Results

Two dynamic network states were characterized. State 2 exhibited a heightened frequency, longer fractional occupancy, and greater mean dwell time in OSA. The cerebellar networks and cerebrocerebellar dFC alterations were mainly located in the default mode network, frontoparietal network, somatomotor network, right cerebellar CrusI/II, and other networks. Global properties indicated aberrant cerebellar topology in OSA. Dynamic properties were correlated with clinical indicators primarily on emotion, cognition, and sleep.

Conclusion

Abnormal dFC in male OSA may indicate an imbalance between the integration and segregation of brain networks, concurrent with global topological alterations. Abnormal default mode network interactions with high-order and low-level cognitive networks, disrupting their coordination, may impair the regulation of cognitive, emotional, and sleep functions in OSA.

Keyword: cerebellum, dynamic functional connectivity, graph theory analysis, hidden Markov model, obstructive sleep apnea

The role of circadian rest-activity rhythm for the link between 25 hydroxyvitamin D and type 2 diabetes: a cohort study

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Background: Temporal distribution and amplitude of physical activity/inactivity in 24 hours known as circadian rest-activity rhythm may predict the risk of various metabolic diseases, including type 2 diabetes (T2D), yet the mechanisms behind the diurnal behavior patterns remain largely unexplored.

Methods: This study included 74,165 UK Biobank participants who were free of T2D at baseline. Circadian rest-activity rhythm (CRAR) characteristics, such as amplitude (strength), acrophase (timing of peak activity), pseudo-F (robustness), and mesor (height), were assessed using an extended cosine model applied to accelerometer measurements. Using Cox regression and restricted cubic spline models, we examined the association between CRAR and incident T2D as well as subsequent all-cause mortality among individuals developed T2D during the follow-up. Mediation analysis was conducted using blood and metabolic biomarkers such as Vitamin D, HDL cholesterol, and apolipoprotein A.

Results: During a median follow-up of 7.9 years, 1784 T2D cases were documented. We found that CRAR abnormalities was associated with a higher risk of incident T2D compared to optimal CRAR, and the multivariate adjusted hazard ratios (HRs) (95% CI) were 1.48 (1.31, 1.67) for low amplitude, 1.25 (1.07, 1.45) for delayed acrophase, 1.17 (1.04, 1.31) for pseudo-F, and 1.55 (1.38, 1.74) for low mesor. Furthermore, low amplitude and low mesor were associated with higher all-cause mortality following the diagnosis of T2D. Serum vitamin D emerged as a crucial mediator in the association between CRAR abnormalities and the risk of T2D as well as subsequent all-cause mortality.

Conclusion: Our study suggests that CRAR abnormalities are linked to an elevated risk of incident T2D and subsequent mortality. These associations are mediated by blood and metabolic biomarkers, with serum vitamin D playing a significant role as the primary mediator.

Keyword: circadian rest-activity rhythm; 5-hydroxyvitamin D; type 2 diabetes

Spindle-related brain activation in N2 and sleep duration: A negative correlation

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Aim: To explore the underlying neural mechanism of functional difference between non-rapid eye movement sleep stage 2 (N2) and N3.

Methods: We tested discrepancy in spindle-related brain activation between N2 and N3 within healthy, non-sleep-deprived college students (dataset 1: n = 27, 59% females, median age 23 years), using simultaneous electroencephalography-functional magnetic resonance imaging (EEG-fMRI). To assess the replicability of the finding, we repeated the analysis among healthy, non-sleep-deprived adults (independent dataset 2: n = 30, 50% females, median age 32 years). Furthermore, correlation analysis was performed to explore the association between spindle-related brain activation of which with significant inter-stage difference and total sleep time (TST) during EEG-fMRI. We conducted the correlation analysis in N2 and N3, respectively.

Results: The finding from dataset 1 indicated significantly increased blood-oxygen level-dependent signal in the right middle temporal gyrus during N2 compared with N3, which was well replicated in dataset 2. Negative association between spindle-related brain activation in the right middle temporal gyrus and TST were only observed in N2.

Conclusion: Our findings emphasize the unique role of spindle-related brain activation in the middle temporal gyrus during N2 in shortening sleep duration.

Keyword: Sleep spindles, Brain activation, N2, Sleep duration, EEG-fMRI

慢性失眠患者睡眠效率对正向情绪和疲乏程度之间动态关联的影响

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目的

本研究旨在通过生态瞬时评估方法,探讨在慢性失眠患者中正向情绪以及疲乏程度之间的日间动态关系,及睡眠效率对其的作用。

方法

本研究为基于真实世界的观察性队列研究。研究对象为 301 名慢性失眠患者,平均年龄 35.1 岁(标准差为 11.5),其中 66.8%为女性。所有被试均通过临床访谈确定具有现患慢性失眠障碍。使用生态瞬时评估,每天 4 次(估计测量时间点分别在 8 时、13 时、18 时和 23 时),连续 7 天动态测量被试的正向情绪疲乏程度,共收集信息 5184 条。使用睡眠日记,被试记录每日上床、入睡、清醒和起床时间,并计算其睡眠效率。采用广义估计方程模型进行分析,明确睡眠效率、正向情绪以及疲乏程度之间的关系。

结果

分析结果表明,前一次评估的正向情绪滞后效应显著影响当前的疲乏($\beta = -0.08$, $P = 0.007$),即正向情绪的增加会导致随后疲乏的下降。同时,前一次评估的疲乏对后一次正向情绪的影响并不显著($\beta = -0.03$, $P = 0.094$)。此外,睡眠效率负向预测疲乏($\beta = -0.24$, $P=0.034$),但对正向情绪的预测效应不显著。

结论

本研究表明,在慢性失眠患者中,正向情绪单向预测疲乏程度,而睡眠效率对日间疲乏存在独立预测作用。本研究提示,干预失眠或是缓解个体疲乏程度的关键手段;而在失眠患者的日常管理中,针对情绪的干预手段可能是更好的日间症状改善策略。

关键词:失眠;生态瞬时评估;睡眠效率;情绪;疲乏

针刺鬼穴治疗异态睡眠验案

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研究目的：异态睡眠是指在入睡时、睡眠期间或从睡眠觉醒时出现的不愉快事件或体验，给患者造成不良健康影响，损伤精神社会功能，亟需有效的治疗方法。本研究旨在报道针刺鬼穴治疗异态睡眠的临床有效案例。

方法：采用针刺鬼穴治疗3位REM相关异态睡眠患者，取穴：水沟、少商、隐白、大陵、申脉、风府、颊车、承浆、劳宫、上星、曲池，均施以捻转泻法操作，留针30min，每日1次，每周3次，4周为一疗程。治疗4周后、随访2月观察临床疗效。

主要结果：本文报告了3例REM相关异态睡眠患者，病例1为63岁女性患者，主诉睡觉时拳打脚踢3年。西医诊断为REM睡眠行为障碍，中医诊断为梦魇（肝火扰心）。予以针刺鬼穴治疗，治疗4周后，患者可安睡整晚，睡眠质量明显提升。随访2月，患者症状未发作。病例2为25岁女性患者，主诉反复发生早晨刚睡醒时言语不能，肢体随意活动不能。西医诊断为复发孤立性睡眠瘫痪；中医诊断为梦魇（肝火扰心）。予以针刺鬼穴治疗，治疗4周后，患者睡眠瘫痪未再发作。随访2月，患者症状未发作。病例3为35岁女性患者，主诉夜间睡觉时常做噩梦，时有惊醒，睡眠不安，醒后能回忆梦境内容。西医诊断为梦魇症，中医诊断为梦魇（肝火扰心）。予以针刺鬼穴治疗，治疗4周后，患者夜间噩梦症状消失。随访2月，症状未再复发。

结论：针刺鬼穴可显著改善REM睡眠行为障碍、复发孤立性睡眠瘫、梦魇的临床症状，是治疗异态睡眠的有效方法。

关键词：针刺，鬼穴，异态睡眠

《内经》导气针法治疗阻塞性睡眠呼吸暂停 低通气综合征临床研究

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目的 评估《内经》导气针法对阻塞性睡眠呼吸暂停低通气综合征（OSAHS）的临床疗效。方法 将 60 例 OSAHS 患者随机分为导气针法组（30 例）和普通针刺组（30 例，脱落 1 例），导气针法组给予《内经》导气针法治疗，普通针刺组给予常规针刺治疗，每周针刺 3 次，10 次为一个疗程，共针刺 3 个疗程。治疗前后对比两组多导睡眠图（PSG）结果、嗜睡情况、睡眠质量、生存质量评分的变化。结果 导气针法组总有效率（93.33%）明显高于普通针刺组（82.76%）（ $P < 0.05$ ）。治疗后导气针法组 AHI、HI、AI、最长呼吸暂停持续时间均显著下降（ $P < 0.01$ ），LSaO₂ 上升（ $P < 0.01$ ）。治疗后普通针刺组 AHI、HI、AI、最长呼吸暂停持续时间显著下降（ $P < 0.01$ ），LSaO₂ 无显著性变化（ $P > 0.05$ ）。治疗后导气针法组 AHI、HI、AI、最长呼吸暂停持续时间显著低于普通针刺组（ $P < 0.05$ ），LSaO₂ 显著高于普通针刺组（ $P < 0.05$ ）。治疗后两组患者 ESS 评分、PSQI 评分显著下降（ $P < 0.01$ ），但导气针法组各项评分显著低于普通针刺组（ $P < 0.05$ ）。治疗后两组患者 WHOQOL-BREF 评分均显著上升（ $P < 0.05$ ），但导气针法组评分显著高于普通针刺组（ $P < 0.05$ ）。结论 《内经》导气针法是一种治疗 OSAHS 疗效确切的方法，具有取穴少、操作简单、刺激柔和等特点，更易于临床推广。

关键词：阻塞性睡眠呼吸暂停低通气综合征；内经导气针法；疗效评定

阻塞性睡眠呼吸暂停神经影像学研究趋势分析：1993-2023年文献计量学研究

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背景： 阻塞性睡眠呼吸暂停（OSA）患者的神经系统症状引发了广泛研究兴趣。神经影像学在 OSA 研究中潜力巨大，但面临挑战。系统分析该领域研究趋势对指导未来工作意义重大。

目的： 分析过去三十年 OSA 神经影像学研究的演变路径、当前热点和未来趋势，为相关研究提供参考。

方法： 检索 Web of Science 核心合集数据库 1993 年 1 月至 2023 年 11 月的 OSA 神经影像学文献。使用 Bibliometric.com、CiteSpace、VOSviewer 和 R 软件进行文献计量分析。

结果： 共纳入 374 篇文献（333 篇文章，41 篇综述）。35 个国家/地区参与，美国贡献最大。加利福尼亚大学系统发表最多（59 篇）。《Sleep》杂志刊文最多。Macey, PM 为最多产作者。近期热点包括区域同质性、完整性、功能连接和大脑活动。“磁共振波谱”研究时间跨度最长。研究方向从结构逐渐转向功能，机构间合作日益紧密。

结论： OSA 神经影像学研究快速发展，主题不断深化。建议未来研究探索 OSA 相关心理和行为状态的神经影像特征，研究脑功能网络动态变化，结合多模态技术，为诊断和治疗提供新思路。跨学科合作和大数据分析将推动该领域进一步发展。

关键词： 阻塞性睡眠呼吸暂停、神经影像学、文献计量分析、可视化、Web of Science

OSA 患儿注意功能障碍：一项行为学与神经电生理学相结合的初步研究

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目的：使用注意网络测试（ANT）结合事件相关电位（ERP）和时频分析，探索阻塞性睡眠呼吸暂停（OSA）儿童注意网络受损的神经机制。

方法：2023年5月1日至2023年7月31日在北京儿童医院睡眠中心招募6-11岁有打鼾或张口症状的儿童。所有参与者完成简易精神状态检查（MMSE）、注意缺陷多动障碍（ADHD）评分量表和多导睡眠监测（PSG）。在进行ANT任务时，同时采集32导联脑电数据。

结果：共有87例患儿数据纳入分析，其中非OSA组21例，轻度OSA组49例，中度至重度OSA组17例。不同组别儿童问卷得分相似，ANT测试中不同条件下的反应时间和准确率组间无差异。ERP分析显示，中度至重度OSA组FZ电极N3成分的振幅分别小于非OSA组和轻度OSA组。时频分析显示，中重度OSA组执行控制网络阶段alpha波段能量高于轻度OSA组（ $Z=-2.624$, $P=0.026$ ）。FZ电极N3成分振幅与阻塞性呼吸暂停低通气指数（OAHI）相关（ $r=0.232$, $P<0.05$ ）。

结论：注意网络任务态的脑电图揭示了OSA儿童注意功能障碍的神经电生理证据。中重度OSA患儿额叶区N3振幅减小，且与OAHI相关，而问卷调查和行为学测试结果没有显著差异，这表明N3振幅有望成为OSA相关认知障碍更敏感的神经生理标记物。

关键词：OSA，儿童，注意，事件相关电位

补充睡眠对急性睡眠剥夺相关认知损害的影响

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目的：探索经补充睡眠后相关认知水平的恢复情况，比较上午小睡与下午小睡对认知恢复的区别。

方法：研究于2022年4月到2023年9月招募受试者，最终30名健康成年人入组，随机分为上午小睡组和下午小睡组。连续3天固定时间完成认知测试，包括卡罗琳斯卡嗜睡量表、反应速度测试、舒尔特方格测试、N-BACK测试。第一天7:00正式进入试验，在固定时间点完成认知测试后进行睡眠剥夺，第二天早上再次进行认知测试，根据随机分组完成上午小睡或下午小睡，夜间共同完成恢复性睡眠，第三天完成最后一次认知测试。

结果：急性睡眠剥夺后受试者的卡罗琳斯卡嗜睡量表评分升高，反应速度减慢，完成舒尔特方格测试的时间延长，补充睡眠后各项测试改善（ $P < 0.001$ ）。睡眠剥夺（ $P = 0.467$ ）及补充睡眠后（ $P = 0.117$ ）1-BACK的正确率未见统计学差异。补充睡眠后2-BACK的正确率增加（ $P = 0.006$ ）。上午小睡与下午小睡在反应速度测试（ $P = 0.419$ ）、舒尔特方格测试（ $P = 0.165$ ）、N-BACK正确率（1-BACK, $P = 0.864$ ；2-BACK, $P = 0.092$ ）、KSS评分（ $P = 0.532$ ）的改善方面未见统计学差异。

结论：急性睡眠剥夺会降低主观警觉性，引起注意力下降。上午小睡与下午小睡对认知的改善作用相近，经过9.3小时的补充睡眠后主观警觉性、反应速度、持续注意力均恢复到睡眠剥夺前的水平，并对工作记忆的提高有一定好处。

关键词：睡眠剥夺；补充睡眠；小睡；认知

Different times of bright light therapy on anhedonia and circadian rhythms in depression: a randomized controlled trial

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Objective: The purpose of this study was to determine the effectiveness of different times of bright light therapy (BLT) on anhedonia and circadian rhythm disturbances in depressed patients. It was further investigated whether the benefit of bright light therapy on anhedonia in depression was associated with changes in melatonin and cortisol rhythm indices during treatment.

Methods: In this single-blind, placebo-controlled study, 81 depression inpatients were recruited from the department of sleep disorders, psychological hospital affiliated to Anhui Medical University and randomly divided into four groups: the morning BLT group (n=23), the morning placebo group (n=17), the evening BLT group (n=22) or the evening placebo group (n=19). The BLT groups were given 10,000 lux bright light therapy and the placebo groups were given <100 lux dim light therapy, respectively. Participants received 30 minutes of light therapy per day (between 9:00–10:00 for the morning groups or between 18:00–19:00 for the evening groups) for a 2-week period. The primary outcome of the study was The Revised Physical Anhedonia Scale (RPAS) score. Secondary outcomes were The Hamilton Depression Scale (HAMD) score, The Hamilton Anxiety Scale (HAMA) score and salivary melatonin and cortisol concentrations. In this, saliva samples were collected from all subjects at fixed time points in two consecutive days for measuring the melatonin and cortisol concentrations to fit circadian rhythms of subjects. Assessments were repeated before therapy, at 1 week of therapy, and at the end of therapy. Primary and secondary outcomes were analysed for time, group and group-time interaction effects using a mixed repeated-measures analysis of variance. Partial correlation analysis and multiple linear regression analysis were used to explore the correlation between melatonin and cortisol rhythm variables and anhedonia before and after treatment.

Results: In terms of general demographic and scale scores at baseline, there were no significant differences between the two groups in the morning or between the two groups in the evening. There were also no significant differences in salivary melatonin and cortisol rhythm indices at baseline. At the end of the experiment, there was a significant improvement in HAMD and RPAS scale scores in the morning BLT group compared to the morning control group in terms of group and time interaction effects ($p=0.017$, $p=0.002$). The peak phase of melatonin in the morning BLT group was significantly delayed after treatment compared to pre-treatment ($p=0.001$) as well as compared to the morning control group ($p=0.013$). Correlation analysis suggested a significant negative correlation between the difference in the peak phase of melatonin and the difference in RPAS scores pre-

and post-treatment ($p=0.005$). The significant correlation remained in the multiple regression analysis after adjusting for confounders ($p=0.013$).
Conclusion: The results suggest that the morning BLT is more effective than placebo in improving anhedonia and depressive symptoms in depressive patients, and is also more reliable in regulating melatonin rhythms. Changes in the peak phase of melatonin during treatment may modulated the efficacy of bright light therapy on anhedonia.

Keyword: Depression, Anhedonia, Bright light therapy, Biological rhythm, Melatonin

Changes in network structures of fatigue and insomnia among female intern nurses with shift work: a longitudinal study

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Abstract

The escalating prevalence of shift work among female intern nurses in China necessitates a nuanced exploration of its impact on fatigue and insomnia symptoms. While prior studies acknowledge the coexistence of these distresses in shift workers, a detailed understanding of their inter-connectedness at the symptom level is lacking. This study delves into the network dynamics of fatigue and insomnia symptoms, aiming to unravel the changes before and after the initial shift work transition among female intern nurses. Through three waves of surveys conducted at baseline, 3 months, and 6 months post-transition, we employed the 11-item Chalder Fatigue Scales for fatigue assessment and three items aligned with the criteria of the Diagnostic and Statistical Manual of Mental Disorders for insomnia evaluation. Network analysis was conducted to estimate centrality and bridge centrality, comparing network properties before and after the shift work transition. Notably, "Difficulty starting things," "Difficulty maintaining sleep," and "Sleepy or drowsy" emerged as central symptoms with higher centrality indices post-transition, exhibiting significant differences compared to the pre-shift work period. The gradual strengthening of the global fatigue-insomnia network further underscores the evolving dynamics following the transition to shift work. This study accentuates the pivotal role of these three symptoms in activating or being activated within the fatigue-insomnia network among female intern nurses post-shift work transition. Consequently, we propose the development of targeted prevention and intervention strategies to alleviate fatigue and insomnia symptoms in female intern nurses navigating their first-time shift work experience from a network perspective.

Keyword: Shift work; Fatigue symptoms; Insomnia symptoms; Network structures; Female intern nurses

Prevalence, correlates, and mental health outcomes of social jetlag in Chinese school-age adolescents: A large-scale population-based study

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Background: This cross-sectional study aimed to examine the prevalence and correlates of social jetlag (SJL) in Chinese adolescents, as well as to test the relationships between SJL and mental health problems. **Methods:** A total of 106979 students (Mage = 13.0 ± 1.8 years; Nmale = 58296 [54.5 %]) from Shenzhen, China completed an online survey from May 24th to June 5th, 2022. Information on sociodemographics, lifestyles, sleep characteristics, anxiety symptoms, and depressive symptoms was collected by a self-administered questionnaire. Multivariate and binary logistic regression were adopted for data analysis. **Results:** 17.8 % of participants experienced SJL ≥ 2 h. To adjust the accumulated sleep debt, sleep-corrected SJL (SJLsc) was calculated and 8.3 % of individuals self-reported SJLsc ≥ 2 h. Both SJL and SJLsc show an increasing trend with age. Risk factors of SJL included females, poor parental marital status, being overweight, physically inactive, smoking, drinking, and having a late chronotype. Moreover, males, having siblings, boarding at school, short sleep duration, experiencing insomnia, and frequent nightmares were significantly associated with an increased risk of SJLsc. After adjusting for all covariates, adolescents with SJLsc ≥ 2 h were more likely to have anxiety symptoms (OR: 1.35, 95 % CI: 1.24 - 1.48) and depressive symptoms (OR: 1.35, 95 % CI: 1.25 - 1.46) than those with SJLsc < 1 h. **Conclusions:** SJL is common among Chinese school-age adolescents. This study is valuable for the development of prevention and intervention strategies for SJL in adolescents at the population level. Additionally, the strong links between SJLsc and emotional problems underscore the critical significance of addressing SJL as a key aspect of adolescent well-being.

Keyword: Social jetlag Sleep hygiene Mental health Adolescents Epidemiologic

医学生睡眠时长及时型与新型冠状病毒疫情期间新发自杀意念的回顾性队列研究

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【目的】探究医学生平时较短的睡眠时长与夜晚型是否能预测新型冠状病毒疫情暴发后产生的自杀意念。【方法】2019年4月至11月本研究向汕头大学的大学生们发放网络问卷以调查睡眠情况、情绪状况等，共回收了489份有效问卷。2020年2月至3月进行了随访，共回收381份有效问卷。短睡定义为自我报告的每晚睡眠时长小于7小时。睡眠时型根据早-晚问卷分数定义。自杀意念通过BDI来评估。二元逻辑回归检验短睡和夜晚型与新发自杀意念的相关性。【结果】纳入研究的333名医学生中，5.71%的人在新型冠状病毒疫情暴发后产生了新的自杀意念。短睡人群在新型冠状病毒疫情爆发后的自杀意念发生率高于长睡人群的自杀意念发生率($P=0.002$)。夜晚型的人群自杀意念发生率为16.13%，高于清晨型(5.13%)和中间型(4.56%)两组人群的自杀意念发生率($P=0.043$)。通过控制潜在的干扰因素后，短睡和夜晚型睡眠时型的受试者在新型冠状病毒疫情暴发后产生自杀意念的风险会更高（短睡： $OR=4.91$ [95% $CI=1.16-20.74$]；夜晚型： $OR=3.80$ [95% $CI=1.08-13.30$]）。【结论】在医学生群体中，短睡和夜晚型睡眠时型都与新型冠状病毒疫情暴发期间产生的自杀意念存在相关性。我们需要着重关注医学生的睡眠健康问题，注重睡眠卫生健康教育，从而较早地对自杀意进行干预。

关键词：自杀意念，睡眠时长，睡眠时型，新型冠状病毒感染，医学生

Associations of brain age gap with incident neurological and psychiatric disorders: a large prospective cohort study

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Brain aging is recognized risk factor for multiple neurological and psychiatric disorders. However, the relationship between brain age, assessed via neuroimaging-based methods, and the onset of these disorders remains unclear. The study aims to explore whether the brain age gap can serve early identification of individuals at high risk for neurodegenerative and psychiatric conditions. This cohort study used data from the UK Biobank, involving 26,420 participants aged 42 to 82 years when undertook brain MRI scans in xx-xx. The Brain Age Gap (BAG) was derived from neuroimaging data reflecting the disparity between predicted and chronological brain age. Incident neurological and psychiatric disorders from baseline 2014 until 2022 were ascertained via first incidents and algorithmically defined outcomes. Data were analyzed using Cox regression models. During the median 4.56 years of follow-up, we ascertained 279 patients with stroke, 49 with dementia, 35 with Parkinson's disease, 233 with depression, 292 with anxiety, and 106 with sleep disorders. Our analyses revealed that per 1-year increase in BAG was associated with a 4% increase in stroke risk and a 25% increase in dementia risk. Furthermore, controlling for age, sex, ethnicity, education, and recruitment center, a higher BAG was significantly associated with elevated risks of depression, anxiety, and sleep disorders with increasing BAG, but the significance diminished upon adjustment for additional confounding variables. Our study suggests that BAG demonstrated significant associations with stroke and dementia incidence, warranting further investigations to elucidate potential causal relationships.

Keyword: Brain age gap, neurological disorders, psychiatric disorders, prospective cohort study

The effect of bright light therapy on metabolic syndrome in depression: a single-blind randomised controlled trial

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Objective: Metabolic syndrome is commonly seen in depression, and depression co-occurs with the components of metabolic syndrome (i.e. abnormal blood sugar, dyslipidemia, insulin resistance). An increasing number of evidences suggest that exposure to different times of bright light can change the involved metabolism. Therefore, we aimed to explore the effectiveness of different times of bright light therapy (BLT) on metabolism-related indicators in patients with depression.

Methods: In this single-blind randomised controlled trial, 83 depression inpatients were recruited from the department of sleep disorders, psychological hospital affiliated to Anhui Medical University and randomly divided into four groups: the morning BLT group (n=25), the morning placebo group (n=18), the evening BLT group (n=19) or the evening placebo group (n=21). The BLT groups were given 10,000 lux bright light therapy and the placebo groups were given <100 lux dim light therapy, respectively. Participants received 30 minutes of light therapy per day (between 9:00-10:00 for the morning groups or between 18:00-19:00 for the evening groups) for a 2-week period. The primary outcome of the study was fasting venous blood collected for total cholesterol, high-density lipoprotein, triglycerides, and blood glucose at baseline and 2 weeks after the light therapy. Baseline differences in demographic and clinical variables between the groups were analyzed using the Student's t-test for continuous variables or Pearson's chi-squared test for categorical variables. Primary and secondary outcomes were analysed for time (baseline, two-week), group (BLT and placebo) and group-time interaction effects using a mixed repeated-measures analysis of variance (ANOVA). The significance level was set at $p < 0.05$ for all tests.

Results: In terms of general demographic and scale scores at baseline, there were no significant differences between the two groups in the morning or between the two groups in the evening. Fasting blood glucose in the morning BLT group was significantly improved compared with the morning placebo group ($p=0.032$), but cholesterol, high density lipoprotein and triglyceride were not significantly improved. No significant differences were found in cholesterol, high-density lipoprotein, and triglycerides.

Conclusion: The results suggest that the morning BLT is more effective than placebo in improving fasting blood glucose in depression. It may provide a new idea for clinical treatment of metabolic syndrome in patients with depression.

Keyword: depression, Bright light therapy, metabolism, fasting blood glucose

伴失眠症状的双相障碍维持治疗期患者睡眠模式与生物节律特征的研究

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目的 探讨双相障碍维持治疗期患者的睡眠模式与生物节律特征研究。

方法 采取病例对照的研究方式,对45例双相障碍维持治疗期患者和50例健康志愿者进行对照研究,比较两组间匹兹堡睡眠质量指数量表(PSQI)、中文版神经精神科生物节律评估访谈(BRIAN-C)、体动记录仪监测的差异。

结果 双相障碍维持治疗期患者和健康对照组在家族史、服用情感稳定剂,服用非典型抗精神病药、PHQ-9总分、MDQ总分差异均有显著统计学意义($P<0.01$);两组间服用镇静催眠药差异有统计学意义($P<0.05$);两组间比较,PSQI总分、睡眠质量、入睡时间、睡眠效率、睡眠障碍、催眠药物、日间功能障碍差异均有显著统计学意义($P<0.01$);BRIAN-C总分、睡眠、活动、饮食习惯差异均有显著统计学意义($P<0.01$);社交($t=2.482$, $P=0.015$)差异有统计学意义($P<0.05$)。体动记录仪的起床时间、卧床时间、睡眠总时间差异均有显著统计学意义($P<0.01$);上床时间,差异有统计学意义($P<0.05$)。

结论 双相障碍维持治疗期患者与健康人群比较有明显的睡眠紊乱和生物节律异常,具有不同程度的生物节律紊乱。

关键词: 双相障碍;失眠;睡眠模式;生物节律;体动记录仪

Variability in sleep architecture and alterations in circadian rhythms in patients with acute cerebral infarction accompanied by sleep-disordered breathing

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Abstract

Purpose To continuously and dynamically monitor the sleep status of patients in the acute phase of cerebral infarction, and to investigate the characteristics of acute cerebral infarction (ACI) associated with sleep-disordered breathing (SDB), variations in sleep structure, and changes in sleep circadian rhythms.

Methods Patients with ACI within 48 h of onset who were admitted to the Department of Neurology at Kailuan General Hospital from November 2020 to December 2022 were selected. Detailed baseline information such as age, gender, smoking history, drinking history, were recorded for the selected participants. From the beginning of their hospitalization, the selected participants were monitored for their sleep status continuously for 5 days using the Intelligent Mattress-based Sleep Monitoring Platform System (IMSMPs). Based on the heart rate data obtained from the monitoring, the interdaily stability (IS) and intradaily variability (IV) of the sleep circadian rhythm were calculated.

Results 1,367 patients with ACI were selected. Monitoring results over 5 days indicated 147 cases (10.75%) without SDB, and 1,220 cases (89.25%) with SDB. Among the group with SDB, there were 248 cases (18.14%) with continuous mild SDB, 395 cases (28.90%) with moderate SDB, 295 cases (21.58%) with severe SDB, and 282 cases (20.63%) that fluctuated between different severity levels. Within this fluctuating group, 152 cases (53.90%) fluctuated between two severity levels, 120 cases (42.55%) between three levels, and 10 cases (3.55%) among all four levels. There were statistically significant differences ($P < 0.05$) in the sleep latency, sleep efficiency, non-rapid eye movement stages 1-2, rapid eye movement, proportion of non-rapid eye movement, proportion of rapid eye movement, wake after sleep onset, time out of bed, number of awakenings, respiratory variability index, and heart rate variability index among patients with ACI monitored from day 1 to 5. However, other monitored sleep structure parameters did not show statistically significant differences ($P > 0.05$). The coefficient of variation for all sleep monitoring parameters ranged between 14.54 and 36.57%. The IV in the SDB group was higher than in the group without SDB ($P < 0.05$), and the IS was lower than in the group without SDB ($P < 0.05$).

Conclusion Patients in the acute phase of cerebral infarction have a high probability of accompanying SDB. The sleep structure of these patients shows significant variability based on the onset time of the stroke, and some patients experience fluctuations among different severity levels of SDB. ACI accompanied by SDB can further reduce the IS of a patient's sleep circadian rhythm and increase its IV.

Keyword: Cerebral infarction • Acute phase • Sleep
structure • Variability • Sleep-disordered breathing • Sleep circadian
rhythm

iRBD 在 PD 认知进展亚型中的预测作用

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目的：识别早期帕金森病患者的认知进展过程是否存在不同的亚型，探索 iRBD 在 PD 认知亚型进展中的影响。

方法：本研究从帕金森进展标志物倡议数据库中收取 337 名 PD 患者 6 年纵向随访的临床及生物标志物资料。将蒙特利尔认知量表(Montreal Cognitive Assessment, MoCA)评分转化为正态分布的以测量认知进展严重程度随时间的不同变化模式，使用潜在类别混合效应模型(Latent Class Mixed Model, LCMM)识别 PD 认知进展亚型。在此基础上，分析帕金森病认知进展亚型的基线相关因素。

结果：LCMM 确定了两类 PD 认知进展亚型：认知完好型(276 例，81.9%)和认知损害型(61 例，18.1%)。认知损害亚型在 6 年的随访期内认知能力持续下降且下降速度明显快于认知完好型，并且在基线的年龄更大，拥有更严重的运动和非运动症状(MDS-UPDRS II, III scores, STAI score, SCOPA score, GDS score)，更多的 serum NFL 和较少的 Mean striatum DAT uptake 以及更高比例的 RBD, Orthostasis。

结论：PD 认知进展可分为认知完好和认知损害两大亚型。18.1%的 PD 患者表现为认知损害型，该型早期常伴有 iRBD，且随着时间的推移，认知下降速度更快。

关键词：帕金森病；认知亚型；潜类别混合效应模型；iRBD；

Effect of sleep in Disease Progression Subtypes of Parkinson's Disease Based on Milestone Events

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Background: Parkinson's disease (PD) exhibits significant heterogeneity in the distribution of clinical symptoms and disease progression. Recently, six milestones have been proposed to assess disease severity in PD. However, iRBD and excessive daytime sleepiness are common problems in PD, it is important to confirm its effect in distinguishing subtypes of disease progression in PD based on these milestone events.

Methods: Latent class analysis (LCA) was used to investigate subtypes of PD progression based on the first occurrence time of six milestones within the 6-year follow-up in Parkinson's Progression Markers Initiative (PPMI) database.

Results: The study included 354 early PD patients, 42.9% of whom experienced at least one milestone within six years. LCA identified two subtypes of PD progression: slow progression (83%) and rapid progression (17%). The milestones over six years were higher in the rapid progression subtype than the slow progression subtype (median:3.00 vs. 0.00, $P<0.001$). Then, 342 patients were divided into the model development cohort (201 cases) and the validation cohort (141 cases) to develop a predictive model for disease progression subtypes.

Univariate logistic regression identified baseline age, motor symptom variables (MDS-UPDRS I, II, III scores, MDS-UPDRS total score, PIGD score), non-motor symptom variables (RBD, SDMT score, SCOPA-AUT score, ESS score), and biomarkers (serum NFL, mean striatal DAT uptake) associated with the rapid progression subtype. Additionally, a nomogram prediction model with MDS-UPDRS I, MDS-UPDRS II, and SDMT scores achieved acceptable performance and clinical usefulness.

Conclusion: Approximately 17% of patients with early PD exhibited the rapid progression subtype, characterized by the occurrence of more and earlier-onset milestones. In the univariate logistic regression analysis, sleep problems were found to be an important factor affecting the PD subtype, but only the SDMT score, MDS-UPDRS I score, and MDS-UPDRS II score entered the nomogram prediction model and were considered to be important tools for predicting PD clinical subtypes.

Keyword: Parkinson's disease, Subtype, sleep, Latent Class Analysis, Prediction Model

睡眠呼吸暂停综合征共病眼科疾病（综述）

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阻塞性睡眠呼吸暂停（OSA）是一种常见的睡眠障碍疾病，特点是在睡眠期间间歇性出现完全或部分上呼吸道阻塞，造成反复发作的呼吸暂停或低通气，从而导致呼吸停止和血氧水平下降。OSA 的诊断主要依据病史、体征、症状、影像学检查和多导睡眠图（PSG）监测的结果。根据呼吸暂停低通气指数（AHI）及夜间最低血氧饱和度将 OSA 分为轻、中、重三种类型，确诊 OSA 要通过夜间多导睡眠图。越来越多的证据表明，OSA 与眼睑综合征、干眼症、中心性浆液性脉络膜视网膜病变、视神经病变（包括开角型青光眼、正常眼压性青光眼）以及视乳头水肿有关。阻塞性睡眠呼吸暂停导致眼部并发症的发病机制尚未完全阐明，但其可能是多因素的，如缺血再灌注损伤、高凝状态、自由基的产生、血管收缩剂的释放、氧化应激的增加、内皮功能障碍等。研究表明，睡眠呼吸暂停还可导致颅内压增高，且与睡眠呼吸暂停严重程度呈明显正相关。以往研究表明，持续气道正压通气（CPAP）可能对于预防和改善眼科疾病起到积极作用，但缺乏大型临床对照研究，因此，尚无明确结论。总之，OSA 可能引起不可逆的眼科并发症，并且，如果可以早期诊断和治疗 OSA，这些眼科并发症是有可能预防和治疗的。因此，临床上，我们应该高度重视 OSA 导致的眼科并发症，早识别，早治疗。

关键词：阻塞性睡眠呼吸暂停；呼吸暂停低通气指数（AHI）；夜间最低血氧饱和度；眼部并发症

A meta-analysis of the association between insomnia with objective short sleep duration and risk of hypertension

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The aim of this meta-analysis was to examine the association between insomnia with objective short sleep duration (ISSD) with prevalent and incident hypertension in cross-sectional and longitudinal studies, respectively. Data were collected from 6 cross-sectional studies with 5914 participants and 2 longitudinal studies with 1963 participants. Odds ratios (ORs) for prevalent and risk ratios (RRs) for incident hypertension were calculated through meta-analyses of adjusted data from individual studies. Compared to normal sleepers with objective normal sleep duration (NNSD), ISSD was significantly associated with higher pooled OR for prevalent hypertension (pooled OR = 2.67, 95%CI = 1.45 - 4.90) and pooled RR for incident hypertension (pooled RR = 1.95, 95%CI = 1.19 - 3.20), respectively. Compared to insomnia with objective normal sleep duration, ISSD was associated with significantly higher pooled OR of prevalent hypertension (pooled OR = 1.94, 95%CI = 1.29 - 2.92) and pooled RR for incident hypertension (pooled RR = 2.07, 95%CI = 1.47 - 2.90), respectively. Furthermore, normal sleepers with objective short sleep duration were not associated with either prevalent (pooled OR = 1.21, 95%CI = 0.84 - 1.75) or incident (pooled RR = 0.97, 95%CI = 0.81 - 1.17) hypertension compared to NNSD. Our findings suggest that ISSD is a more severe phenotype of the disorder associated with a higher risk of hypertension. Objective short sleep duration might be a valid and clinically useful index of insomnia's impact on cardiovascular health.

Keyword: Insomnia Insomnia with objective short sleep duration Hypertension
Meta-analysis

文拉法辛联合扎来普隆胶囊对抑郁症合并睡眠障碍患者疗效、神经营养因子水平及睡眠质量影响

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目的：抑郁症是一种高复发率及高致残率的情绪障碍性疾病，以持久情绪低落为主要临床表现。睡眠障碍是抑郁症患者最常见并发症，患者长期受负性情绪影响极易出现入睡困难等症状，诱发失眠。临床中针对抑郁症合并睡眠障碍患者的干预手段主要以药物干预为主，其中扎来普隆胶囊可改善患者睡眠状态的同时减轻抑郁情绪影响。但相关疾病发病原因复杂，单一药物治疗无法起到临床显著效果。作为二环类非典型抗抑郁药，文拉法辛在改善或逆转患者抑郁状态以及睡眠障碍领域中发挥重要作用。本研究着重分析抑郁症合并睡眠障碍患者接受文拉法辛联合扎来普隆胶囊治疗方案对临床疗效、神经营养因子水平及睡眠质量影响。方法 选取本院 2021 年 8 月至 2023 年 7 月收治的 120 例抑郁症合并睡眠障碍患者，随机数字法分对照组、观察组均 60 例。结论联合治疗方案效果更为显著。在改善患者神经营养因子水平方面，文拉法辛可以有效提高可以提高脑源性神经营养因子含量并增强患者大脑细胞营养供应，有效维持大脑正常功能，联合治疗更为显著，因此在临床中应当重视这两种药物的联合应用效果。

关键词：抑郁症；睡眠障碍；文拉法辛；扎来普隆胶囊；BDNF；S100 β ；

24 小时睡眠剥夺及剥夺后 1 小时睡眠对个体主客观疲劳的影响

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目的：评估 24 小时睡眠剥夺对个体疲劳的影响程度及睡眠剥夺后 1 小时睡眠对缓解疲劳的作用。方法：招募 19 名健康青年受试者进行 24 小时睡眠剥夺，在睡眠剥夺后提供 1 小时的睡眠环境。在睡眠剥夺前、后及睡眠后分别使用多维疲劳量表（MFS）、视觉模拟评分（VAS）、Stanford 嗜睡量表（SSS）、闪光融合评估其疲劳程度。期间佩戴体动记录仪记录其睡醒状态，确保有效完成睡眠剥夺。结果：疲劳评分在睡眠剥夺前后分别为 35.50 ± 26.81 分、 91.30 ± 28.4 分，1 小时睡眠后为 59.80 ± 30.22 分，三者差异具有统计学意义。精力视觉模拟评分在睡眠剥夺前后分别为 22.5 ± 15.18 分、 10.50 ± 9.05 分，1 小时睡眠后分数为 17.4 ± 14.6 分，1 小时睡眠后分数与剥夺前无统计学差异。睡眠剥夺后嗜睡程度显著高于睡眠剥夺前，1 小时睡眠后嗜睡程度明显下降， $P < 0.05$ 。且体外反搏干预后嗜睡程度与睡眠剥夺前无统计学差异， $P > 0.05$ 。结论：本试验结果表明，24 小时睡眠剥夺后疲劳水平、嗜睡水平明显增加，1 小时的睡眠可部分回复疲劳感及嗜睡感，其中嗜睡程度可恢复到睡眠剥夺前水平。

关键词：睡眠剥夺, 疲劳, 嗜睡, 小睡

睡眠纺锤波对中重度阻塞性睡眠呼吸暂停患者记忆功能的影响及持续气道正压通气疗效的初步探讨

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目的观察 OSA 患者短期 CPAP 治疗前后 N2 期纺锤波特征的变化, 探讨短期 CPAP 治疗对 OSA 患者记忆功能的影响, 及其与纺锤波之间的关系。方法纳入符合入排标准的 OSA (AHI>15 次/小时) 患者 32 例, 进行一夜 CPAP 干预确定最佳治疗压力, 第二夜在 PSG 监测下进行 CPAP 治疗。于第二夜治疗结束后的次日再次进行相同的记忆功能评估。使用 PSD 和 Omega 复杂性分析 CPAP 干预前后纺锤波的特征。观察短期 CPAP 干预对纺锤波的改变及其对记忆的影响。结果两夜 CPAP 治疗后, OSA 患者的 ODI、AHI 和 TS90%、NREMI 期比例 (%) 显著降低。记忆功能评估结果显示: 与干预前相比, OSA 患者在短期 CPAP 干预后, 即刻、延迟逻辑记忆能力的分数显著提高, (均 $P<0.001$); 此外, 图形再认记忆的选择时间也显著降低 (均 $P<0.001$)。与 CPAP 干预前相比, OSA 患者在短期 CPAP 干预后全脑慢、快、总纺锤波 PSD 更高, 前额区慢纺锤波 PSD 更高, 中央区慢、快、总纺锤波 PSD 更高, 枕区慢、总纺锤波 PSD 更高 (均 $P<0.05$); 与干预前相比, OSA 患者短期 CPAP 干预后全脑慢、快、总睡眠纺锤波 Omega 复杂性更低, 枕区慢纺锤波、快纺锤波、总纺锤波的 Omega 复杂性更高 (均 $P<0.05$)。结论短期 CPAP 治疗可以提高不同脑区纺锤波的活性和连接性, 能够有效逆转中重度 OSA 患者的刻逻辑记忆、即刻视觉记忆、工作记忆。

关键词: 阻塞性睡眠呼吸暂停, 持续气道正压通气, 睡眠纺锤波, 记忆功能, 脑电频谱

艾司氯胺酮快速抗抑郁：年龄与效果的相关性研究

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目的：评估重复静脉输注艾司氯胺酮治疗中重度抑郁症的疗效与安全性，分析效果差异与年龄的相关性。方法：收集2019年6月至2023年3月因抑郁焦虑状态接受治疗的病人信息，评估60例患者治疗前后汉密尔顿焦虑量表（Hamilton Rating Scale for Anxiety, HAMA）及汉密尔顿抑郁量表（Hamilton Rating Scale for Depression, HAMD），治疗过程中行常规生命体征监测及治疗后即刻进行临床医生管理的分离状态量表（Clinician-Administered Dissociative States Scale, CADSS）测试以评估药物副作用的严重程度，分析抑郁量表评分降低程度与年龄的相关性。结果：HAMA与HAMD量表在治疗后2-24小时内明显降低，且抗抑郁效果至少持续至治疗后2个月；汉密尔顿抑郁量表降低百分比与年龄呈负相关；CADSS量表显示解离状态在注射40min时最为明显，2小时后基本消失；艾司氯胺酮输注期间平均动脉压、收缩压、舒张压、脉搏无显著性变化。结论：艾司氯胺酮静脉输注抗抑郁的效果差异与年龄呈负相关，具有起效迅速、作用持久和安全性高等优点。

关键词：关键词：中重度抑郁症；艾司氯胺酮；静脉输注；年龄；疗效

I 型发作性睡病患者焦虑抑郁症状的相关脑网络机制

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目的:本研究旨在评估未用药物治疗的 I 型发作性睡病 (NT1) 患者临床症状中相关症状及焦虑、抑郁与夜间睡眠结构的相关性,并探索 NT1 焦虑抑郁症状发生的脑网络机制。

方法:采用发作性睡病严重程度量表、焦虑自评量表、抑郁自评量表、多导睡眠图、多次小睡潜伏期测试和 7Trs-fMRI 检查对 20 例 NT1 患者和 20 例健康对照进行评估。采用 SPSS Statistics for Windows, version 21.0 进行统计分析。

结果:除了典型的临床表现外,NT1 患者还容易出现睡眠治疗不佳、夜间多发觉醒、焦虑、抑郁等合并症。7T 磁共振研究中发作性睡病组较健康对照组出现多脑区 reho 值明显增加,包括丘脑、岛叶、中央后回等区域,焦虑量表评估与睡眠结构中的总睡眠时间呈负相关(偏相关 $=-0.479$, $P=0.044$)、睡眠效率负相关(-0.505 , $P=0.033$),相关脑区:reho:与 insulaR 正相关(0.583 , $P=0.011$);抑郁量表评估与睡眠效率负相关(-0.507 , $P=0.032$),reho:与 lingualL 正相关(0.499 , $P=0.035$),与 postcentrallL 正相关(0.478 , $P=0.045$)

结论:NT1 患者夜间睡眠结构异常,焦虑、抑郁增加,其焦虑、抑郁等并发病状的加重或与睡眠结构异常有关,症状发生或与发作性睡病疾病进程中岛叶、中央后回等位置受损有关。

关键词:发作性睡病;睡眠结构;白天过度嗜睡;焦虑;抑郁

异态睡眠 1 例报告并文献复习

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异态睡眠是主要或全部发生在睡眠期间的不愉快或不良的行为或体验,可分为非快速眼动(non rapid eye movemen,NREM)相关的异态睡眠、快速眼动(rapid eye movemen,REM)相关的异态睡眠和其他异态睡眠。本文报告 1 例异态睡眠的病例,结合文献分析总结,以提高临床医师对本病的认识。

关键词: 异态睡眠;多导睡眠监测;睡行症;

帕金森病睡眠结构特点及其影响因素的临床研究

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目的 探讨帕金森病患者睡眠障碍的发生率、睡眠结构特征、影响因素。

方法 选取 2016 年 8 月—2022 年 4 月就诊于河北医科大学第一医院神经内科门诊及住院的 101 例 PD 患者为研究对象。应用 UPDRS-III 和 H-Y 分期对患者运动功能及疾病严重程度进行评价。对 PD 患者进行 PSQI 量表、ESS 量表、IRLS 量表、RBD 量表等测试，并测量患者身高、体重、BMI、颈围、腹围、询问既往病史等，所有患者均接受了标准化的夜间多导睡眠监测。

结果 (1) 101 例 PD 患者中有 87 例 (86.14%) 存在睡眠障碍。(2) PSG 显示 PD 患者的睡眠障碍常见的有 RBD、PLM 和 OSAHS。(3) PD-RBD 患者 REM 期睡眠比例为 $(13.14 \pm 8.11)\%$ ，主观睡眠质量较差且伴有明显的抑郁情绪。(4) PD 患者 PLM 易伴随 RLS 同时出现。(5) PD-OSAHS 在颈围及腹围较大的 PD 患者中更易发生，与 BMI 值并无明显相关性，PD-OSAHS 患者 EDS 更常见，对患者日间功能影响更大。

结论 PD 患者睡眠障碍的患病率较高，PD 伴发睡眠障碍患者多表现为 RBD、PLM 和 OSAHS 等方面，PD-RBD 患者睡眠质量较差且伴有明显的抑郁情绪，PD-OSAHS 在颈围及腹围较大的 PD 患者中更易发生，与 BMI 值并无明显相关性。

关键词： 帕金森病；睡眠障碍；睡眠结构特点；影响因素

Comparison of Vagus Nerve Cross-Sectional Area between Brain-first and Body-first Parkinson's Disease: A High-resolution Ultrasound Case-Control Study

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Abstract

Introduction: The significant roles of the vagus nerve (VN) and gut-brain axis in the progression of Parkinson's disease (PD) have recently come to light. Building on these findings, recent hypotheses propose the categorization of PD into two distinct subtypes differentiated by the initial site of α -synuclein (α -syn) aggregation: brain-first or body-first PD. Our study aimed to explore the benefits of VN ultrasound for comparative analysis between PD patients and healthy controls, as well as to discern variations between these proposed PD subtypes.

Methods: High-resolution ultrasound (HRUS) was used to measure the VN cross-sectional area (CSA) in 106 healthy controls and 127 PD patients. The PD group was further categorized into 42 body-first onset PD patients and 85 brain-first onset PD patients.

Results: The PD group had a significantly lower bilateral average VN CSA compared to the control group (left VN (mean \pm standard deviation): PD group $1.49 \pm 0.43 \text{ mm}^2$, control group $1.90 \pm 0.53 \text{ mm}^2$, $p < 0.001$; right VN: PD group $1.95 \pm 0.55 \text{ mm}^2$, controls group $2.48 \pm 0.57 \text{ mm}^2$, $p < 0.001$). The right VN CSA was consistently larger than the left in both groups ($p < 0.001$). Subgroup analysis revealed that body-first PD patients tended to exhibit a smaller VN CSA than brain-first PD patients (left VN: body-first $1.35 \pm 0.36 \text{ mm}^2$, brain-first $1.56 \pm 0.45 \text{ mm}^2$, $p = 0.010$; right VN: body-first mean $1.74 \pm 0.45 \text{ mm}^2$, brain-first $2.05 \pm 0.57 \text{ mm}^2$, $p = 0.001$). The VN CSA, specifically the right VN, exhibited a weak but statistically significant correlation with PD subtype and some components of PD-related assessment scales. The body-first PD group scored significantly higher on the Unified Parkinson Disease Rating Scale, Unified Parkinson Disease Rating Scale part I, Hamilton Depression Scale, Hamilton Anxiety Scale, Non-Motor Symptoms Questionnaire, Rapid Eye Movement Sleep Behavior Disorder Screening Questionnaire, Parkinson's Disease Questionnaire-39, and Scales for Outcomes in Parkinson's disease-autonomic, but significantly lower on the Parkinson's Disease Sleep Scale, reflecting greater non-motor symptom burdens.

Conclusion: These findings provide evidence of VN atrophy in PD, further suggesting that atrophy is more pronounced in body-first PD versus brain-first PD. VN ultrasound could serve as an adjunctive diagnostic tool for PD.

Keyword: Parkinson's disease, vagus nerve, atrophy, ultrasound, brain-first, body-first

健康和神经精神儿童的多导睡眠监测参数:一项系统综述和荟萃分析

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背景:健康儿童和精神神经疾病儿童的多导睡眠监测证据不足, 阻碍了睡眠特征的管理和研究及其临床应用。迫切需要建立健康和神经精神疾病儿童的规范数据。全面定量评估健康儿童多导睡眠监测 (psg) 客观参数的年龄性别调整正常值, 并比较神经精神障碍儿童与健康对照儿童 psg 客观参数的差异。

方法:在 Scopus 数据库中检索涉及儿童睡眠监测的文章。纳入总睡眠时间 (TST)、睡眠效率 (SE) 等 9 个常规多导睡眠图 (PSG) 参数。采用随机效应模型估计各参数的总体效应量及其 95% 可信区间 (CI) 和 95% 预测区间 (PI)。采用混合效应 meta 回归分析年龄、体重指数 (BMI) 和性别对多导睡眠监测参数的影响。

结果:共纳入 135 项研究。健康儿童 TST 为 459.44 min, SE 为 87.87%。随着年龄的增长, SOL 和 WASO 时间呈下降趋势。SWS 期和 rem 期所占比例也有类似趋势。而 SE 和 N2 与年龄变化呈正相关。除 SE 外, 未发现其他多导睡眠监测参数与性别相关。所有神经精神疾病患儿, 尤其是癫痫、唐氏综合征和孤独症患儿, 至少表现出一项不同于健康对照的指标。

结论:本研究结果为健康儿童多导睡眠监测参数提供了客观的正常值。多种神经精神疾病患儿有特征性的多导睡眠监测参数变化模式。儿童的客观多导睡眠监测参数对于早期发现儿童的健康和异常神经精神问题具有重要的临床意义。

关键词: 睡眠, 儿童

阻塞性睡眠呼吸暂停中枢损伤发生的相关因素的研究探讨

周姗姗

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目的 通过观察 OSA 患者连续动态无创整夜经皮二氧化碳分压水平的变化,探讨 OSA 呼吸中枢受损发生混合性睡眠呼吸暂停的机制,并对 OSA 精准个体化治疗提供可靠的理论依据。
方法 研究对象来自于河北医科大学第三医院确诊为 OSA 的患者 57 例,进一步根据 MAI 将其分为三组,单纯 OSA 组(对照组)20 例;MSA-1 组 19 例;MSA-2 组 18 例。收集纳入组内患者的临床资料。对比各组指标间差异,并进一步分析相关性。
结果 三组间患者比较,差异有统计学意义的指标有性别、颈围、吸烟史、N1 比例及 REM 比例、经皮二氧化碳分压最大值(PtcCO₂.ma)、PtcCO₂ 平均值(PtcCO₂.mean)、PtcCO₂ 大于 45mmHg 的时间占总 CO₂ 监测时间的百分比(PtcCO₂.T.45%)、PtcCO₂ 高于 50mmHg 的平均事件持续时间(PtcCO₂.T.50)。相关因素分析显示,MAI 与 PtcCO₂.ma、PtcCO₂.mean、PtcCO₂.T.45%、PtcCO₂.T.50 呈负相关。
结论 本研究显示 OSA 患者 MSA 事件的发生与 PtcCO₂ 水平降低密切相关。当 PtcCO₂.ma、PtcCO₂.mean 值降低、PtcCO₂.T.45%减小、PtcCO₂.T.50 缩短,OSA 患者发生 MSA 的比例越高,程度越重。因而,OSA 伴有 CO₂ 降低的患者更易于发生 MSA,OSA 的呼吸中枢受损可能与 CO₂ 水平降低相关。

关键词: 经皮二氧化碳,阻塞性睡眠呼吸暂停,混合性睡眠呼吸暂停,中枢发生机制

阻塞性睡眠呼吸暂停与心外膜脂肪组织分布关系的研究

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目的

研究无并发症的阻塞性睡眠呼吸暂停 (OSA) 患者心外膜脂肪组织分布及脂肪代谢情况，分析心外膜脂肪组织在 OSA 相关内脏脂肪作用。

方法

从 2017 年 7 月至 2023 年 12 月，我们收集了西安交通大学第二附属医院耳鼻喉头颈外科收治的 180 例患者的临床资料。这些资料包括人口统计学特征、生活方式行为、与 OSA 相关的病史、生化、炎症和超声心动图相关的参数。所有受试者根据多导睡眠图 (PSG) 的结果被分为轻中度 OSA 组和重度 OSA 组。

结果

在轻中度和重度 OSA 患者之间，存在显著的心外膜脂肪体积、心外膜脂肪密度、胸腔脂肪体积、心房脂肪体积和 CVAI（中国内脏脂肪指数）差异（所有 $p < 0.05$ ）。但在两组之间，没有显著的冠状动脉脂肪衰减指数差异（所有 $p > 0.05$ ）。弹性网络回归、限制立方样条曲线和森林图亚组分析显示，CVAI 是与 AHI 和 OSA 严重程度最相关的内脏脂肪参数（所有 $p < 0.05$ ）。在控制基线数据和内脏脂肪体积的影响后，发现 OSA 严重程度在多元线性回归分析中仍对 EATV 和 EATD 产生显著影响（所有 $p < 0.05$ ）。

结论

没有心血管疾病和糖尿病的 OSA 患者的病情进展可能促进 EATV 的增加，尤其是心房部分。我们的研究进一步验证了 OSA 患者全身脂肪代谢的影响。有必要进一步研究内脏脂肪组织与心外膜脂肪组织之间的关系以及 OSA 与早期心血管疾病的关系。在治疗早期心血管疾病合并 OSA 时，应关注心外膜脂肪组织的变化。

关键词：阻塞性睡眠呼吸暂停, 心外膜脂肪组织, 内脏脂肪

午睡近十年国内外研究状况分析

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午睡是一种维持白天工作学习效率的常见休息方式，也是一种对身体健康和日常活动有重要影响的生活方式。据报道，白天午睡作为影响健康的一种可改变的生活方式因素，睡眠时长的长短可影响许多功能与疾病发生的风险，如认知能力、高血压、糖尿病、代谢综合征、中风等。本文提供了对近十年国内外午睡领域研究的综合文献综述，旨在总结并分析午睡研究的当前状态和趋势。许多研究表明午睡与不同人群、不同系统性疾病有着不容忽视的关联，所以明确午睡对躯体化疾病的影响，探究正确的午睡方式，有助于改善现代人们的生活质量，减少各种躯体化疾病的发病率，节约卫生经济成本。

关键词：午睡；心脑血管疾病；抑郁症；糖尿病；夜间睡眠

腭咽肌外展双“8”字缝合法在 HUPPP 手术中的应用效果

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目的：比较腭咽肌外展双“8”字缝合法和单纯缝合法在改良悬雍垂腭咽成形术（HUPPP）手术中的应用效果。

方法：将所有符合入排标准，并拟于我院睡眠中心接受 HUPPP 手术的阻塞性睡眠呼吸暂停低通气综合征（OSAHS）患者随机分为单纯缝合组和腭咽肌外展双“8”字缝合组。在 HUPPP 术后 2 周和 1 个月进行随访，使用问卷以及切口愈合评估量表，评估患者主观症状、术区恢复情况以及不良事件发生率等。

结果：截至 2023 年 6 月 1 日，共入组 70 名接受 HUPPP 手术的 OSAHS 患者，最终有 66 名 OSAHS 患者完成随访。随访结果发现单纯缝合组和腭咽肌外展双“8”字缝合组患者在术后 2 周-1 个月，体重均出现显著下降（ $p < 0.05$ ），但两组间体重变化量无显著差异（ $p > 0.05$ ）；两组患者日间嗜睡及张口呼吸症状均显著改善（ $p < 0.01$ ）。随访期间，两组患者术后主要不适症状为口腔干燥感及异物感，术后均无明显鼻咽反流症状，两组间主观症状无显著差异（ $p > 0.05$ ）；两组间切口感染评分、出血评分及切口愈合程度无显著差异（ $p < 0.05$ ），但腭咽肌外展双“8”字缝合组患者切口裂开评分略低于单纯缝合组（ $p < 0.05$ ）；两组间严重出血及感染等不良事件发生率无显著差异（ $p > 0.05$ ）。

结论：本研究证实腭咽肌外展双“8”字缝合法更有助于 HUPPP 术后切口愈合，但对 OSAHS 患者术后主观症状及不良事件发生率无显著影响。

关键词：双“8”字缝合法，阻塞性睡眠呼吸暂停低通气综合征，不良事件

学龄前儿童同床睡与内化问题的关系：一项队列研究

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采用问卷调查法，以上海地区学龄前儿童为被试，进行为期两年半的追踪调查，共施测三次，首次施测调查儿童性别、年龄、父母受教育程度、家庭年收入等社会人口学变量，每次施测均由家长汇报儿童是否同床睡以及儿童的睡眠质量和内化问题。用长处和困难问卷(Strengths and Difficulties Questionnaire, SDQ)中的内化问题维度测量儿童内化问题，用儿童睡眠习惯问卷(Strengths and Difficulties Questionnaire, SDQ)调查睡眠质量，并用该问卷中的条目“孩子是否独自在自己的床上入睡”为标准判断是否为同床睡。使用 STATA 18.0 进行数据分析。结果发现在控制父母受教育程度、家庭年收入以及儿童性别后，相较于非同床睡儿童，T1 和 T2 时期的同床睡儿童内化问题仍然显著增加 ($p < 0.05$)。对睡眠焦虑维度进行分组后，比较焦虑组与非焦虑组的逻辑回归模型，发现非焦虑组的儿童在各个时期的同床睡均对内化问题有显著消极影响 ($p < 0.05$)，即同床睡儿童内化问题更严重。焦虑组儿童在 T1 时期，同床睡对内化问题无显著影响；在 T2 时期，同床睡对内化问题存在边缘显著的积极影响 ($p = 0.076$)；在 T3 时期，同床睡对内化问题存在显著积极影响 ($p < 0.05$)。

关键词：纵向研究, 学龄前, 儿童, 同床睡, 内化问题, 睡眠焦虑

儿童无创呼吸机压力滴定模式选择的探讨

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目的 研究整夜 PSG 下进行人工压力滴定时，定压 CPAP 与窄距 AUTO-CPAP 模式对儿童 OSA 治疗效果、舒适度和依从性的影响。

方法 观察 10 例在本睡眠中心经 PSG 诊断为重度 OSA 且适合进行 CPAP 治疗的患儿，在 PSG 下进行无创呼吸机压力滴定：其一为 NREM 期的最适压力 PN（消除仰卧位 NREM 期的所有阻塞性呼吸事件，且仰卧位 NREM 期 \geq 15 分钟）；其二为整夜最适压力 PR（消除所有阻塞性呼吸事件，且仰卧位 REM 期 \geq 15 分钟）。PSG 下分别使用 CPAP PR 和 Auto-CPAP PN-PR 两种方式对患儿进行整夜呼吸机治疗。分析 PSG 的结果，比较不同治疗方式下患儿的各个指标及次日清醒后对夜间睡眠的主观感受。

结果 四例：窄距 AUTO-CPAP 模式治疗比定压 CPAP 治疗，患儿夜间因通气而觉醒哭闹的次数明显减少，佩戴时间更长；次日清晨对夜间睡眠的主观感受更舒适；但整夜 OAH1 更高。有两例患儿与之相反。三例患儿未见明显差异。一例患儿放弃使用无创呼吸机治疗。

结论 使用无创呼吸机治疗时，窄距 Auto-CPAP 可以在大部分消除患儿整夜的阻塞性呼吸事件、提高整夜最低血氧饱和度、降低因呼吸机通气引起的不适感，使患儿依从性提高，但由于压力不足，患儿因呼吸事件引起的觉醒较多，睡眠片段化较定压 CPAP 模式更严重。但因观察记录的病例数较少，未能对患儿年龄、体重及病情严重程度进行详细分组比较，结果较片面，需待积累改进。

关键词：儿童，无创呼吸机压力滴定，OSA

单胸腹带III型便携式睡眠监测仪对中国成人睡眠呼吸暂停低通气综合征的诊断价值

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目的:

评价一种单胸腹带的III型便携式睡眠监测仪[Alice NightOne(ANO)]在中国成人人群中对于睡眠呼吸暂停(OSA)的诊断价值。

方法:

本研究选取因打鼾就诊的中国成人患者,进行ANO的HSAT(ANO_{home}),并同时进行多导睡眠监测(PSG)及ANO监测(ANO_{lab})。利用Bland-Altman分析、诊断试验等评估ANO与PSG所得结果之间的一致性。

结果:

①共有95例同时进行PSG与ANO_{lab},83例成功进行ANO_{home}。ANO_{lab}、ANO_{home}所得AHI分别为24.9(±20.9)、22.8(±18.4)次/h,与相应PSG所得AHI呈强相关性(r值分别为0.948、0.831,均P<0.001)。

③Bland-Altman分析显示,ANO_{lab}、ANO_{home}所得AHI较相应PSG AHI分别低7.2(±1.7)、11.3(±2.0)次/h,一致性系数分别为22.0、34.4。

④以AHI≥5次/h为诊断标准,ANO_{lab}对OSA的灵敏度及特异度分别为96.3%、92.9%,ANO_{home}则分别为94.6%、100%;以AHI≥15次/h为诊断标准,ANO_{lab}对中重度OSA的灵敏度及特异度分别为84.1%、96.9%,ANO_{home}则分别为74.6%、91.7%。

结论:

使用Alice NightOne进行睡眠呼吸监测对于中国成人OSA患者具有一定诊断价值。

关键词:睡眠呼吸暂停,家庭睡眠呼吸暂停监测,便携式设备

抑郁患者述情障碍在手机成瘾和睡眠障碍的中介作用

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目的探讨重度抑郁患者述情障碍和抑郁程度在智能手机成瘾和睡眠质量间的中介作用。方法采用匹兹堡睡眠质量量表、手机成瘾指数量表、抑郁自评量表和述情障碍量表对 114 名符合国际疾病分类(International Classification of Diseases, ICD)-10 标准的重度抑郁发作患者进行问卷调查。所有数据采用 SPSS22.0 统计软件进行分析。结果在 114 名重度抑郁发作患者中,手机成瘾检出率为 72.7%,睡眠障碍的检出率为 72.2%。睡眠障碍与述情障碍、手机成瘾、抑郁程度呈正相关,均满足。中介效应分析结果显示,生理性症状和认识和区分情感与躯体感受的能力在手机成瘾和睡眠质量之间的中介作用显著,总间接效应为 0.0459,占总效应的 57.45%。结论抑郁程度和述情障碍在重度抑郁发作患者的手机成瘾和睡眠质量之间存在中介效应。

关键词: 重度抑郁发作; 手机成瘾; 睡眠障碍; 述情障碍

睡眠相关性疼痛勃起病例分析

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研究目的：睡眠相关性疼痛勃起(SRPE)是一种罕见的睡眠异常，其病因和发病机制尚不明确。本研究旨在通过分析4例SRPE患者，探讨其病因、诊断及临床特点，旨在提高对该疾病的认识，并为临床诊疗提供依据。

研究方法：本研究回顾性分析了4例确诊为SRPE的患者，所有患者均接受多导睡眠图(PSG)联合夜间阴茎勃起测试(NPT)或夜间阴茎勃起记录测试(NPTR)以及视频记录，以明确诊断。同时，分析其病因，包括特发性、OSA相关、自主神经功能失调及药物诱发等因素。

主要结果：研究发现，所有患者在REM睡眠期间均出现疼痛性勃起，而清醒时勃起无痛。4例患者的病因分别为特发性、OSA相关、自主神经功能失调相关及药物诱发。通过PSG和NPT/NPTR的联合应用，成功诊断并确认了SRPE。

结论：SRPE是一种罕见且可能被忽视的男性功能障碍，睡眠医学科在该疾病的诊断中具有独特优势。进一步的研究和临床关注有助于改善该疾病的诊断率和治疗效果。

关键词：睡眠相关性疼痛勃起，PSG，NPTR

吸烟对 OSA 共病脑梗死的生物信息学及临床特征影响的初步研究

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背景及目的:

研究基于生信筛选吸烟人群中诱发 OSA 共病脑梗死的关键基因, 通过临床验证关键基因的表达; 进一步分析吸烟人群中关键基因与 OSA 共病脑梗死临床特征之间的关系, 探讨关键基因在共病发生过程中的生物学机制。

方法: (1) OSA 共病脑梗死吸烟情况临床分析 ; (2) 吸烟诱发 OSA 共病脑梗死关键基因筛选及生信分析验证 ; (3) 关键基因的临床验证及其与临床特征关系分析

结果:

(1) 吸烟诱发 OSA 共病脑梗死关键基因筛选及生信分析结果: PPI 网络构建与算法分析筛选出上调表达基因 HMMR、下调表达基因 NCOA3 作为吸烟诱发 OSA 共病脑梗死的关键基因;

(2) 关键基因的临床验证及其与临床特征关系分析: qRT-PCR 结果显示相比于对照组, 实验组中 HMMR 基因的上调表达及 NCOA3 基因的下

调表达更为显著, 存在统计学意义。

结论: (1) 生物信息学分析结果表明吸烟人群中 HMMR、NCOA3 基因的表达与 OSA 共病脑梗死的发生存在相关性; OSA 与脑梗死共表达 DEGs、

吸烟 DEGs 共同参与免疫调节、氧化应激损伤、癌症通路相关的生物学过程, 吸烟可能通过影响免疫反应、氧化应激损伤、癌症通路作用促进了 OSA 共病脑梗死的发生。

(2) 吸烟通过上调基因 HMMR 表达与下调基因 NCOA3 表达参与了 OSA 共病脑梗死的发生发展过程并同时影响冠心病、高血压、血糖增高、高血脂等共病危险因素。

关键词: OSA 共病脑梗死; 吸烟; 生物信息学; 关键基因

青少年抑郁症发生非自杀性自伤行为的影响因素及情绪调节措施的应用研究

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目的：总结青少年抑郁症发生非自杀性自伤行为的影响因素，分析情绪调节措施对其的作用。研究方法：采用回顾性分析，将本院诊治的162例青少年抑郁症患者作为研究对象，病例收集年限为2023年1月-2024年4月，按照是否发生非自杀性自伤行为进行分组，即未发生非自杀性自伤行为的有121例，将其设为对照组；发生非自杀性自伤行为的有41例，将其设为观察组，筛查发生非自杀性自伤行为的有关因素；同时对观察组患者采取情绪调节措施，分析干预前后患者病情的改善情况。结果：青少年抑郁症发生非自杀性自伤行为的影响因素包括重度抑郁、有童年创伤、家庭环境不良、学习压力较大、受过校园霸凌($P < 0.05$)；在情绪调节措施的干预下，患者的抑郁症状、非自杀性自伤行为评分均相比干预前较低($P < 0.05$)。结论：青少年抑郁症发生非自杀性自伤行为的影响因素复杂多样，需重点关注青少年的身心健康；采取情绪调节措施进行干预，有益于缓解患者的抑郁症状，减少非自杀性自伤行为的发生。

关键词：青少年抑郁症；非自杀性自伤行为；影响因素；情绪调节措施

康养老年人群的睡眠呼吸障碍和睡眠结构变异性研究

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目的 通过对康养老年人群进行睡眠状态连续动态监测，研究康养老年人群睡眠呼吸障碍和睡眠结构变异性的变化特征及相关影响因素。**方法** 选取 2021 年 8 月至 2023 年 5 月在开滦荆各庄医养中心及开滦范各庄养老中心入住的老年人群。详细记录全部入选患者年龄、性别、吸烟史、饮酒史、既往病史等基线资料，入选者应用新型自然状态无感智能床垫式睡眠状态监测平台系统进行睡眠状态监测。**结果** 康养老年人群 7 天平均 AHI 均 ≥ 5 次/小时，按 7 天 AHI 均值将康养人群发生睡眠呼吸障碍的等级分层分析，显示在睡眠呼吸障碍轻度、中度、重度三组之间 REM 期占比、NREM 期占比、深睡眠期占比、最小呼吸、最大呼吸、平均心率、最小心率、最大心率具有统计学差异性，康养老年人群 7 天在不同睡眠呼吸障碍等级之间的睡眠结构指标变异性分析显示 NREM 期占比变异系数、深睡眠期变异系数、深睡眠期占比变异系数具有统计学差异性。多因素 logistic 回归结果显示，深睡眠期占比、最大呼吸、最大心率为睡眠呼吸障碍是否为重度的影响因素。**结论** 康养老年人伴睡眠呼吸障碍的严重程度等级具有波动性，深睡眠期具有变异性，目前对于睡眠诊断筛查连续监测的时间尚无统一的标准，因此需要进行这方面的大样本研究以指导临床的诊断和治疗。睡眠呼吸障碍是老年人群的常见和高发病症，以在不同严重程度等级之间进行波动更为常见。

关键词： 康养人群, 长程无感睡眠监测系统, 睡眠呼吸障碍, 睡眠结构, 变异性

昼夜节律量化值对急性脑梗死后睡眠呼吸障碍发病预测价值

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目的 探讨昼夜节律量化值对急性脑梗死后睡眠呼吸障碍发病预测价值。

方法 选取2020年11月~2022年12月开滦总医院神经内科住院1367例急性脑梗死（ACI）患者。监测5天睡眠呼吸暂停低通气指数是否并发睡眠呼吸障碍（SDB），将1367例ACI患者分为非SDB组（147例）与SDB组（1220例）。收集并分析两组患者基线及临床资料，包括昼夜节律CR-IS/V量化值。以ACI发生SDB为因变量，有统计学意义指标为自变量，对ACI发生SDB影响因素行多因素Logistic回归分析。通过受试者工作（ROC）曲线及曲线下面积（AUC）评估CR-IS/IV量化值对ACI后SDB发病预测价值。

结果 ①两组基线资料均无统计学意义②SDB组丘脑梗死、脑干梗死的比例高于非SDB组；SDB组NIHSS评分、CR-IV量化值高于非SDB组；SDB组CR-IS量化值低于非SDB组，组间比较差异均有统计学意义。③多因素Logistic回归分析显示：脑干梗死、CR-IS量化值、CR-IV量化值是ACI发生SDB的危险因素。④经ROC曲线分析CR-IS/IV分别的AUC：0.843、0.814；灵敏度为：73.1%、63.0%；特异性为：86.4%、87.1%。

结论 CR量化值是ACI发生SDB的危险因素，CR-IS量化值 ≤ 0.619 和CR-IV量化值 ≥ 0.649 时，对ACI后SDB发病具有一定预测价值。

关键词：昼夜节律、急性脑梗死、睡眠呼吸障碍、预测、量化值、危险因素

Development and Validation of a Simple Clinical Nomogram for Predicting Obstructive Sleep Apnea-hypopnea Syndrome in Patients with Hypertension

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Objective:

Obstructive sleep apnea hypopnea syndrome (OSAHS) is common in patients with hypertension, and the two are closely related. Therefore, the aim of our study is to construct and validate an objective and easy-to-use nomogram that can accurately predict the risk of OSAHS in patients with hypertension.

Methods:

The retrospective data of patients with hypertension who underwent polysomnography (PSG) at the Sleep Medicine Center of the First Affiliated Hospital of Guangzhou Medical University was collected. All participants were assigned to the training group, followed by a random draw of approximately 70% as the validation group. Logistic regression and LASSO regression models were used to select factors and construct the nomogram. C-index, calibration curve, decision curve analysis (DCA) and clinical impact curve analysis (CICA) were used to assess the identification, calibration and clinical validity of the nomogram. Finally, nomogram validation was performed in the validation group.

Results:

This study included a training group of 303 and a validation group of 217. Logistic and LASSO regression analyses identified gender, age, BMI, NC and ESS as predictors for inclusion in the nomogram. The C-index of both the training group and validation group was 0.840, which is better for identification and calibration. The area under the curve (AUC) of the nomogram predictive model and STOP-Bang at the three diagnostic cut-off points of $AHI \geq 5$, $AHI \geq 15$ and $AHI \geq 30$ were 0.840 vs 0.778, 0.754 vs 0.740, and 0.765 vs 0.751 respectively. The AUC at each intercept point was higher than that of STOP-Bang. DCA and CICA showed that the nomogram is clinically useful.

Conclusion:

We created a nomogram predictive model with good accuracy and clinical applicability consisting of the five indicators of gender, age, BMI, NC and ESS. This model can be useful in determining OSAHS risk in patients with hypertension.

Keyword: obstructive sleep apnea; nomogram; predictors; STOP-Bang

小脑静态与动态功能连接组学在阻塞性睡眠呼吸暂停诊断中的价值研究

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研究目的：阻塞性睡眠呼吸暂停(OSA)可导致小脑缺血缺氧及血流减少,进而引发神经功能异常。鉴于早期识别 OSA 的生物标志物具有重要临床意义,本研究拟通过探究以小脑为种子点的全脑功能连接(FC)模式,揭示 OSA 特异性 FC 改变。

方法：纳入 60 例 OSA 及 60 名健康对照。基于小脑模板提取 27 个感兴趣区,采用全时间序列相关及滑动窗法分析 OSA 患者小脑-全脑静态(sFC)和动态功能连接(dFC)变化。dFC 通过滑动窗口种子体素相关量化,以跨窗口 FC 标准差作为测量指标;sFC 则用跨窗口平均连接表示。结合 sFC 和 dFC 特征,应用多种机器学习算法区分 OSA 与健康对照,并预测 OSA 患者睡眠、情绪及认知状况。

结果：OSA 患者双侧颞上回、右颞中回 dFC 增高,右额中回 dFC 降低;小脑 6L、右扣带回、右额中回、双侧顶下小叶、右缘上回、右岛叶及右颞上回 sFC 增强。sFC 与 dFC 组合较单独特征具有更高分类效能,支持向量机(SVM)表现最优。两者结合区分 OSA 与健康对照的平均准确率为 79%,灵敏度 92%,特异性 67%,AUC 为 89%。此外,这些特征可预测 OSA 患者睡眠、情绪及认知严重程度。

结论：dFC 和 sFC 异常反映了 OSA 患者大脑网络重构。静态与动态连接组学的结合能有效鉴别 OSA,SVM 模型效果最佳。这些独特 FC 模式可作为潜在神经影像生物标记,为阐明 OSA 相关认知、睡眠及情绪障碍的病理机制提供新视角。

关键词：阻塞性睡眠呼吸暂停; 功能磁共振成像; 动态连接组学; 功能连接; 机器学习; 小脑; 预测模型

Effect of Oral Orexin Receptor 2 Agonist TAK-861 on the Severity of Symptoms in Individuals With Narcolepsy Type 1: Results From a Phase 2 Study

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Introduction: Narcolepsy type 1 (NT1) is characterized by excessive daytime sleepiness and the presence of cataplexy episodes and defined by low cerebrospinal fluid (CSF) orexin levels. The orexin receptor 2 agonist TAK-861 has shown wake-promoting effects and improvement of cataplexy-like symptoms in animal models of narcolepsy and is under investigation as a therapeutic agent for NT1.

Methods: An analysis of exploratory data from the randomized, double-blind, placebo-controlled, Phase 2 study (NCT05687903) was conducted to explore disease severity in individuals with ICSD-3 confirmed NT1. Eligible participants were age 18-70 years (Japan: 16-70), with an Epworth Sleepiness Scale (ESS) score >12 , and ≥ 4 partial/complete episodes of cataplexy/week. Participants were randomized to oral TAK-861 (0.5mg twice 3 hours apart, 2mg twice 3 hours apart, 2mg then 5mg 3 hours later, or 7mg once daily), or placebo. Exploratory endpoints included change from baseline to Week 8 in the Narcolepsy Severity Scale for clinical trials (NSS-CT), and Clinical Global Impression (CGI) and Patient Global Impression (PGI) at Week 8. The NSS-CT, a validated, self-administered 15-item scale, evaluates the severity, frequency, and impact of five main narcolepsy symptoms (with four severity levels: mild 0-14, moderate 15-28, severe 29-42, very severe 43-57). Efficacy and safety data are reported separately.

Results: A total of 112 participants (mean age of 34.0 years, 51.8% female, ESS score 18.5, NSS score 30.7) were randomized to TAK-861 (0.5mg/0.5mg n=23, 2mg/2mg n=21, 2mg/5mg n=23, 7mg n=23) or placebo (n=22). Significant improvements in NSS-CT total score were achieved with TAK-861 (Least square [LS] mean [SE] change from baseline to Week 8: -18.2 [0.5mg/0.5mg], -21.0 [2mg/2mg], -21.1 [2mg/5mg], -17.2 [7mg]) with TAK-861 and -3.5 for placebo; all $P < 0.001$ vs placebo). At Week 8, $>70\%$ of patients treated with TAK-861 were much/very much improved on the PGI and CGI, consistent with NSS-CT. TAK-861 was generally well tolerated and there were no treatment-related serious TEAEs or discontinuations due to TEAEs during the study.

Conclusion: In this Phase 2 study, TAK-861 showed significant and clinically meaningful improvements in NSS-CT and improvements in PGI and CGI versus placebo in participants with NT1 over 8 weeks.

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Keyword:

Efficacy and Safety of TAK-861, an Oral Orexin Receptor 2 Agonist, in Individuals With Narcolepsy Type 1: Results From a Phase 2 Study

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Introduction: Narcolepsy type 1 (NT1) is characterized by excessive daytime sleepiness and cataplexy associated with low cerebrospinal fluid orexin levels. Orexin receptor agonists are promising treatments for NT1. The orexin receptor 2 agonist TAK-861 has shown wake-promoting effects and improvement of cataplexy-like symptoms in narcolepsy animal models.

Methods: This randomized, double-blind, placebo-controlled, Phase 2 study (NCT05687903) evaluated the efficacy and safety of TAK-861 in participants with ICSD-3-confirmed NT1. Eligible participants were age 18-70 years (Japan: 16-70), with an Epworth Sleepiness Scale (ESS) score >12, and ≥ 4 partial/complete episodes of cataplexy/week. Participants were randomized to oral TAK-861 (0.5mg twice 3 hours apart, 2mg twice 3 hours apart, 2mg then 5mg 3 hours later, or 7mg once-daily), or placebo. Endpoints included change from baseline to Week 8 in mean sleep onset latency on the Maintenance of Wakefulness Test (SOL-MWT; primary endpoint), ESS total score, weekly cataplexy rate (WCR), and occurrence of treatment-emergent adverse events (TEAEs).

Results: A total of 112 participants, previously withdrawn from stimulant and anti-cataplectic medication, were randomized (0.5mg/0.5mg n=23, 2mg/2mg n=21, 2mg/5mg n=23, 7mg n=23, placebo n=22). Participants had a mean age of 34.0 years and ESS score of 18.5 at baseline; 51.8% were female. Least squares (LS) mean (SE) changes from baseline to Week 8 in SOL-MWT were: 12.49 (2.13), 23.50 (2.04), 25.42 (2.07), 14.96 (1.95), and -1.16 (2.06) minutes with 0.5mg/0.5mg, 2mg/2mg, 2mg/5mg, 7mg and placebo, respectively (LS mean difference versus placebo all $P \leq 0.001$). After adjustment for multiple comparisons, statistically significant changes from baseline to Week 8 were achieved for all dose groups versus placebo for SOL-MWT and ESS, and for the 2mg/2mg and 2mg/5mg dose groups for WCR. TEAEs occurred in 77.8% (70/90) patients on TAK-861 versus 31.8% (7/22) on placebo. The most common TEAEs were urinary urgency/frequency and insomnia. No treatment-related serious TEAEs or discontinuations due to TEAEs occurred during the study.

Conclusion: In this Phase 2 study, TAK-861 showed significant and clinically meaningful improvements versus placebo on objective and subjective measures of sleepiness and cataplexy frequency. TAK-861 was generally well tolerated in participants with NT1 over 8 weeks.

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Keyword:

OSA 患者 REM 与 NREM 期睡眠碎片化与糖代谢紊乱的关系

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尽管许多研究都证明了呼吸暂停低通气指数 AHI、微觉醒指数 MAI 与糖代谢之间的关系，但快速眼动期 REM 和非快速眼动期 NREM 的睡眠片段化与糖代谢异常之间的关系尚不明确。在上海市第六人民医院睡眠中心招募疑似阻塞性睡眠呼吸暂停 (OSA) 的受试者参加上海睡眠健康研究。收集受试者基本的人体测量数据和多导睡眠图 PSG 指标，包括 AHI、氧降指数 ODI、和 SpO₂ 等数据。使用 PSG 监测所得的总计 REM 期和 NREM 期微觉醒次数及睡眠时长分别计算了 MAI、MAI-REM 和 MAI-NREM。在 PSG 监测次日清晨收集空腹血糖 FPG 及空腹胰岛素 FINs 等生化数据，并计算胰岛素抵抗稳态模型 (HOMA-IR)。采用二元 Logistic 回归评估患者 MAI-REM 和 MAI-NREM 与高血糖、高胰岛素血症和胰岛素抵抗的独立相关性，并使用多元线性回归探索 MAI-REM、MAI-NREM 与 FPG、FINs 和 HOMA-IR 的相关性。本研究最终纳入了 4448 名受试者。逻辑回归结果显示，在调整了所有混杂因素后，MAI-REM、MAI-NREM 与高血糖、高胰岛素血症和胰岛素抵抗之间无明显相关性。但线性回归及敏感性分析的结果显示，在 OSA 人群中，患者 MAI-NREM 与空腹胰岛素升高独立正相关，且这一关系在 MAI-REM 小于中位数的人群中依然存在。因此需要进一步开展前瞻性队列研究，以确定两者之间的独立关系。

关键词：睡眠碎片化、糖代谢紊乱

The effects of early chronotype on the risk of Bipolar disorder: a genetic study

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Objective: Epidemiological evidence suggests a correlation between early chronotype, or morningness, and Bipolar disorder. However, the causal relationship between these factors remains unclear. This two-sample Mendelian randomization (MR) study aims to determine whether morningness is a risk factor for, or a manifestation of, Bipolar disorder.

Methods: We analyzed summary statistics from genome-wide association studies focusing on morningness and Bipolar disorder. The inverse-variance weighted (IVW) method and the weighted-median approach were employed to explore the causal nature of the relationship. Additionally, pleiotropy tests, heterogeneity assessments, and leave-one-out sensitivity analyses were conducted to validate the MR assumptions.

Results: The study revealed a significant causal relationship between morningness and an increased risk of Bipolar disorder, as indicated by both the IVW method (OR= 0.853(0.825-0.882), $\beta = -0.159$, $P = 6.58 \times 10^{-21}$) and the weighted-median method (OR= 0.892 (0.865-0.919), $\beta = -0.115$, $P = 1.28 \times 10^{-13}$). The pleiotropy tests found no significant pleiotropy effects (all $P > 0.05$). Pleiotropy tests showed no significant effects (all $P > 0.05$), and heterogeneity tests also indicated no significant disparities (all $P > 0.05$). Furthermore, leave-one-out sensitivity analyses confirmed that the findings were not influenced by any single SNP.

Conclusions: Morningness may be a protective factor for Bipolar disorder rather than merely a marker of the disease process. This finding highlights the importance of considering chronotype characteristics as protective factors in the early identification and management of individuals at risk for Bipolar disorder.

Keyword: Chronotype, Morningness, Bipolar disorder, Mendelian randomization, Causality.

Circadian rhythms of melatonin and its relationship with anhedonia in patients with mood disorders: a cross-sectional study

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Background Mood disorders are strongly associated with melatonin disturbances. However, it is unclear whether there is a difference in melatonin concentrations and melatonin circadian rhythm profiles between depression and bipolar disorder. In addition, the relationship between anhedonia, a common symptom of affective disorders, and its melatonin circadian rhythm remains under-investigated.

Methods Thirty-four patients with depression disorder, 20 patients diagnosed with bipolar disorder and 21 healthy controls participated in this study. The Revised Physical Anhedonia Scale (RPAS) was performed to assess anhedonia. Saliva samples were collected from all subjects at fixed time points (a total of 14 points) in two consecutive days for measuring the melatonin concentrations to fit circadian rhythms of subjects. Melatonin circadian rhythms were compared between the three groups using ANOVA. Partial correlation analysis and linear regression analysis were used to explore the correlation between melatonin rhythm variables and anhedonia.

Results We found that the peak phase of melatonin in the depression group was significantly advanced compared to the control group ($P < 0.001$) and the bipolar disorder group ($P = 0.004$). The peak phase of melatonin and RPAS showed a negative correlation ($P = 0.003$) in depression patients, which was also demonstrated in the multiple linear regression model ($B = -2.47$, $P = 0.006$).

Conclusions These results suggest that circadian rhythms of melatonin are differentiated in depression and bipolar disorder and correlate with anhedonia in depression. Future research needs to explore the neurobiological mechanisms linking anhedonia and melatonin circadian rhythms in depressed patients.

Keyword: Depression, Bipolar disorder, Anhedonia, Circadian rhythm, Melatonin, Mood disorder

Temporal Dynamics of Negative Emotional Memory Reprocessing During Sleep

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Newly encoded memories are reactivated and consolidated during post-learning sleep supported by numerous studies. However, it is unclear whether the intensity of memory reprocessing is consistently maintained throughout the night or exhibits dynamic changes. This study aimed to investigate the temporal dynamics of negative emotional memory reprocessing during sleep, with a specific focus on slow oscillation (SO)-spindle coupling and its role in memory reprocessing. In experiment 1 (N = 40, mean age = 22.5 years), we detected the negative emotional memory reprocessing strength in each sleep cycle, we found that the 2nd sleep cycle after negative emotional memory learning constitute the most sensitive window for memory reprocessing. Furthermore, SO spindle coupling signals in this window plays a role in stabilizing negative emotional memory. In experiment 2, to verify the role of SO-spindle coupling in negative emotional memory reprocessing, we utilized transcranial alternating current stimulation (tACS) to disrupt SO-spindle coupling during the 2nd sleep cycle (N = 21, mean age = 19.3 years). Notably, the effects of the tACS intervention demonstrated a significant reduction in the recognition of negative emotional memories. These findings offer new insights into the mechanisms that regulate emotional memory consolidation during sleep and may have implications for addressing psychiatric disorders associated with pathological emotional memory.

Keyword: Sleep, Memory reactivation, Spindle

Modulation of brain oscillations by continuous theta burst stimulation in patients with insomnia disorder

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Background: Continuous theta burst stimulation (cTBS) induces long lasting depression of cortical excitability measured by motor evoked potentials. In the present study, we explored the modulation of cTBS on resting state electroencephalogram (rsEEG) during wakefulness in patients with insomnia.

Methods: Forty-one patients with insomnia were recruited in the counterbalanced crossover study. Both active and sham cTBS over right dorsolateral prefrontal cortex comprised three sessions, during which closed-eyes rsEEG were acquired pre and post-cTBS of each session. After intervention, patients were outfitted with a polysomnography monitoring device and instructed to retire to bed at their habitual bedtime. We used rsEEG together with power spectral density (PSD) and phase locking value (PLV) to investigate changes in spectral power and phase synchronization before and after three sessions cTBS during wakefulness, and to explore the effects of cTBS during wakefulness to subsequent sleep.

Results: The PSD of delta and theta bands were increased after active cTBS across global brain regions with a cumulative effect with increasing sessions. The PLV of delta and theta bands were enhanced between stimulated frontal area and occipital areas ($p < 0.05$, FDR correction). The efficiency of information communication within frontal-occipital networks was consistently improved through three sessions cTBS. Increased theta power during wakefulness was positively related with that during the NREM of the first sleep cycle ($r=0.453$, $p=0.023$).

Conclusions: Active cTBS improved spectral power of delta and theta bands with a cumulative effect during wakefulness. The modulation of cTBS influenced the theta power in subsequent sleep onset. Our findings contribute to a more comprehensive understanding of the neurobiological mechanisms involved in the effects of cTBS.

Keyword: Continuous theta burst stimulation, Electroencephalogram, Insomnia

夜间就寝时间对阻塞性睡眠呼吸暂停患者高血压风险的影响：基于中国华南地区社区调查

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目的：阻塞性睡眠呼吸暂停（OSA）作为高血压的独立风险因素，且共病高血压时传统降压治疗效果欠佳、高血压危象风险加剧。既往研究发现睡眠对高血压风险的潜在作用，本研究旨在探讨入睡时间该可调控因素，明确其对OSA患者高血压患病率的影响。

方法：本研究依托全生命期多样化队列（DLCC）与广东省国民健康数据调查，采用IV型可穿戴智能睡眠监测设备（WISM），并结合匹兹堡睡眠质量指数（PSQI）及失眠严重程度指数（ISI）问卷，收集参与者的睡眠相关数据。

结果：研究共纳入6,598名受试者，其中男性占比31.7%（2,089人），平均年龄为53.07 ± 12.59岁。高血压患病率为31.4%（2,073人），OSA患病率为30.4%（2,006人），其中821人共病高血压。整体而言，受试者平均入睡时间为22:55 ± 1:07，OSA共病高血压患者入睡时间更早（22:44 ± 1:10）。入睡时间早于22:00的个体高血压患病率显著上升，高达47.7%（347/784），且该组睡眠效率最低睡眠潜伏期最长。经多变量调整模型，研究表明相较于入睡时间在22:00至23:59之间的OSA患者，入睡时间早于22:00的OSA患者高血压患病风险显著增加。

结论：睡眠习惯尤其是入睡时间对OSA患者的高血压风险具有显著影响。较早的入睡时间与OSA患者高血压患病率的显著上升紧密相关。

关键词：阻塞性睡眠呼吸暂停, 高血压, 入睡时间, 睡眠行为

Analysis of the Association between Frequency Nightmares and Chronic Diseases: A Cross-Sectional Study

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Objective: In recent years, thanks to the progress in technologies, there has been a growing interest in delving into the realm of dreams and their essence. Earlier studies have highlighted a strong link between recurring nightmares and both mental and neurological disorders. Given that the body operates as a unified entity, there exist intricate interactions between the central and peripheral systems. Nonetheless, there is presently a dearth of research concerning the association between chronic ailments beyond the realm of the brain and frequent nightmares. We aimed to fill this gap using data from a large-scale cross-sectional study in China.

Methods: A cross-sectional study was conducted involving adult participants between June 2022 and July 2022. The statistical analysis was performed using SPSS 26 software, employing chi-square tests for count data between groups, as well as binary logistic regression for multivariate analysis. The significance level was set at $\alpha = 0.05$, and a two-sided test was used.

Results: A total of 41,061 resident cases were included in the study. The analysis revealed a significant association between the following diseases and the occurrence of nightmares: insomnia (OR=1.89), thyroid disease (OR=1.86), migraine (OR=1.31). The p-value was found to be ≤ 0.05 , indicating statistical significance. Simultaneously, we examined the connection between lifestyle habits, bedtime routines, and frequent nightmares. The findings revealed: the sleeping position and activities 1 hour before sleep are highly correlated with frequent nightmares.

Conclusion: After analyzing a large sample of cross-sectional data and conducting corrections with variables in a greater number of dimensions., contrary to previous studies, we found that frequent nightmares are only independently associated with insomnia, thyroid disorders, and migraines, and not related to psychiatry disorders. Taking a shower, using telephone for relax before bedtime and avoiding a prone sleeping position can effectively lower the likelihood of experiencing nightmares. Conversely, engaging in stimulating activities before sleep, like exercising or watching television, tends to heighten the occurrence of nightmares. Nightmares, being disruptive experiences during sleep, have a significant impact on the quality of overnight sleep. Therefore, they should be considered as symptoms requiring attention and management during disease treatment.

Keyword:

Association of sitting time and insomnia, mental health symptoms and the modifying effect of exercise in Chinese adults: a cross-sectional study

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Objective: Prolonged sitting can lead to a variety of adverse health effects. Exercise is a healthy lifestyle worthy of promotion. However, little is known about their association with mental health in Chinese population. The aim of this study was to explore the association between sitting time and insomnia and mental health symptoms in Chinese adults, and to reveal the modifying effect of exercise.

Methods: From June to July 2022, a cross-sectional survey was conducted and online questionnaires were distributed through the JD.com questionnaire platform. The contents of the questionnaire covered demographic characteristics, lifestyle habits, sleep and mental health symptoms related scales, etc. According to the quartile and median of sitting time per day, the participants were divided into four groups: "<4 hour", "4-<6 hour", "6-<8 hour", ">=8 hour". Outcome scales included the Insomnia Severity Index (ISI), The Patient Health Questionnaire-2 (PHQ-2) and the Generalized Anxiety Disorder -2 scale (GAD-2). Insomnia symptom was defined as an ISI score ≥ 15 , depression symptom was defined as PHQ-2 score ≥ 3 , anxiety symptom was defined as GAD-2 score ≥ 3 . In stratified analyses, 4-6 hour of sitting time plus exercise frequency of every day or almost every day was used as the reference. The statistical methods used in this study included multivariate logistic regression analysis, restricted cubic spline method, etc. Stata16 and R4.3.3 were used for analyses.

Results: A total of 34861 valid questionnaires were included in the final analysis. For demographic characteristics, the average age was 36.3 years, and 41.0% were female, and 96.6% were Han nationality, 82.6% of the educational level were college or higher. In terms of physical activity, the mean of sitting time was 6.3 hours per day, and 0.6 hours per day for exercise. The prevalence of insomnia symptom, depression symptom and anxiety symptom were 6.4%, 19.0% and 16.4%, respectively. Both univariate and multivariate logistic regression models showed that prolonged sitting time (≥ 8 hour) increased the risk of insomnia and mental health symptoms, for multivariate logistic regression models, prolonged sitting time increased the risk of insomnia symptom by 71%, depression symptom by 17%, and anxiety symptom by 12% (Insomnia symptom aOR=1.71, 95%CI: 1.50-1.96; depression symptom aOR=1.18, 95%CI: 1.09-1.28; anxiety symptom aOR=1.12, 95%CI: 1.03-1.22). The restricted cubic spline results showed that there was a nonlinear U-shaped dose-response relationship between sitting time and insomnia symptom, depression symptom, and anxiety symptom (all overall $P < 0.001$, all

nonlinear $P < 0.001$), sitting time with the lowest risk of insomnia symptom was 3.7 hour, depression symptom was 4.7 hour, and anxiety symptom was 4.8 hour. The results of stratified analyses showed that exercise frequency of every day or almost every day could reduce the risk of depression symptom or anxiety symptom caused by prolonged sitting time by 1.69 times and 0.98 times, respectively. High-frequency exercise may also offset the risk of insomnia symptom caused by prolonged sitting.

Conclusions: There was a U-shaped relationship between sitting time and mental health. Sedentary behavior may increase the risk of insomnia and mental health symptoms. Exercise may be a good lifestyle to improve people's mental health.

Keyword: Sitting time, Exercise, Mental health, Insomnia, Chinese population

Effects of ultrasound-guided stellate ganglion block combined with auricular acupressure on postoperative sleep disturbance in patients undergoing hip arthroplasty

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Patients who undergo total hip arthroplasty (THA) commonly suffer from poor sleep during the postoperative period. This randomized controlled trial set out to evaluate the effect of stellate ganglion block (SGB) combined with auricular acupressure (AA) on postoperative sleep disturbance (POSD) in patients undergoing THA. 105 subjects undergoing THA under spinal anaesthesia were randomly assigned into three groups, and received either sham AA without using Semen Vaccariae (group A), AA using Semen Vaccariae (group B) or AA combining with SGB (group C). The primary outcome was the incidence of POSD on the first postoperative night. Secondary outcomes included the data of objective and subjective sleep quality, night VAS pain scores, number of PCA and amount of additional analgesics during that time. On the first postoperative night, the incidence of POSD was significantly lower in group C than in group A, 36.4% and 75.8%, respectively ($p=0.005$). Compared with group A, the total sleep time, deep sleep duration and proportion and sleepefficiency in group B and C (all $p < 0.05$) were statistically increased. Meanwhile, the time and number of awakening, light sleep duration and proportion were statistically reduced and REM duration was statistically increased in the latter group as well (all $p < 0.05$). The sleep depth and total St. Mary's Hospital scores in group B and C, while the number of awakening, daytime function and sleep satisfaction scores in group C were significantly higher than that in group A (all $p < 0.05$). In addition, there were no significant differences in other secondary outcomes between the three groups (all $p > 0.05$). The results above suggested that the combined treatment of SGB and AA effectively prevented the occurrence of postoperative sleep disorders and improved the subjective and objective sleep quality of patients undergoing THA on the first postoperative night.

Keyword: stellate ganglion block, sleep disturbance, auricular acupressure, hip arthroplasty

中青年 OSA 患者发生心脑血管事件的危险因素分析

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目的

本研究在常规 PSG 参数上引入低氧负荷这一指标，随访 OSA 患者心脑血管事件的发生情况，探讨发生心脑血管事件的危险因素。

方法

收集我院 2016 年 1 月至 2021 年 1 月至睡眠中心就诊并完成 PSG 监测的患者，纳入患者共 329 名，平均年龄 42.6 岁。计算患者低氧负荷，按照 4 分位将低氧负荷水平分为 4 级。自 2022 年 1 月开始随访，通过查阅门诊病历、住院病历及电话访谈获得首次 PSG 诊断至 2022 年间主要临床结局事件，后续每 6 个月随访一次，记录其心脑血管事件如高血压、冠心病、心律失常、心衰、TIA 和卒中的发生情况，无事件者的随访数据截至 2024 年 1 月。根据是否新发事件将患者分为两组：事件组 57 例，对照组 272 例。比较两组患者一般资料和 PSG 参数等之间的差异，并采用 COX 回归分析 OSA 患者发生心脑血管事件的危险因素。

结果

从首次诊断到结束随访平均 45 个月、最长 81 个月，329 例 OSA 患者共发生 57 例新发事件。多因素分析结果显示：REM%、慢波睡眠比例越少，低氧负荷分级越大，OSA 患者发生心脑血管事件风险越大 [HR (95%CI) 值分别为 0.346 (0.181, 0.661)、0.360 (0.190, 0.681)]。

结论

REM%减少、慢波睡眠比例减少、低氧负荷增加是 OSA 患者发生心脑血管事件风险的独立危险因素。与 AHI、TS90、ODI 等传统指标相比，低氧负荷能够更好地预测 OSA 患者发生心脑血管事件的风险。

关键词：阻塞性睡眠呼吸暂停；心脑血管事件；高血压；低氧负荷

中青年 OSA 患者脑白质高信号的影响因素及其与认知功能的关系探讨

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目的 探讨无心脑血管基础疾病的中青年男性人群中 OSA 患者脑白质高信号 (WMH) 的影响因素及其与认知功能的相关性。**方法** 前瞻性选取 2020 年 6 月至 2022 年 6 月在苏州大学附属第二医院睡眠中心因打鼾行 PSG 的患者, 纳入共 104 例, 收集一般资料、PSG 参数, 使用 Epworth 量表评估嗜睡, MoCA 和计算机化认知测试软件 (CANTAB) 评估认知功能, 所有受试者采集 MRI 数据, 使用 Fazekas 视觉分级法评价 WMH 的严重程度。患者分为 2 组: 以 $AHI \leq 15$ 次/h 为对照组共 48 例, 以 $AHI > 15$ 次/h 为 OSA 组共 56 例。**结果** 与对照组相比, OSA 组的 AHI、 $N1+N2\%$ 、 $N3\%$ 、ODI、TS90 更高 (均 $P < 0.05$), $N3\%$ 、 $REM\%$ 、 $MinSpO_2$ 更低 (均 $P < 0.05$)。与对照组相比, OSA 组的 ESS 评分更高 ($P < 0.05$), MoCA 总分以及子项目视空间与执行、延迟回忆分数更低 (均 $P < 0.05$), MOT 平均反应时间、PRM 即刻反应时间更长, SWM 完成总时间更长。MRI 显示, OSA 组 WMH、深部 WMH 发生率高于对照组。logistic 回归分析显示年龄和 REM 期睡眠比例减少是中青年 OSA 患者 WMH 发生的危险因素。**结论** 中青年 OSA 患者合并 WMH 的比例较高, 并存在认知功能下降, 但 WMH 的发生和严重程度与认知功能下降无相关性; REM 期睡眠比例减少可能是中青年 OSA 患者发生 WMH 的危险因素;

关键词: 阻塞性睡眠呼吸暂停, 磁共振成像, 脑白质高信号, Fazekas 评分

卒中前睡眠特征和白质病变的相关性研究

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目的：探讨急性缺血性卒中 (acute ischemic stroke, AIS) 患者卒中前睡眠特征与白质病变的关系。

材料与方法：纳入符合标准的 AIS 患者共 233 例，男女比例 2.19:1，平均年龄 65.67 ± 12.13 岁。使用匹兹堡睡眠质量指数问卷评估卒中前睡眠状态，包括睡眠时间、效率、潜伏期和睡眠质量；使用 Epworth 嗜睡量表和 Berlin 量表分别评估患者的日间嗜睡及睡眠呼吸暂停的风险程度。根据 Fazekas 分级，将脑室旁白质病变评分 3 分和/或脑深部白质病变评分 ≥ 2 分定义为高级别白质病变 (high white matter hypertension, HWMH)。采用趋势性检验比较不同白质病变等级在睡眠参数上的差异；采用 Logistic 回归模型探讨导致 HWMH 的独立危险因素。

结果：研究显示，63.52% 的患者存在 HWMH。趋势性检验发现，随着白质疏松程度的增加，睡眠时间 ≥ 8.5 小时 (P for trend < 0.001) 及具有高危睡眠呼吸暂停风险 (P for trend = 0.004) 患者的比例显著增加；Logistic 回归分析提示，除了年龄和既往卒中病史，睡眠时间 ≥ 8.5 小时 (OR 3.001, 95%CI: 1.095-8.225, P = 0.033) 是白质病变的独立危险因素。

结论：卒中前更长的睡眠时间被认为是 AIS 患者白质病变的独立危险因素。

关键词：睡眠，白质病变，缺血性卒中

发作性睡病自发性体动变化的尺度不变性研究

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目的 本研究评估发作性睡病患者体动变化的尺度不变性特征，旨在探讨发作性睡病患者的生物钟节律中枢 SCN 的功能变化，揭示发作性睡病内在复杂睡眠-觉醒障碍的病理性机制。

方法 临床对照性研究。受试者分为 3 组：发作性睡病猝倒组 (n=25)、发作性睡病非猝倒发作组 (n=16) 和年龄性别匹配的正常对照组 (n=10)。患者组均未服用药物治疗。纳入研究的受试者采集 2 周的体动数据，记录 nPSG、次日 MSLT、ESS、睡眠日记。通过趋势波动分析 (Detrended fluctuation analysis, DFA) 对体动变化的尺度不变性模式进行量化分析，并研究各参数间的相关性。

结果 在年龄性别匹配的正常儿童，自发性体动在检测时间尺度 (分钟~10 小时) 表现出强劲的尺度不变性特征。发作性睡病猝倒组和非猝倒组自发性体动活动的尺度不变性指数 (猝倒组: 0.859 ± 0.057 ; 非猝倒组: 0.910 ± 0.033) 较年龄匹配的正常对照组 (0.985 ± 0.014) 显著下降，但体动活动的尺度不变性指数在猝倒组和非猝倒组之间差异无显著性。发作性睡病体动变化的尺度不变性指数在 >1.5 小时的大范围时间尺度内均有下降。

结论 发作性睡病患者体动变化波动的尺度不变性在 >1.5h 的时间尺度出现异常，揭示 Hcrt 神经元丧失对 SCN 区系统内在固有生物钟节律振荡影响的特征。

关键词: 发作性睡病, 体动, 尺度不变性, Hcrt, SCN

Analysis of the effective dose of dexmedetomidine titration for inducing entry into stage N2 sleep and its related factors based on polysomnography in depressive patients with insomnia

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Objective Analysis of the effective dose of dexmedetomidine titration for inducing entry into stage N2 sleep and its related factors based on polysomnography in depressive patients with insomnia.

Methods 91 depressive patients with insomnia in the Center for Pain and Sleep Medicine of the Affiliated Hospital of Shandong Second Medical University were enrolled from February 2023 to August 2023. General clinical data were collected. The dosage of intravenous dexmedetomidine utilized to induce these patients into stage N2 sleep was evaluated through titration under polysomnography. Furthermore, relevant factors influencing the titrated dexmedetomidine dose were analyzed by correlation and multiple linear regression. Results The average effective dose of intravenous dexmedetomidine for inducing stage N2 sleep was $49.0 \pm 16.4 \mu\text{g}$, ranging from 20–100 μg . Results from multiple linear regression revealed age as the primary factor influencing dexmedetomidine dosage ($B=0.388$, 95% CI: 0.098–0.685, $P=0.01$). The dosage of dexmedetomidine varied across age groups: $38.7 \pm 14.2 \mu\text{g}$ in the ≤ 17 years group; $52.5 \pm 15.5 \mu\text{g}$ in the 18–44 years group; $54.9 \pm 14.9 \mu\text{g}$ in the 45–59 years group; and $56.0 \pm 19.9 \mu\text{g}$ in the ≥ 60 years group. Compared to pre-titration, at the end of the titration, the patients exhibited a decrease in heart rate (68.2 ± 10.0 vs 57.0 ± 13.3 , $P < 0.05$), with no significant changes observed in mean arterial pressure (86.1 ± 9.5 vs 84.5 ± 12.4 , $P > 0.05$) and oxygen saturation (98.0 ± 2.1 vs 96.1 ± 2.4 , $P > 0.05$).

Conclusion In this study, dexmedetomidine was determined to be safe and effective in inducing the N2 sleep stage in depressive patients with insomnia. Based on polysomnography, we assessed the mean dose of dexmedetomidine and observed a correlated increase in dosage with age.

Keyword: Polysomnography, Depression, Insomnia, Dexmedetomidine, N2 sleep

I 型发作性睡病患者注意力缺陷及认知受损与睡眠结构有关 及相关脑网络机制研究

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目的:本研究旨在评估未用药物治疗的 I 型发作性睡病 (NT1) 患者临床症状中注意力缺陷症状与夜间睡眠结构的相关性,并探索 NT1 注意力缺陷及认知功能受损发生的脑机制。

方法:采用发作性睡病严重程度量表、注意力缺陷障碍分级评估量表第四版、蒙特利尔认知评估和 7T 头颅磁共振检查对 20 例 NT1 患者和 20 例健康对照进行评估。

结果:除了典型的临床表现外,NT1 患者还容易出现睡眠治疗不佳、夜间多发觉醒、认知功能受损等症状。ADHD:与总睡眠时间呈负相关 ($-0.532, P=0.028$),FFA 中与左侧舌回呈负相关 ($-0.752, P=0.001$),Reho:MOCA 与右侧岛叶负相关 ($-0.437, P=0.07$),与左侧舌回正相关 ($0.5, P=0.035$)。

结论:NT1 患者夜间睡眠结构异常,注意力缺陷及认知功能受损增加,其注意力受损程度、视空间功能、延迟回忆功能或与睡眠结构异常有关,症状发生或与发作性睡病疾病进程中舌回、脑岛、中央后回、补充运动区、枕叶卡尔卡尼裂等位置受损有关。

关键词:发作性睡病;睡眠结构;白天过度嗜睡;ADHD;注意力缺陷;认知功能

慢波睡眠中暴露游戏声音线索对网络游戏成瘾的干预研究

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目的：网络游戏成瘾(IGD)是青少年主要的精神心理疾病，目前仍缺乏有效的治疗方法。本研究旨在探讨慢波睡眠状态下的闭环线索暴露对IGD的疗效及其脑电机制，并与清醒条件下的线索暴露疗效相比较。

方法：研究招募84名符合DSM-5中IGD诊断的网络游戏成瘾者，随机分为睡眠干预组、睡眠对照组、清醒干预组、清醒对照组。睡眠干预组采用闭环调控技术连续两晚在慢波睡眠的up-state阶段给予约300次的游戏声音，对照组给予相应次数的游戏无关声音，清醒干预组和对照组连续两天在清醒状态下分别暴露游戏相关或无关声音。四组均在基线、干预后、1周、2周、3周、4周随访，评估渴求和游戏时间，并在基线、干预后及4周后采集线索诱导任务下的脑电信号特征。

结果：与基线相比，睡眠干预组在干预后及4周后的渴求程度和游戏时间显著降低，而其他组没有显著变化；睡眠干预组线索诱发的脑电时频成分中，低频能量和早期spindle波能量显著高于对照组，并与渴求和游戏时间降低显著负相关；而诱发的晚期spindle波能量显著低于对照组，随着暴露次数呈显著线性增加趋势；渴求降低>30%组的晚期spindle波能量的增加斜率显著高于渴求降低<30%组。

结论：睡眠中慢波状态下进行线索暴露可有效降低网络游戏成瘾者的渴求和游戏时间，且存在长期效应，线索诱发的晚期spindle波能量可能是其起效的关键机制。

关键词：网络游戏成瘾，慢波睡眠，闭环调控，线索暴露

Comprehensive analysis of the effects of opioid use on obstructive sleep apnea and sleep duration

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Background: Opioid use and the risk of obstructive sleep apnea (OSA) remain controversial. This study aims to investigate the potential association between opioid use and OSA as well as sleep duration, using both Mendelian randomization (MR) and observational study methods.

Methods: Two-sample MR was used to assess the causal relationship between opioid use and OSA, as well as sleep duration. Inverse variance weighted (IVW) method was used as the primary method of analysis. An observational study was conducted in the National Health and Nutrition Examination Survey (NHANES) database. Exposure was the participant's self-reported use of at least one prescription drug containing opioids. Multiple regression models and subgroup analysis were performed to investigate the relationship between opioid use and OSA and sleep duration. Additionally, opioid use was categorized into short-term (< 90 days) and long-term (\geq 90 days) to investigate the relationship between the duration of usage and sleep disorders.

Results: Genetically predicted opioid use was not found to be associated with the risk of OSA or sleep duration. Consistently, in case-control studies, after adjusting for various confounding factors, opioid use was not found to be associated with the risk of OSA or sleep duration. However, subgroup analyses revealed that opioid use was an independent risk factor for OSA in individuals with alcohol consumption, hypertension, diabetes, and cancer. Furthermore, among individuals younger than 60 years of age, males, those with a body mass index (BMI) of 30.0kg/m² or higher, alcohol consumers, and non-cancer individuals, opioid use was identified as an independent risk factor for reduced sleep duration. All of these associations were observed solely in the context of long-term opioid use. Specifically, among individuals with diabetes, short-term opioid use was found to increase sleep duration.

Conclusion: Opioid use does not influence the risk of OSA or sleep duration in the general population. However, in specific populations, such as those consuming alcohol, with hypertension, diabetes, and cancer, the effects of long-term opioid use on sleep disorders warrant careful attention.

Keyword: Analgesics, Opioid; Sleep Apnea, Obstructive; Sleep Duration; Mendelian randomization; Nutrition Surveys

睡眠靶向记忆再激活对老年人记忆的影响及机制

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【目的】随着机体老化，老年人的认知能力以不同速度衰退，其中以记忆功能减退最为显著。在睡眠过程中暴露记忆相关线索，能够靶向激活特定记忆，进而提高记忆水平，该范式也被称为靶向记忆再激活。

【方法】本研究招募年龄范围在55-75周岁的老年人和18-35岁的年轻人。受试者到达实验室进行记忆编码任务的学习。当受试者进行午睡，待睡眠监测显示其进入NREM 2期时进行线索暴露。

【结果】研究发现：（1）在NREM 2期睡眠期间进行TMR，能够有效提高年轻人的鉴别力指数和记忆再认评分；对于老年人，则仅对记忆再认评分有所提高，但对鉴别力指数无明显改善；（2）睡眠状态下进行TMR，能够提高年轻人纺锤波的振幅，但对老年人不存在显著影响，而纺锤波的数量、时长和功率谱在两组人群均无显著改变；（3）进一步对慢波振荡分析发现，睡眠状态下进行TMR，能够提高两组受试者慢波振荡的振幅和负向电压，而慢波振荡的数量、时长和正向电压无显著变化。

【结论】本研究主要发现，在NREM 2期睡眠期间进行TMR，能够有效改善年轻人的精细回忆和记忆熟悉度，但对老年人仅能改善记忆熟悉度。这可能与睡眠过程中TMR引起的纺锤波和慢波振荡的变化有关；其中，纺锤波的振幅增加或是介导青年人和老年人记忆干预差异的重要机制。本研究提示睡眠状态下TMR作为一种操作简便且非侵入性的干预手段，对于老年人和青年人的记忆均有改善效果，但同时存在差异影响。

关键词：睡眠；记忆；老年人；靶向记忆再激活；睡眠特征波

探讨加速度计测得的不同强度的睡眠时长和身体活动与心力衰竭发生风险的独立及联合关系。

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方法： 研究包含了来自英国生物库的 89,572 名参与者（平均年龄 62.2 ± 7.8 岁，男性占 42.8%）。睡眠时长分为短（ <6 小时/天）、正常（6-8 小时/天）和长（ >8 小时/天）；运动（PA）包括总 PA、轻度 PA（LPA）、中度至高强度 PA（MVPA）、高强度 PA（VPA），均通过加速度计测量，持续 7 天。MVPA 和 VPA 依据世界卫生组织的推荐水平进行分类，而 LPA 和总 PA 则依据中位数进行分类。心力衰竭病例通过医院记录或死亡登记识别。

结果： 在 7 年的随访期内，1,324 名参与者（2.1%；发病率为 2.1/1000 人年）发展为心力衰竭。短睡眠时长（ <6 小时/天）与心力衰竭风险增加 33% 相关 [风险比（HR）1.33，95% 置信区间（CI）：1.11-1.59]，而长睡眠时长则没有发现显著关联。这种短睡眠相关的风险可以通过增加 PA，尤其是达到推荐的 MVPA 或 VPA 水平来减轻。在联合分析中，与符合推荐的 MVPA 且睡眠时长正常的参与者相比，那些不符合 MVPA 推荐且睡眠时长短的参与者的心力衰竭风险最高（HR 1.78，95% CI：1.42-2.25）。

结论： 加速度计测得的短睡眠时长（ <6 小时/天）与心力衰竭发生的较高风险相关，而长睡眠时长则无显著关联。充足的 PA，特别是达到推荐的 MVPA 或 VPA 水平，可以部分减轻这种风险。

关键词： 客观测量；睡眠时长；运动；心衰

基于低氧参数构建 OSA 患者睡眠分期预测模型

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目的 比较阻塞性睡眠呼吸暂停（OSA）患者快速眼动（REM）睡眠期与非快速眼动（NREM）睡眠期之间低氧参数的差异，并构建人工神经网络（ANN）睡眠分期预测模型。方法 回顾性分析经整夜多导睡眠监测（PSG）的 86 例患者，从 PSG 原始数据导出数据文件，导入 Matlab 软件中进行分析，提取伴有脉搏血氧饱和度（SpO₂）下降的 REM（2023 个）和 NREM（10075 个）分期事件。两组间 13 个低氧参数的比较采用差异性分析，ANN 模型的构建采用前馈结构，结合多层感知器（MLP）的反向传播算法。使用受试者工作曲线（ROC）和曲线下面积（AUC）检验模型预测效果，并计算灵敏度、特异度、阳性预测值和阴性预测值评估模型预测性能。结果 REM 组 e-minSpO₂、DSpO₂、r.DSpO₂ 均低于 NREM 组， Δ SpO₂、d.DSpO₂、ODR、ORR、T90、d.T90、r.T90、ST90、d.ST90、r.ST90 均高于 NREM 组（P<0.05）；ANN 模型测试集预测 REM 睡眠的准确率为 84%，AUC 为 0.73，敏感度、特异度、阳性预测值及阴性预测值分别为 0.11、0.99、0.65、0.85。结论 OSA 患者 REM 与 NREM 睡眠低氧参数存在差异，基于低氧参数可构建 ANN 预测模型，实现便捷、准确、快速地识别睡眠分期，为临床睡眠相关疾病的诊治提供参考。

关键词：阻塞性睡眠呼吸暂停；低氧参数；睡眠分期；预测模型

中药联合无创正压通气法治疗阻塞性睡眠呼吸暂停低通气综合征的疗效评价

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摘要：目的 分析中药祛瘀化痰汤联合无创正压通气法治疗阻塞性睡眠呼吸暂停低通气综合征（OSAHS）的实际临床疗效。方法 研究对象选取为 2022 年 1 月至 2023 年 6 月黄石爱康医院收治的 76 例 OSAHS 患者，利用随机数表方法，将全部患者分为对照组及观察组各 38 例。对照组给予无创正压通气，观察组给予无创正压通气联合中药祛瘀化痰汤的方法治疗，两组患者均连续治疗 4 周，对比两组患者的临床疗效，采用 Epworth 嗜睡量表（ESS）和中医症候积分量表、炎症因子及睡眠呼吸监测指标无差异评价对比治疗前后两组患者的睡眠质量

结果 治疗前比较 2 组中医症候积分量表、炎症因子及睡眠呼吸监测指标无差异， $P>0.05$ ；治疗后与对照组比较，治疗组中医症候积分更低；IL-6、CRP 及 TNF- α 值更低；AHI 指标更低， SpO_2 指标升高；治疗组有效率（95.00%）高于对照组（80.00%）， $\chi^2=4.114$ ， $P=0.043$ ， $P<0.05$ （具统计学意义）。经过治疗后观察组 ESS 评分均显著低于对照组，差异有统计学意义（ $t=4.715$ ， $P<0.05$ ）。

结论 中药祛瘀化痰汤联合无创正压通气法治疗老年 OSAHS 的疗效确切，可以提升 OSAHS 患者的睡眠以及生活质量水平，可减缓不适、降低炎症反应，改善睡眠状态、提高疗效，临床可广泛应用。

关键词：阻塞性睡眠呼吸暂停低通气综合征；无创正压通气；中医药；炎症因子；疗效

探究通过加速度计测量的睡眠时长与心血管疾病发生风险及心血管相关死亡之间的关联

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目的：本研究旨在确定加速度计测量的睡眠时长与心血管疾病的发生和相关死亡风险之间的关联。

方法：本研究包含来自英国生物银行的92,261名参与者（平均年龄：62.4 ± 7.8岁，其中56.4%为女性）。研究通过在参与者手腕上的加速度计，连续七天记录了他们的平均日睡眠时间。睡眠时长分为：短睡眠（<7小时/天）、正常睡眠（7-9小时/天）和长睡眠（>9小时/天）。通过医院记录或死亡登记确定了心血管疾病的发生和死亡。

结果：在中位随访期为7.0年的时间内，共有13,191名参与者发生了心血管疾病，1,079名参与者死于心血管疾病。研究发现，相比于正常的睡眠时长，通过加速度计测量的短睡眠时长与心血管疾病风险的增加有关。具体来说，短睡眠时长与总体心血管疾病的发生率增加相关（相对危险度 [HR] 为1.06，95% 置信区间 [CI] 为1.02 - 1.10），与心血管相关死亡的风险更是显著增加（HR为1.29，95% CI为1.14 - 1.46）。此外，短睡眠时长还与心肌梗死（HR为1.14，95% CI为1.03 - 1.26）和心力衰竭（HR为1.20，95% CI为1.08 - 1.34）的风险增高相关。另外，睡眠时长与总体心血管疾病以及相关死亡之间存在L型关联。

结论：加速度计测量的短睡眠时长与心血管疾病发生和相关死亡的风险增加有关。保持足够的睡眠时长可能有助于促进心血管健康。

关键词：睡眠时长，心血管疾病，死亡率，英国生物银行

Construction of machine learning models for sleep stages in adult OSA patients based on hypoxia parameters

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Objective To explore the differences in hypoxia parameters between rapid eye movement (REM) sleep and non-rapid eye movement (NREM) sleep in patients with obstructive sleep apnea (OSA) and to construct sleep stage prediction models based on different machine learning algorithms. **Methods** From June 2022 to December 2023, a total of 85 snoring patients who underwent overnight polysomnography (PSG) at the sleep center of Tianjin Medical University General Hospital were selected as the study subjects. The 2028 REM and 10081 NREM staging events accompanied by a decrease in pulse oxygen saturation (SpO_2) were extracted by exporting the PSG raw data files and importing them into Matlab software for analysis. Based on the 13 SpO_2 feature indicators, four algorithms were applied to construct the prediction models in the training set: logistic regression (LR), decision tree (DT), random forest (RF) and extreme gradient boosting (XGBoost). In the validation set, the model performance was evaluated using the indicators of subject operating curve (ROC), area under the curve (AUC), confusion matrix, accuracy, sensitivity, specificity, positive predictive value, negative predictive value and so on. **Results** The model demonstrated significant differences in hypoxic parameters between REM and NREM sleep in OSA patients. The AUC values for predicting REM sleep using LR, DT, RF, and XGBoost algorithms in the validation set were 0.661, 0.720, 0.730 and 0.740 respectively. The nonlinear DT, RF and XGBoost models outperformed the traditional linear LR models, with the XGBoost model performing best. **Conclusion** The machine learning model constructed based on hypoxia parameters has the ability to predict REM sleep, which can provide an efficient, accurate and reliable tool for portable devices to identify sleep stages.

Keyword: Obstructive sleep apnea, Hypoxia parameters, Sleep stage, Predictive models

青少年抑郁症患者失眠的发生率和相关危险因素分析

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【摘要】 目的 探讨知觉压力对青少年抑郁症患者失眠的影响及反刍思维是否在知觉压力和青少年失眠关系中起到中介作用。方法 采用知觉压力量表(perceived stress scale, PSS-10), 患者健康问卷抑郁量表(patient health questionnaire-9, PHQ-9)、反刍思维量表(ruminative responses scale, RRS), 失眠严重指数量表(Insomnia Severity Index, ISI) 对 1364 名符合研究纳入标准的 11-18 岁青少年进行临床评估。结果 ① 青少年抑郁症患者失眠发生率为 69.21%, 其中女性为男性的 2.25 倍 (OR=2.25, $p < 0.001$)。② 与无失眠组相比, 失眠组年龄更小 ($z=-2.79$, $p = 0.005$), PHQ-9 ($z=-16.45$, $p < 0.001$), RRS ($z=-13.00$, $p < 0.001$) 和 PSS-10 ($z=-14.81$, $p < 0.001$) 均显著高于非失眠组, 差异有统计学意义。③ 回归分析显示知觉压力 (OR=1.058), 抑郁症状 (OR=1.122), 年龄小 (OR=0.908) 是失眠的风险因素。结论 青少年抑郁症患者失眠的高发生率与知觉压力水平、抑郁症状和年龄密切相关, 临床应加强对知觉压力和抑郁症状的有效评估和干预, 特别是对发病年龄较小的青少年, 以改善其睡眠质量和整体心理健康水平。

关键词: 失眠, 知觉压力, 抑郁症状, 青少年

我国社区人群中倒班工作者健康问题多病模式研究

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目的：分析倒班工作者健康问题多病共存现状与模式，为倒班工作者多病共存精准管理提供理论依据和数据支撑。

方法：本研究通过京东平台对中国 34 个省级行政区的居民进行线上问卷调查，收集一般人口学信息、倒班工作情况、躯体健康问题、精神心理评估等内容。分析倒班工作者多病现状，通过网络分析的方法，识别中心症状，探索倒班工作者中共病与多病模式。

结果：本研究共纳入调查对象 41061 人，平均年龄为 36.2 ± 9.5 岁，59.1% 为女性，其中 9612 人（23.4%）从事倒班的工作。11818 人（28.8%）存在多病共存，其中倒班工作者多病占比（38.7%，3720 人）高于非倒班工作者（25.8%，8098 人； $P < 0.001$ ）。随着年龄的增长，倒班工作者中精神心理问题和躯体健康问题的多病共存存在不同的年龄轨迹。倒班工作者出现躯体健康问题的多病率在 ≥ 55 岁年龄组最高（18.6%），但精神心理症状的多病率在 15-24 岁年龄组最高（48.6%）。网络分析结果发现倒班工作者的日间嗜睡症状通常与焦虑症状、癌症共发，认知失败通常与冠心病、高血脂共发。此外，影响倒班工作者和非倒班工作者整体健康的核心症状是焦虑症状和抑郁症状，桥梁症状分别是日间嗜睡和失眠症状。

结论：倒班工作者具有高多病率、多病人群差异化和疾病共发模式典型等特征，提示应根据倒班工作者疾病共发特征，在倒班工作者健康问题的预防与管理等方面研制特异性策略。

关键词：倒班工作者；健康问题；多病共存；网络分析

Construction and validation of predictive models for treatment-emergent central sleep apnea in adult OSA patients

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Objective Constructing and comparing treatment-emergent central sleep apnea (TECSA) prediction models based on different machine learning algorithms can help healthcare professionals quickly and accurately assess the risk of developing the disease. **Methods** A retrospective study was conducted in which patients were divided into the TECSA group (59 cases) and the non-TECSA group (161 cases) based on the occurrence of TECSA after continuous positive airway pressure (CPAP). Significant factors identified by single-factor analysis were included in the model. The training set utilized four algorithms: logistic regression (LR), support vector machine (SVM), random forest (RF) and extreme gradient boosting (XGBoost) to construct the TECSA prediction models. The validation set assessed the predictive performance of the models using metrics such as the area under the receiver operating characteristic (ROC) curve, accuracy, sensitivity, specificity, Kappa value and F1 score. **Results** Single-factor analysis revealed that age, BMI, gender, AHI, CAI, MAI, ArI and MSpO₂ were statistically significant between the two groups. The TECSA prediction models constructed based on four algorithms, LR, SVM, RF and XGBoost performed well, with the RF model exhibiting the best predictive performance. **Conclusion** The significant predictors identified by the machine learning algorithms can provide valuable information for predicting the risk of TECSA in OSA patients undergoing CPAP treatment. The developed models serve as effective predictive tools for healthcare professionals in selecting treatment options.

Keyword: Obstructive sleep apnea, Treatment-emergent central sleep apnea, Continuous positive airway pressure ventilation, Predictive models

Sleep in psoriasis: A meta-analysis

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Objective Currently, there are discrepant results regarding the quantitative effect of psoriasis on sleep, which may, in part, be attributed to the use of non-standardised questionnaires.

Methods The PubMed/Medline, Embase, and Cochrane databases were searched for cross-sectional, case-control or cohort studies that recruited patients with psoriasis and healthy controls and reported data regarding Pittsburgh Sleep Quality Index (PSQI) and the prevalence of sleep disturbance (SD) based on the PSQI, published from inception up to January 2023. Secondary outcomes included scores for the Insomnia Severity Index (ISI), Beck Depression Inventory (BDI), and Epworth Sleepiness Scale (ESS), and risk for restless legs syndrome (RLS). Meta-analyses using random-effects models were used for statistical analyses.

Results Fifteen studies including 1274 patients with psoriasis and 775 controls were analysed. A higher PSQI (weighted mean difference [WMD]=3.397, $P<0.001$, $I^2=84.2\%$) and a higher risk for SD (odds ratio [OR]=6.640, $P<0.001$, $I^2=67.5\%$) were observed in patients with psoriasis compared with controls. Subgroup analyses revealed a greater difference in PSQI score and/or risk for SD between patients with psoriasis and controls in subgroups of psoriatic arthritis, moderate-to-severe psoriasis, shorter psoriasis duration, and younger age. Moreover, patients with psoriasis exhibited higher ISI (WMD=2.709, $P<0.001$) and BDI scores (WMD=4.565, $P=0.001$), and risk for RLS (OR=4.689, $P=0.01$). However, there was no significant difference in ESS scores (WMD=-0.229, $P=0.77$) compared with controls.

Conclusion Psoriasis was associated with poor sleep quality and higher risk for SD, especially among patients with psoriatic arthritis, severe psoriasis, shorter duration of psoriasis, and younger age. Patients with psoriasis were also more likely to experience insomnia, RLS, and depression.

Keyword: Sleep; Insomnia; Restless Legs Syndrome; Psoriasis; Psoriatic Arthritis

便携式脉搏血氧仪在成人阻塞性睡眠呼吸暂停患者中的应用价值

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目的 评价便携式脉搏血氧仪 (CS- W0xi) 在成人阻塞性睡眠呼吸暂停 (OSA) 中的应用价值。

方法 本研究前瞻性纳入 2022 年 7 月至 2023 年 7 月因打鼾就诊于北京大学人民医院呼吸睡眠医学科进行多导睡眠监测 (PSG) 的成人患者, 同时使用 CS- W0xi 持续监测经皮动脉血氧饱和度 (SpO₂)。利用差异性检验、Pearson 相关系数及 Bland- Altman 法评估 CS- W0xi 测得的 3%氧减指数 (CS- ODI3) 与 PSG 测得的 3%氧减指数 (PSG- ODI3) 之间的一致性, 并以受试者工作特征 (ROC) 曲线确定其诊断 OSA 的最佳界值。

结果 共纳入 184 例受试者, CS- ODI3 与 PSG- ODI3 两者之间的相关系数为 0.93 ($P < 0.001$)。CS- ODI3 与 PSG 测得的 AHI (PSG- AHI) 之间相关性较好 ($r = 0.92$, $P < 0.001$), Bland- Altman 一致性检验显示两者平均差值为 0.7 次/h, 95%一致性界限为 (-17.9, 19.3 次/h)。当使用 CS- ODI3 ≥ 5 次/h 来识别 OSA 时, 敏感度为 94.4%, 特异度为 80.0%, 准确率为 91.3%。以 PSG 作为金标准时, CS- ODI3 诊断 OSA (PSG- AHI ≥ 5 次/h) 的 ROC 曲线下面积 (AUC) 为 0.933。

结论 便携式脉搏血氧仪对于 OSA 高风险患者 SpO₂ 指标监测较准确, 识别 OSA 有较好的敏感度和特异度, 是可用于筛查的可靠工具。

关键词: 睡眠呼吸暂停, 阻塞性, 血氧测定法, 多导睡眠监测, 氧减指数

舌咽后区 MRI 测量参数诊断 OSAHS 的临床价值

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目的 分析舌咽后区磁共振成像 (MRI) 测量参数评估阻塞性睡眠呼吸暂停低通气综合症 (OSAHS) 患者的上气道形态情况, 客观地判定上气道阻塞平面及阻塞成因。**方法** 选择 2022 年 5 月-2023 年 12 月就诊于湖北民族大学附属民大医院呼吸内科 OSAHS 的 90 例患者, 按照病情程度分为轻度组 (23 例)、中度组 (23 例)、重度组 (44 例) 三组。分析三组患者舌咽后区 MRI 测量参数。**结果** 重度 OSAHS 患者体重、BMI、AHI 及颌下脂肪厚度明显大于中度、轻度患者 (均 $P < 0.05$); 重度组 OSAHS 患者的单一部位阻塞、腭咽合并舌咽部阻塞、软腭肥厚、过长及悬雍垂后坠及腭扁桃体肥大合并舌咽平面狭窄发生率明显高于轻度组、中度组 (均 $P < 0.05$); 三组 OSAHS 患者舌咽后区气道各数据 (最小截面积、气道横径与矢径、气道前壁、侧壁及后壁) 比较, 差异有统计学意义 ($P < 0.05$); 轻度组 OSAHS 患者的最小截面积、气道矢径、气道前壁厚度明显大于重度组、中度组, 而气道横径、气道侧壁及后壁明显小于重度组、中度组 (均 $P < 0.05$)。重度组 OSAHS 患者 AHI 值与气道横径、气道后壁软组织厚度呈正相关, 与舌咽平面气道矢径呈负相关 (均 $P < 0.05$)。**结论** OSAHS 患者采用 MRI 影像学测量舌咽后区参数对 OSAHS 患者的上气道进行形态学分析, 可客观评价治疗后气道重塑后改变情况, 有重要定位诊断价值, 能客观评价气道重塑改变情况。

关键词: 磁共振成像 ; 阻塞性睡眠呼吸暂停低通气综合症 ; 舌咽后区

Association of TLR2, TLR4 and CD14 Gene Polymorphisms with Obstructive Sleep Apnea and its phenotypic traits in Chinese male adults

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Background: The pathogenesis of obstructive sleep apnea (OSA) is tightly related to inflammatory response. Previous studies showed that the activation of Toll-like receptor-2 (TLR2) and CD14 related signaling pathway can mediate the release of various inflammatory factors, which may participate in the pathogenesis of OSA. However, the association between TLR2 and CD14 polymorphisms with OSA susceptibility is still unclear.

Purpose: To examine the association of CD14 rs2569190 (A>G) and TLR2 rs3804099 (T>C) polymorphisms with the presence of OSA and its phenotypic traits in Chinese male adults.

Method: A total of 2120 adult males (1470 OSA cases and 650 non-OSA controls) were involved. Anthropometric measurements, polysomnographic variables, biochemical indicators, medical history and genotypic data were collected for each person. Chi-square tests were used to compare the allelic frequencies and genotypes between cases and controls. Logistic regression and linear regression with adjustments were used to explore the association between genotypic polymorphisms with the presence of OSA and phenotypic traits.

Result: Allelic frequencies and genotype distribution of CD14 rs2569190 were significantly different among OSA patients and controls (both $p < 0.05$). Individuals with the G allele conferring a higher risk of the disease (OR=1.227, 95% CI:1.054-1.427, $p=0.008$) after adjusting for potential confounding factors. In contrast to CD14, no significant differences were observed in the SNPs of TLR2 and TLR4 genes between two groups. Under dominant genetic model, individuals with CD14 rs2569190 GA/GG genotype had a 1.349 fold increased risk of OSA compared with subjects of CD14 rs2569190 AA genotype (95%CI:1.093-1.664, $p=0.005$). OSA patients with rs3804099 TC/CC genotype had higher arousal index ($p=0.028$) and apnea hypopnea index during Non-rapid-eye-movement (NREM) ($p=0.032$) than those with rs3804099 TT genotype.

Conclusion: SNPs of CD14 and TLR2 may participant in the pathogenesis of OSA, which warrant further research.

Keyword: Obstructive sleep apnea; single nucleotide polymorphism; CD14; TLR2.

睡眠促进恐惧记忆消退及其神经影像学机制

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适当的恐惧记忆有助于个体生存，但是如果恐惧记忆的过度泛化或失调，则可能导致创伤后应激障碍（Posttraumatic stress disorder, PTSD）或其他创伤及应激相关的精神心理疾病。目前，临床上常基于记忆消退原理，常用的认知行为疗法为暴露疗法，对 PTSD 患者通过实景暴露或想象暴露的方式，通过自我陈述、不断地进行痛苦的回忆使其慢慢适应直至脱敏。然而，暴露疗法在患者清醒状态下进行操作，暴露过程过于不适，极有可能加剧患者的心理创伤甚至导致病情加重。与此同时，暴露疗法可能仅仅产生了新的安全记忆，并没有真正修改原始的恐惧记忆，因此预后效果并不稳定，可能会导致复发。这些问题在其他 PTSD 的临床治疗手段中也没有得到很好的改善。因此，寻找和发展新型安全有效的非药物治疗手段对于治疗 PTSD 等精神疾病或者行为障碍具有重要意义。

本研究旨在基于临床的暴露疗法，尝试在睡眠中以线索暴露为手段，探索睡眠中无痛苦地消除恐惧记忆的方法及相关神经影像机制，为临床精神疾病的治疗提供全新思路，发现在睡眠中通过线索暴露也可以消退恐惧记忆。

关键词：睡眠，恐惧记忆，消退，fMRI

临床真实世界中抑郁症患者移动手机 CBT 治疗抑郁症状改善顺序及影响治疗效果的因素分析

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目的：本研究旨在了解影响患者对抑郁症治疗反应的因素。

方法：共有 1485 名患者完成了基线问卷调查，其中 307 名患者至少完成了四次调查（基线和每月一次）。评估工具包括匹兹堡睡眠质量指数（PSQI）、广泛性焦虑障碍 7 项量表

（GAD-7）、患者健康问卷-9（PHQ-9）、患者健康问卷-15（PHQ-15）和艾普沃斯嗜睡量表（ESS）。结果：单变量分析显示，在第 8 周和第 12 周，性别在减轻率上无显著差异，但年龄和教育水平显著（ $P < 0.05$ ）。多变量逻辑回归分析表明，年龄小于 30 岁的患者预后较差（ $OR = 4.363$, 95% CI: 2.271-8.382, $P < 0.01$ ），病程超过 3 年的患者预后也较差

（ $OR = 0.448$, 95% CI: 0.219-0.919, $P = 0.029$ ）。在第 12 周，显著因素包括年龄、教育水平、病程、PSQI、PHQ-15 和 ESS（ $P < 0.05$ ）。较年轻的年龄（ $OR = 0.252$, 95% CI: 0.139-0.458, $P < 0.01$ ）、较长的病程和家族史（ $OR = 0.503$, 95% CI: 0.279-0.907, $P = 0.022$ ）是残留症状的风险因素。

结论：在考虑抑郁症的预后和精力恢复时，应关注较年轻的、病程较长的以及有家族史的患者。

关键词：抑郁，改善顺序，影响因素，PHQ-15。

Mechanisms of Senegenin in Regulating Oxidative Stress and Mitochondria Damage for Neuroprotection in Insomnia

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Background: Insomnia is a common sleep disorder worldwide, and oxidative stress and mitochondrial damage are closely related to insomnia. The aim of this study was to investigate the mechanism by which Senegenin exerts neuroprotective effects in regulating oxidative stress and mitochondrial damage in insomnia.

Methods: In vivo, EGG/EMG analysis was used to determine the successful establishment of insomnia rat models, and relevant behavioral experiments were used to detect learning and memory and cognitive exploration function in rats; Nissl and HE staining and electron microscopy were used to detect the pathological changes of neurons and mitochondria in rat brain tissue and the expression of oxidative stress parameter levels; RT-qPCR, western blotting and IHC were used to detect the expression of sleep and oxidative factors. In vitro, H₂O₂-induced oxidative damage model was established in PC12 cells, CCK-8 assay was used to detect the effective concentration of Senegenin to protect PC12 cells; cellular ROS and related oxidative stress parameter levels were measured; RT-qPCR and western blotting were used to detect the expression levels of Keap1/Nrf2 and PINK1/Parkin factors, key signaling pathways of oxidative stress and mitochondrial damage.

Results: During insomnia, Wake is prolonged, NREM and REM are shortened; learning and memory and cognitive exploration function are impaired, oxidative stress factor expression is changed, and mitochondria are damaged. Brain tissue from insomnia rats showed decreased expression of BDNF, 5-HT_{1A}, GABA-T and GAD and increased expression of 5-HT_{2A} and Glu. Oxidatively damaged cells induced increased ROS expression when H₂O₂ was induced. H₂O₂ induced increased Keap1, PINK1, Parkin, and LC3 expression and decreased Nrf2, NQO1, HO-1, and p62 expression in cells.

Conclusion: Oxidative stress and mitochondrial damage may be associated with the development of insomnia, and Senegenin may play a neuroprotective role by improving oxidative stress and mitochondrial damage by regulating Keap1/Nrf2 and PINK1/Parkin signaling pathways.

Keyword: Insomnia; Senegenin; Oxidative Stress; Mitochondria damage; PC12 cells

Senegenin regulates the mechanism of insomnia through the Keap1/Nrf2/PINK1/Parkin pathway mediated by GAD67

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Background: Insomnia is a common neurological disorder globally. As a pivotal enzyme in GABA synthesis, GAD67 catalyzes the conversion of Glu to produce GABA, thereby modulating neuronal excitability through receptor binding and influencing insomnia. Senegenin, the primary active compound in *Polygala tenuifolia*, demonstrates the capacity to inhibit neuronal apoptosis and enhance neuroprotection. It is extensively employed in the management of insomnia and other neurological ailments. This study aimed to investigate how Senegenin mediates the Keap1/Nrf2/Parkin/PINK1 pathway to regulate insomnia via GAD67.

Methods: PC12 cells and rat models were transfected with GAD67 lentivirus, and the expression levels of GAD67 mRNA and protein, as well as Keap1/Nrf2/Parkin/PINK1-related cytokines, were assessed using RT-qPCR and WB. The levels of ROS and mitochondrial membrane potential in PC12 cells were measured. Behavioral experiments were conducted on rats, GAD67 expression in the hippocampus was detected by immunofluorescence, pathological changes in the hippocampus were observed by HE staining, and protein expression in the hippocampus was detected by immunohistochemistry.

Results: During the development of insomnia, GAD67 expression increased, the Wake stage was prolonged, NREM and REM stages were shortened, and learning and exploration dysfunction occurred in the insomnia group. ROS increased and mitochondrial membrane potential decreased in the GAD67-KD group, which was reversed in the GAD67-OE group. The expression levels of GABA-T, BDNF, 5-HT1A, Nrf2, NQO1, HO-1 and p62 were decreased in insomnia rats, positively correlated with decreased expression in the GAD67-KD group and negatively correlated with decreased expression in the GAD67-OE group; the expression of GluR2, 5-HT2A, Keap1, PINK1, Parkin and LC3 was increased in insomnia rats, positively correlated with increased expression in the GAD67-KD group, and negatively correlated with increased expression in the GAD67-OE group; Senegenin intervention was found to regulate the expression levels of pathway cytokines.

Conclusion: During the development of insomnia, GAD67 expression increases, and Senegenin can regulate the expression of Keap1/Nrf2/Parkin/PINK1 pathway factors by mediating GAD67, thus playing a regulatory role in the development of insomnia.

Keyword: Insomnia; GAD67; Lentivirus; Keap1/Nrf2; Parkin/PINK1

Potential Molecular Mechanisms of Electroacupuncture With sleep Induced by Chronic Pain on a Rat Model

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Objective: To investigate the effects and possible mechanisms of electroacupuncture (EA) on sleep in rats with a neuropathic pain model.

Methods: Male Sprague-Dawley rats were implanted with electroencephalogram (EEG) and electromyogram (EMG) electrodes for recordings. After electrode implantation, the rats underwent left sciatic nerve ligation to establish a chronic constriction injury (CCI) model. In the CCI group, the left sciatic nerve was ligated with 4-0 sterile silk suture to ensure the blood supply to the sciatic nerve. In the control group, the sciatic nerve was only exposed and isolated without ligation. Mechanical pain threshold and thermal pain threshold were measured 1 day before surgery and 3, 5, 7, 10, and 14 days after surgery. SD rats were randomly divided into four groups (n=8): sham surgery + non-EA group (Sham + Sham EA), sham surgery + EA group (Sham + EA), CCI + non-EA group (CCI + Sham EA), and CCI + EA group (CCI + EA). From 7 to 14 days post-CCI surgery, EA was administered to the Shenmen (HT7) and Zhaohai (KI6) acupoints in the EA groups, while non-acupoint EA was applied to the non-EA groups between 8:00-11:00 AM. On the 14th day after surgery, one sleep cycle (07:00-07:00) was monitored, mechanical and thermal pain thresholds were measured, and spontaneous activity was recorded. Rats were then sacrificed to determine the expression of LKB1 protein in the hippocampus.

Results: Seven days post-surgery, CCI rats showed significantly reduced mechanical and thermal pain thresholds, decreased spontaneous activity, reduced nighttime sleep, and decreased hippocampal LKB1 protein expression ($P < 0.05$). Compared to the Sham group, the EA group showed significantly increased mechanical and thermal pain thresholds, increased spontaneous activity, increased nighttime sleep, and upregulated hippocampal LKB1 protein expression ($P < 0.05$).

Conclusion: Electroacupuncture can improve mechanical and thermal pain thresholds, increase spontaneous activity, and improve sleep in CCI rats. LKB1 may be a potential target for EA in regulating sleep in rats with chronic neuropathic pain.

Keyword: Electroacupuncture; Chronic Pain; sleep

儿童变应性鼻炎唾液菌群特征

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目的：儿童变应性鼻炎（allergic rhinitis, AR）是阻塞性睡眠呼吸暂停的危险因素。本研究探索 AR 静止期和活动期儿童唾液菌群，并寻找静止期特征性菌群。方法：共纳入 70 名儿童，平均年龄 7.8 ± 2.79 岁，经耳鼻喉专科检查后分为 AR 静止期组（20 例， 7.8 ± 2.6 岁），AR 活动期组（23 例， 6.9 ± 2.7 岁），健康对照组（27 例， 8.6 ± 2.9 岁）。收集各组儿童晨起后空腹非刺激性唾液，进行 DNA 的提取、检测，并选用 V3-V4 区进行 16S rRNA 测序，分析多样性和物种组成，并通过 LEfSe 分析筛选差异分类单元。结果：各儿童年龄、性别、体质指数无统计学差异。AR 活动期组唾液菌群的 α 多样性指数显著降低（ $p < 0.05$ ）， β 多样性中 Bray-Curtis 距离和 Jaccard 距离在活动期组与其他两组间表现出显著分离（ $p < 0.05$ ），静止期儿童与对照组儿童无显著差异。筛选 AR 静止期儿童和活动期儿童的差异菌群，静止期组中富集的属有 27 个，活动期组富集的属有 5 个，其中益生菌 *Bifidobacterium*、*Stomatobaculum*、*Faecalibacterium*、*Eubacterium* 和 *Lactobacillus* 在静止期组儿童中显著富集。结论：AR 活动期与静止期儿童的唾液菌群在多样性和物种组成上有显著差异，并且静止期儿童唾液具有特征性菌群，可能用于未来作为疾病进展及治疗的生物标志物。

关键词：变应性鼻炎, 唾液菌群, 16S rRNA 测序

基于 OX1R/PLC β -1/PKC α /ERK1/2 信号通路探讨安寐丹对失眠模型大鼠肝脏神经递质和昼夜节律的影响及机制

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目的：基于 OX1R/PLC β -1/PKC α /ERK1/2 信号通路探讨安寐丹对失眠大鼠肝脏神经递质及昼夜节律的影响及机制。方法：SPF 级 SD 大鼠随机分为空白组、模型组、苏沃雷生组、安寐丹低、中、高剂量组；除空白组外，其余各组通过腹腔注射 PCPA 进行造模，空白组给予等容生理盐水、苏沃雷生组给予苏沃雷生溶液灌胃、安寐丹低、中、高剂量组分别给予安寐丹水煎液；观察各组一般情况、体质量和 24 h 自主活动情况；采用 HE 和 Masson 染色观察肝脏病理学改变，ELISA 检测肝脏神经递质的表达，Real-time PCR 检测肝脏生物钟基因 m RNA 表达，Western blot、Real-time PCR 检测肝脏信号通路蛋白及 m RNA 表达。结果：与空白组比较，模型组狂躁、静止节律紊乱 ($P < 0.01$)，肝脏肌纤维断裂、水肿，神经递质含量降低、节律基因 m RNA 表达降低或表达升高，信号通路蛋白及 m RNA 基因表达均增高 ($P < 0.01$)；与模型组比较，安寐丹低、中、高剂量组可增加失眠大鼠体质量，减少狂躁状态、增加其静止时间和频率，并可上调神经递质和节律基因 m RNA 表达，抑制信号通路蛋白表达 ($P < 0.05$)。结论：安寐丹可通过抑制 OX1R/PLC β -1/PKC α /ERK1/2 信号通路调节失眠大鼠肝脏神经递质表达，改善昼夜节律紊乱，且安寐丹高剂量组效果最佳。

关键词：安寐丹；失眠；昼夜节律；神经递质；食欲素受体 1 (OX1R)/磷脂酰肌醇特异性磷酸酶 C β -1 (PLC β -1)/蛋白激酶 C α (PKC α)/细胞外信号调节激酶 1/2 (ERK1/2) 信号通路；

Multimodal neuroimaging signatures of sleep problems in preadolescence and its prediction of the developmental trajectory of internalizing and externalizing difficulties

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Pediatric sleep related problems (SRP) are not homogenous but a composite concept containing multiple domains ranging from behavioral difficulties (e.g., bedtime resistance), to diagnosable sleep disorders (e.g., sleepwalking). Previous studies investigating the alterations of brain structure and function associated with pediatric SRP only focused on one domain of sleep problems or one brain modality, which leads to the relationship between pediatric SRP, and multi-model brain networks remains unknown. Here, we simultaneously examined structural and functional brain network patterns in relation to dimensions of SRP in the Adolescent Brain Cognitive Development (ABCD) dataset by applying a multivariate approach (partial least squares). This multivariate analysis reveals a composite general sleep disturbances dimension which covaries with distinct morphological and functional connectivity signatures, primarily involving the attentional and default mode networks. These findings were replicated in an independent dataset and generalized to the Human Connectome Project-Development (HCP-D) and Queensland Twin Adolescent Brain (QTAB) dataset. The multimodal neural signatures associated with the general sleep disturbances dimension also captured neuromolecular and developmental ontologies. Critically, the identified SRP related multi-model neural correlates can mediate the interplay between pediatric SRP and internalizing/externalizing symptoms and predict the developmental trajectory of internalizing/externalizing behavioral difficulties. Our findings enhance the understanding of the biological mechanisms underlying dimensions of SRP in preadolescence and could inform brain-based intervention and treatment programs to improve sleep-related and mental health-related outcomes across development.

Keyword: Pediatric sleep, sleep disturbances, dimensional approach, multi-model neuroimaging, psychopathology symptoms, prediction

Ambient chemical and physical approaches for the modulation of sleep and wakefulness

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Humans spend a third of their lives asleep. While the sleep-wake behaviors are primarily modulated by homeostasis and circadian rhythm, several ambient chemical and physical factors, including light, sound, odor, vibration, temperature, electromagnetic radiation, and ultrasound, also affect sleep and wakefulness. Light at different wavelengths has different effects on sleep and wakefulness. Sound not only promotes but also suppresses sleep; this effect is mediated by certain nuclei, including the pedunculopontine nucleus and inferior colliculus. Certain sleep-promoting odorants regulate sleep through the involvement of the olfactory bulb and olfactory tubercle. In addition, vibrations may induce sleep through the vestibular system. A modest increase in ambient temperature leads to an increase in sleep duration through the involvement of the preoptic area. Electromagnetic radiation has a dual effect on sleep-wake behaviors. The stimulation produced by the ambient chemical and physical factors activates the peripheral sensory system, which converts the chemical and physical stimuli into nerve impulses. This signal is then transmitted to the central nervous system, including several nuclei associated with the modulation of sleep-wake behaviors. This presentation summarizes the effects of ambient chemical and physical factors on the regulation of sleep and wakefulness, as well as the underlying neurobiological mechanisms.

Keyword: electromagnetic radiation; light; odor; sleep; sound; temperature; ultrasound; vibration, wakefulness

Isolated theta waves originating from the midline thalamus trigger memory reactivation during NREM sleep

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During non-rapid eye movement (NREM) sleep, neural ensembles in the entorhinal-hippocampal circuit responsible for encoding recent memories undergo reactivation to facilitate the process of memory consolidation. This reactivation is widely acknowledged as pivotal for the formation of stable memory and its impairment is closely associated with memory dysfunction. To date, the neural mechanisms driving reactivation of neural ensembles during NREM sleep remain poorly understood. Here, we show that the neural ensembles in the medial entorhinal cortex (MEC) that encode spatial experiences exhibit transient high-frequency firing pattern during NREM sleep, that is, reactivation occurs in the MEC. The occurrence of cell ensemble reactivation consistently coincides with isolated theta waves, thereby suggesting that isolated theta waves serve as a reliable sign of reactivation. In addition, we found that the nucleus reuniens (RE) in the midline thalamus exhibits typical theta waves during NREM sleep, which are highly synchronized with those occurring in the MEC. Closed-loop optogenetic inhibition of RE-MEC pathway specifically suppressed these isolated theta waves, resulting in impaired reactivation and compromised memory consolidation following a spatial memory task. The findings suggest that theta waves originating from the ventral midline thalamus play a pivotal role in initiating memory reactivation, thereby unveiling the underlying mechanisms of memory consolidation.

Keyword: sleep, spatial memory consolidation, nucleus reuniens, medial entorhinal cortex

The thalamic nucleus reuniens is selectively required for memory acquisition via enhancing entorhinal theta oscillations

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The medial entorhinal cortex (MEC)-hippocampal circuit plays a pivotal role in spatial memory, encompassing the processes of acquisition and recall, primarily occurring during wakefulness. Accumulating evidence suggests that wakefulness-promoting systems, including cholinergic, monoaminergic, and peptidergic systems, directly innervate different nodes of the MEC-hippocampal circuit and play an essential role in supporting spatial memory by regulating the activities of space-modulated functional neurons, synaptic plasticity, and oscillatory activities of memory traces. For instance, inputs from the medial septum (MS) are associated with theta oscillation generation linked to grid cell and place cell formation. Meanwhile, hypocretinergic and histaminergic neurons exhibit heightened activity during wakefulness effectively enhancing entorhinal gamma oscillations and theta-gamma coupling respectively. Dysregulation within these wakefulness-promoting systems could lead to severe memory impairment potentially underlying dysmnnesia in clinical settings. In addition to dissecting the MEC-hippocampal circuit itself, it is crucial to comprehend how various wakefulness-promoting systems regulate this circuit.

In addition to the wakefulness-promoting systems of the basal forebrain and hypothalamus, the nucleus reuniens (RE), located in the midline thalamus that promotes wakefulness, extensively innervates the CA1 region of the hippocampus, medial prefrontal cortex (mPFC), and MEC. It plays a critical role in memory acquisition and retrieval across various episodic memory-related tasks. RE has been reported to organize oscillatory synchrony, thereby exerting bidirectional control over mPFC-hippocampal interactions. For example, RE phase-locks with hippocampal theta (6-12 Hz) during spatial alternations and drives transient synchronized beta activity in the mPFC-hippocampal loop, contributing to nonspatial sequence memory. Additionally, RE actively promotes gamma coupling in the mPFC-hippocampal circuit during slow-wave sleep. It is worth noting that RE densely projects to the MEC; however, its specific role within the RE-MEC pathway remains unknown.

Using fiber photometry in conjunction with multi-channel recording technology, we discovered that RE neurons projecting to MEC exhibit heightened activity during spatial exploration behaviors, such as locomotion, rearing, and object-place investigation, when compared to a stationary state. The activity of these RE neurons projecting to MEC demonstrates a positive correlation with theta oscillations associated with spatial exploration. Chemogenetic inhibition of this pathway specifically diminishes theta oscillations linked to spatial exploration while impairing the formation of spatial memory; however, it does not affect spatial exploration behaviors per se. Moreover, employing an optogenetic approach revealed that this pathway is specifically involved in the acquisition of spatial memory but has no impact on its retrieval. Finally, we further traced the upstream inputs received by RE neurons projecting to MEC and found that this particular cell population predominantly integrates top-down inputs from the orbitofrontal cortex (OrbC), prelimbic cortex/infralimbic cortex

(PrL/IL), cingulate cortex (CC), and hippocampal subiculum inputs. This series of findings unveil a specific regulatory mechanism underlying the control of theta oscillations which selectively participates in the acquisition of spatial memory.

Keyword: spatial memory acquisition, nucleus reuniens, medial entorhinal cortex, theta oscillation

Salivary microbiome profile in children with allergic rhinitis

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Objective: Allergic rhinitis (AR) in children is a risk factor for obstructive sleep apnea. This study aims to investigate the salivary microbiota in children during both the quiescent and active phases of AR, and to identify characteristic microbiota.

Methods: Seventy children (mean age 7.8 ± 2.79 years) were included, divided into quiescent AR (n=20, 7.8 ± 2.6 years), active AR (n=23, 6.9 ± 2.7 years), and healthy controls (n=27, 8.6 ± 2.9 years). Non-stimulated saliva was collected, and DNA was extracted for 16S rRNA sequencing (V3-V4 regions). Microbial diversity and composition were analyzed, and LEfSe was used to identify differential taxa.

Results: There were no significant differences in age, sex, or BMI among the groups. The α -diversity index of the active AR group was significantly lower than other groups ($p < 0.05$). Bray-Curtis and Jaccard distances showed significant separation between the active AR group and the other two groups ($p < 0.05$), with no statistically significant differences between the quiescent AR and control groups. Twenty-seven genera were enriched in the quiescent AR group, including Bifidobacterium, Stomatobaculum, Faecalibacterium, Eubacterium, and Lactobacillus which could be probiotics, whereas five genera were enriched in the active AR group.

Conclusion: Children with active and quiescent AR exhibit significant differences in salivary microbiota diversity and composition. The quiescent AR group possesses characteristic microbiota that may serve as biomarkers for disease progression and treatment.

Keyword: allergic rhinitis, pediatric

节律分子 RORA 调控 NAD⁺代谢参与帕金森病多巴胺神经元丢失的机制研究

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研究目的：视黄酸相关孤儿受体 α (ROR α) 是一种参与代谢和炎症调节的核受体，NAD⁺是调节各种代谢途径的关键信号分子，大脑中 NAD⁺含量随年龄增长而降低，导致细胞功能障碍，本研究旨在探讨帕金森病 (PD) 进程中 NAD⁺水平改变与 ROR α 及多巴胺 (DA) 能神经元退化变性的关系。

研究方法：采集共 50 例 PD 患者和年龄匹配的健康对照血液样本，分离外周血单个核细胞 (PBMC) 进行 qRT-PCR 实验。基于 PD 细胞和小鼠模型，通过单细胞 RNA 测序和生物信息学分析确定其具体下游机制，并结合 qRT-PCR、WB、CHIP 等实验验证关键分子及通路。

研究结果：与健康对照相比，PD 患者 PBMC 中 Rora 基因的 mRNA 水平下调。构建了 Rora 基因半敲除小鼠，Rora 缺乏导致 DA 能神经元丢失伴随星形胶质细胞、小胶质细胞激活增多，最终导致运动功能下降。为明确具体调控机制，进行了单细胞测序，GO 分析发现包括 NAD⁺等途径发生了显著变化。ELISA 结果表明，PD 进程中 NAD⁺水平和 NAD⁺/NADH 比值改变，可以由 Rora 调节。为了进一步证实调控作用，我们进行了 ChIP 实验，ChIP- qPCR 结果显示，ROR α 可以直接结合于 NAD⁺合成关键酶 NAMPT 的编码基因启动子区域，调节其转录活性。

研究结论：在 PD 进展过程中，ROR α 可调节 NAD⁺合成过程的关键酶 NAMPT，进而改变脑内 NAD⁺水平影响 DA 能神经元功能。

关键词：关键词：帕金森病；NAD⁺；ROR α ；神经元

Wearable-device-measured circadian rest-activity rhythm with mortality risk in cancer patients

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While increasing evidence from animal studies suggests that circadian disruption plays a role in cancer progression and metastasis, the associations between circadian rhythms and mortality risk in cancer patients remain uncertain. In this study, we examined the associations between circadian rest-activity rhythm (CRAR) as measured by a wearable device and all-causes, cancer, and cardiovascular disease (CVD) mortality risk in 7456 participants from the UK Biobank. The mean age of the participants was 65.7 ± 6.9 years, and 58.9% were female. Over a median follow-up period of 9.0 years (64,525 person-years), during which 934 deaths were recorded, CRAR disruptions was found to predict a 31% to 164% increased risk of all-cause, cancer, and CVD mortality. Furthermore, low amplitude and low M10 showed superior predictive ability for mortality outcomes compared to several established risk factors, such as poor sleep, smoking, alcohol consumption, obesity, and unhealthy diet. Therefore, the CRAR parameters may serve as simple, accessible, and reliable markers for the identification of individuals at high risk for mortality in cancer patients.

Keyword: Circadian rhythm, Rest-activity pattern, Accelerometer, Cancer, Mortality, Cohort

Associations between inflammatory factors and sleep: A two-sample bidirectional Mendelian randomization study

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Abstract

BACKGROUND: Observational research has showed significant associations between inflammatory factors and sleep. Experimental studies suggested acute increase in the levels of inflammatory markers following sleep deprivation and sleep restriction. However, the causal association between inflammatory factors and sleep remains unclear in chronic and natural settings.

OBJECTIVES: This study aimed to investigate the causal association of inflammatory factors with seven sleep-related traits, including chronotype, daytime napping, daytime sleepiness, insomnia symptoms, and sleep duration.

METHODS: Two-sample bidirectional Mendelian randomization (MR) analysis was used to investigate the causal associations between 91 inflammatory factors and 7 sleep-related traits. Summary-level data of inflammatory factors were derived from the EBI GWAS Catalog ($n = 14,824$); sleep-related traits were obtained from UK Biobank. We calculated effect estimates using the inverse-variance weighted (IVW), weighted median, and MR-Egger methods. Heterogeneity and pleiotropy were detected and measured by the MR pleiotropy residual sum and outlier, Cochran's Q statistics, and MR-Egger regression.

RESULTS: We found that 30 inflammatory factors had causal effects on sleep-related traits, while sleep-related traits had causal effects on 20 inflammatory factors. After adjusted by false discovery rate (FDR), strong evidence was found for the causal effects of CD 40 (OR = 1.02, 95% CI: 1.01-1.03), ST1A1 (OR = 0.97, 95% CI: 0.96-0.99), uPA (OR = 1.03, 95% CI: 1.01-1.04) on chronotype, and FGF-21 (OR = 1.02, 95% CI: 1.01-1.03), hGDNF (OR = 1.01, 95% CI: 1.00-1.02), TNFB (OR = 0.99, 95% CI: 0.98-1.00), TNFSF14 (OR = 1.01, 95% CI: 1.00-1.02) on napping.

CONCLUSION: Our study suggest a bidirectional causal association between inflammatory factors and sleep-related traits, indicating that sleep could influence our overall health via regulating systematic inflammation.

Keyword: sleep, inflammatory factors, Mendelian randomization, instrumental variable, causal relationship

Dexmedetomidine Promotes NREM Sleep by Depressing Oxytocin Neurons in the Paraventricular Nucleus in Mice

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Abstract

Dexmedetomidine (DEX) is a highly selective $\alpha 2$ -adrenoceptor agonist with sedative effects on sleep homeostasis. Oxytocin-expressing (OXT) neurons in the paraventricular nucleus (PVN) of the hypothalamus (PVN^{OXT}) regulate sexual reproduction, drinking, sleep-wakefulness, and other instinctive behaviors. To investigate the effect of DEX on the activity and signal transmission of PVN^{OXT} in regulating the sleep-wakefulness cycle. Here, we employed OXT-cre mice to selectively target and express the designer receptors exclusively activated by designer drugs (DREADD)-based chemogenetic tool hM3D(Gq) in PVN^{OXT} neurons. Combining chemogenetic methods with electroencephalogram (EEG) /electromyogram (EMG) recordings, we found that cannula injection of DEX in PVN significantly increased the duration of non-rapid eye movement (NREM) sleep in mice. Furthermore, the chemogenetic activation of PVN^{OXT} neurons using i.p. injection of clozapine N-oxide (CNO) after cannula injection of DEX to PVN led to a substantial increase in wakefulness. Electrophysiological results showed that DEX decreased the frequency of action potential (AP) and the spontaneous excitatory postsynaptic current (sEPSC) of PVN^{OXT} neurons through $\alpha 2$ -adrenoceptors. Therefore, these results identify that DEX promotes sleep and maintains sleep homeostasis by inhibiting PVN^{OXT} neurons through the $\alpha 2$ -adrenoceptor.

Keyword: DEX, OXT neurons, PVN, EEG/EMG recording, Electrophysiological recording

Dexmedetomidine accelerates photoentrainment and affects sleep structure through the activation of VIP neurons in the SCN

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Abstract

Dexmedetomidine (DexM) is a highly selective $\alpha 2$ -adrenoceptor agonist with a significant decrease in postoperative adverse effects, such as sleep and circadian rhythm disruption. Vasoactive intestinal peptide neurons in the suprachiasmatic nucleus (SCNVIP) regulate the synchronization of circadian rhythm to the external environment in mammals. To investigate the effects and underlying mechanisms of DexM on sleep and circadian rhythm. Here, using electrophysiological and chemogenetic methods together with locomotor activity, electroencephalogram /electromyogram recordings, we find that DexM accelerate the rate of re-entrainment following an 8-hour phase advance in the 12 hour light:12 hour dark cycle (LD), increase the amount of non-rapid eye movement sleep (NREM) and decrease the mean duration time of rapid-eye movement sleep (REM). Chemogenetic inhibition of SCNVIP neurons hinders the acceleration rate of re-entrainment and the changes in the sleep-wakefulness cycle caused by DexM. Lastly, electrophysiological results show that DexM increases the firing rate and the frequency of spontaneous excitatory postsynaptic current (sEPSC) of SCNVIP neurons and decreases the frequency of spontaneous inhibitory postsynaptic current (sIPSC) through the $\alpha 2$ -adrenergic receptor. Interestingly, DexM also reduces the frequency of miniature inhibitory postsynaptic current (mIPSC) of SCNVIP neurons. Therefore, these results identify DexM promotes sleep and maintains the coordination of circadian rhythms to the external environment by activating SCNVIP neurons through $\alpha 2$ -adrenoceptor.

Keyword: Dexmedetomidine; SCN; VIP; circadian rhythm

Wolfram syndrome 1 regulates sleep in dopamine receptor neurons by modulating calcium homeostasis

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Objective:

Sleep disruptions are quite common in psychological disorders, but the underlying mechanism remains obscure. Wolfram syndrome 1 (WS1) is an autosomal recessive disease mainly characterized by diabetes insipidus/mellitus, neurodegeneration and psychological disorders. It is caused by loss-of function mutations of the *WOLFRAM SYNDROME 1 (WFS1)* gene, which encodes an endoplasmic reticulum (ER)-resident transmembrane protein. Heterozygous mutation carriers do not develop WS1 but exhibit 26-fold higher risk of having psychological disorders. Since WS1 patients display sleep abnormalities, we aimed to explore the role of *WFS1* in sleep regulation so as to help elucidate the cause of sleep disruptions in psychological disorders.

Methods:

Through mutantting or knocking down *wfs1* by the GAL4/UAS system in *Drosophila melanogaster*, we monitored flies' sleep by the DAM system. Then we used pharmacological feeding, genetic interaction, and confocal imaging to explore the mechanism of *wfs1* regulating sleep.

Results:

We found in *Drosophila* that knocking down *wfs1* in all neurons and *wfs1* mutation lead to reduced sleep and dampened circadian rhythm. These phenotypes are mainly caused by lack of *wfs1* in dopamine 2-like receptor (Dop2R) neurons which act to promote wake. Consistently, the influence of *wfs1* on sleep is blocked or partially rescued by inhibiting or knocking down the rate-limiting enzyme of dopamine synthesis, suggesting that *wfs1* modulates sleep via dopaminergic signaling. Knocking down *wfs1* alters the excitability of Dop2R neurons, while genetic interactions reveal that lack of *wfs1* reduces sleep via perturbation of ER-mediated calcium homeostasis.

Conclusions:

Taken together, we propose a role for *wfs1* in modulating the activities of Dop2R neurons by impinging on intracellular calcium homeostasis, and this in turn influences sleep. These findings provide a potential mechanistic insight for pathogenesis of diseases associated with *WFS1* mutations.

Keyword: Wolfram syndrome 1, sleep, dopamine receptor, calcium homeostasis

Compound 38, a novel potent and selective antagonist of adenosine A2A receptor, enhances arousal in mice

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Compound 38, a novel pyridinone compound, is a potent selective antagonist of the adenosine A2A receptor (A2AR). The A2AR plays a pivotal role in the regulation of sleep-wake behaviors. However, the effects of compound 38 on sleep-wake regulation remain unknown. In the experimental condition, wild-type mice were divided into 6 groups (n = 7-8), including a negative control group, an experimental group (Compound 38: 3.3, 5.0, 7.5, 15, and 30 mg/kg), and a positive control group (Caffeine: 15 mg/kg). Compound 38 was intraperitoneally injected at 9:00 am, and changes in EEG and EMG were monitored to detect alterations in sleep-wakefulness. In the total sleep deprivation model, the animals were divided into 5 groups (n = 7), including a negative control group, an experimental group (Compound 38: 7.5, 15, 30 mg/kg), and a positive control group (Caffeine: 15 mg/kg). After 6 hours of sleep deprivation (13:00-19:00), the animals were injected intraperitoneally, and the effects of Compound 38 on sleep recovery were observed. In the exploration of this awakening mechanism, the animals were divided into two groups: A2AR knockout (A2AR^{-/-}; n = 8) and wild-type littermates (A2AR^{+/+}; n = 8). The animals were intraperitoneally injected with vehicle or compound 38 at 7.5 mg/kg, and polysomnography was conducted using a multi-channel sleep recorder. The effects of the compound 38 on sleep-wakefulness, sleep structure, and sleep homeostasis were analyzed using SleepSign software. Finally, the ADMETlab2.0 and QikProp software were used to calculate the pharmacokinetic and pharmacodynamic properties of compound 38. Compound 38 has a dose-dependent effect on arousal in mice and is most effective at a dosage of 7.5 mg/kg. Furthermore, compound 38 prolongs the mean duration of wakefulness and reduces the number of sleep-wake transitions. During the sleep rebound phase after 6 hours of sleep deprivation, compound 38 exhibits arousal-promoting effects. Meanwhile, compound 38 has no effect on promoting wakefulness in A2AR-knockout mice, but has a stronger effect on wakefulness in the corresponding wild-type littermates. Moreover, compound 38 possesses optimizable drug-like characteristics. In conclusion, as a novel A2AR antagonist, compound 38 promotes wakefulness via the adenosine A2AR in mice and exhibits promising applications for further advancements in the field of sleep-wake disorders.

Keyword: Compound 38; A2AR antagonist; sleep-wake states; sleep deprivation; A2AR-KO mice

HIF-1 α 通过抑制 SLC7A11 促进慢性间歇低氧诱导的肺组织铁死亡

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目的：铁死亡参与慢性间歇低氧（CIH）诱导的肺损伤。本研究旨在探索缺氧诱导因子-1 α （HIF-1 α ）/ 溶质载体家族 7 成员 11（SLC7A11）信号通路在 CIH 相关肺组织铁死亡中的作用。

方法：通过动物实验和细胞实验确认了 CIH 相关的肺损伤和铁死亡。在细胞实验中，敲低 HIF-1 α 和过表达 SLC7A11 后观察表型的变化，以明确 HIF-1 α / SLC7A11 通路的在 CIH 相关人正常肺上皮细胞（BEAS-2B）铁死亡中的作用。采用 ChIP-qPCR 检测 HIF-1 α 和 SLC7A11 启动子区域是否存在结合位点。通过动物实验验证 HIF-1 α 抑制剂 2-ME2 对 CIH 所致肺损伤的治疗效果。

结果：动物实验中，与对照组相比，CIH 组肺组织损伤伴 HIF-1 α 表达水平增高，并伴随铁死亡相关基因的变化（ $P < 0.05$ ）。在细胞实验中，与对照组相比，CIH 组细胞损伤伴 HIF-1 α 表达水平上升，并伴随着铁死亡相关基因的变化（ $P < 0.05$ ）。敲低 HIF-1 α 或过表达 SLC7A11 可逆转 CIH 诱导的 BEAS-2B 细胞铁死亡的发生。ChIP-qPCR 确认 HIF-1 α 与 SLC7A11 启动子区域之间存在结合位点。动物实验发现 2-ME2 可减轻 CIH 所致肺损伤和铁死亡。

结论：CIH 通过激活 HIF-1 α / SLC7A11 信号通路引起肺损伤和铁死亡。HIF-1 α 抑制剂 2-ME2 能有效逆转 CIH 所致肺损伤。

关键词：阻塞性睡眠呼吸暂停；慢性间歇低氧；HIF-1 α ；SLC7A11；铁死亡；肺损伤

Chronic intermittent hypoxia exacerbates the progression of NAFLD via SPP1 mediated polarization in macrophages

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Background: Obstructive sleep apnea, characterized by chronic intermittent hypoxia (CIH), contributes to the development and progression of non-alcoholic fatty liver disease (NAFLD). Emerging evidence underscores the importance of macrophages in NAFLD pathogenesis; however, the impact of CIH on hepatic macrophages and the underlying mechanisms during NAFLD progression remain largely unexplored.

Methods: In this study, we established two murine models of NAFLD and simultaneously exposed the mice to CIH or room air conditions to evaluate the impact of CIH on liver injury and hepatic macrophage dynamics. In vitro experiments were conducted using bone marrow-derived macrophages to validate the CIH-induced macrophage polarization and its correlation with hepatocyte damage. Furthermore, the role of secreted phosphorylated protein 1 (SPP1) in CIH-induced M1 macrophage polarization was investigated.

Results: In NAFLD models induced by both high-fat diet and methionine-choline-deficient diet, CIH exposure aggravated liver damage, presenting as increased inflammation and fibrosis. Hepatic macrophages analysis revealed that CIH enhanced macrophage infiltration and promoted inflammatory polarization during NAFLD progression. CIH-exposed macrophages exhibited increased M1 polarization and inflammatory activation, subsequently exacerbating cell damage in lipotoxic hepatocytes. Notably, transcriptomic analysis demonstrated consistent upregulation of *Spp1* in CIH-exposed macrophages and hepatic macrophages in NAFLD. The significantly elevated expression of SPP1 in macrophages in response to CIH exposure was further validated at both the protein level and release concentration. Ultimately, CIH-induced M1 inflammatory polarization and the resulting hepatocyte injury were alleviated by the knockdown of SPP1 in macrophages.

Conclusion: CIH accelerates the progression of NAFLD by promoting M1 polarization in hepatic macrophage. The upregulation of *Spp1* emerges as a promising biomarker and intervene target for CIH-induced proinflammatory macrophage phenotypes.

Keyword: OSA, NAFLD, CIH, Macrophages, M1 polarization, SPP1

Efferent pathways from the suprachiasmatic nucleus to the horizontal limbs of diagonal band promote NREM sleep during the dark phase in mice

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The regulation of circadian rhythms and the sleep-wake states involves in multiple neural circuits. The suprachiasmatic nucleus (SCN) is a circadian pacemaker that controls the rhythmic oscillation of mammalian behaviors. The basal forebrain (BF) is a critical brain region of sleep-wake regulation, which is the downstream of the SCN. Retrograde tracing of cholera toxin subunit B showed a direct projection from the SCN to the horizontal limbs of diagonal band (HDB), a subregion of the BF. However, the underlying function of the SCN-HDB pathway remains poorly understood. Herein, activation of this pathway significantly increased non-rapid eye movement (NREM) sleep during the dark phase by using optogenetic recordings. Moreover, activation of this pathway significantly induced NREM sleep during the dark phase for first 4 h by using chemogenetic methods. Taken together, these findings reveal that the SCN-HDB pathway participates in NREM sleep regulation and provides direct evidence of a novel SCN-related pathway involved in sleep-wake states regulation.

Keyword: Suprachiasmatic nucleus, Basal forebrain, Sleep-wake, Non-rapid eye movement sleep

Melatonin targets the paraventricular thalamus to promote non-rapid eye movement sleep in C3H/HeJ mice

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Abstract Objective

Melatonin (MLT) is an important circadian signal for sleep regulation, but the neural circuitries underlying the sleep-promoting effects of MLT are poorly understood. The paraventricular thalamus (PVT) is a critical thalamic area for wakefulness control and expresses MLT receptors, raising a possibility that PVT neurons may mediate the sleep-promoting effects of MLT.

Methods

In vitro and in vivo recording methods were used to uncover potent inhibitory effects of MLT on PVT neurons in C3H/HeJ mice. Pharmacological manipulations were performed in the PVT for fiber photometry, multi-channel electrophysiological recording and EEG/EMG recording.

Results

In the present study, we found that MLT receptors were highly expressed in the PVT, and MLT directly inhibited PVT neurons via binding to postsynaptic MT1R and MT2R. Fiber photometry and electrophysiological recording experiments revealed that MLT suppressed the spontaneous populational and single neuron activities. Exogenous MLT administration into the PVT increased NREM sleep, whereas MLT receptor antagonists significantly decreased NREM sleep. Moreover, specifically knocking down MLT receptors by using RNAi induced a significant decrease in NREM sleep, while increasing wakefulness, particularly during the transition periods of different light and dark phases.

Conclusions:

Together, these results suggest that PVT is an important target mediating the effects of MLT on wakefulness/sleep.

Keyword: Melatonin, paraventricular thalamus, NREM sleep

前额叶皮层 Slc1a2 过表达逆转睡眠剥夺引发的谷氨酸/GABA(γ -aminobutyric acid)-谷氨酰胺循环障碍：星形胶质细胞与神经元通讯的关键作用

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目的：旨在探究 PFC Slc1a2 的过表达在睡眠剥夺引起的谷氨酸/GABA-谷氨酰胺循环功能障碍中的调节作用，并进一步揭示星形胶质细胞与神经元之间的通讯对此的影响。

方法：针对睡眠剥夺引发的细胞异质性变化全面对比了正常睡眠小鼠、睡眠剥夺小鼠和睡眠剥夺后恢复小鼠的与睡眠-觉醒有关的脑干、皮层和下丘脑细胞的变化。细胞通讯分析方法进一步研究了星形胶质细胞与神经元间的交互，并发现其在睡眠剥夺后有所改变。为了探索 Slc1a2 的作用在 PFC 区域特异性地过表达 Slc1a2 并进行睡眠剥夺处理。并检测神经活动和特定蛋白的表达，通过 ELISA 检测脑脊液中 GABA 含量，使用 [¹H-¹³C]-核磁共振技术评估不同组小鼠神经元和星形胶质细胞的代谢状况。

结果：睡眠剥夺改变脑干、皮层和下丘脑中的细胞分布和基因表达，我们发现了星形胶质细胞与神经元间通讯的减弱，这种改变与 [¹H-¹³C]-核磁共振检测的结果相吻合，显示谷氨酸/GABA-谷氨酰胺代谢在这些细胞中出现了障碍。动物行为学数据与这些分子水平的变化保持一致，睡眠剥夺小鼠展现焦虑样行为，及在诸如新物体识别测试和 Y 迷宫测试中，小鼠认知和记忆功能受到了损害。PFC 中特异性地过表达 Slc1a2 时，睡眠剥夺带来的这些不利影响均得到了明显的逆转

结论：PFC 中 Slc1a2 的过表达能逆转由睡眠剥夺引发的神经递质 GABA 功能障碍，星形胶质细胞与神经元间的通讯发挥了中心调节作用。

关键词：前额叶皮层；Slc1a2；睡眠剥夺；谷氨酸/GABA-谷氨酰胺循环；星形胶质细胞；神经元通讯；

Hypothalamic supramammillary neurons that project to the medial septum modulate wakefulness in mice

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The supramammillary nucleus (SuM) is a hypothalamic region lying above the mammillary body and provides abundant projections to numerous brain regions like the hippocampus, septum, frontal cortex, and cingulate cortex^{1,2}. Recent advances in high-performance recording and manipulation techniques have enabled extensive studies of SuM functions, subsequently revealing its involvement in numerous processes such as episodic memory^{3,4}, novelty detection⁵, theta rhythm^{6,7}, locomotion⁸, hippocampal neurogenesis⁹, and wakefulness¹⁰. In particular, one previous study demonstrated that SuM glutamatergic neurons serve as a key node for arousal, and chemogenetic activation of SuM glutamatergic neurons, but not GABAergic neurons, produces sustained arousal¹⁰. However, which downstream brain regions are involved in the SuM control of arousal remains unknown. The medial septum (MS), which primarily contains cholinergic, GABAergic and glutamatergic neurons^{11,12}, has been suggested to mediate different brain functions like locomotion¹³, learning and memory^{14,15}, hippocampal theta generation¹⁶, and wakefulness^{17,18}. Among these functions, MS glutamatergic neurons were shown to control wakefulness by activating lateral hypothalamic glutamatergic neurons¹⁸. Furthermore, a recent study has demonstrated that SuM glutamatergic neurons project to MS glutamatergic neurons and are responsible for modulating the motivation for environmental interaction¹⁹. Based on this established anatomical connection and combined findings, we hypothesized that a SuM-MS projection may modulate wakefulness. To test this hypothesis, we performed circuit-specific optical Ca²⁺ and optrode recordings in SuM-MS projection across sleep-wakefulness cycles. We identified a set of wake-active neurons in SuM that projects to MS. Optogenetic or chemogenetic activation of SuM-MS projection induced behavioral and EEG arousal, and chemogenetic inhibition of this projection decreased wakefulness. Overall, our results reveal a critical role of the hypothalamic septal projection for wakefulness modulation.

Keyword: sleep-wakefulness cycles, Supramammillary nucleus, Medial septal, Glutamatergic neurons

Dysregulation of the Molecular Clock by Blood-Borne Factors in Alzheimer's Disease Patients

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Background: Circadian disruptions are increasingly recognized in Alzheimer's disease (AD) patients and may influence disease onset and progression. This study examines how AD pathology affects blood-borne factors that regulate circadian rhythms.

Methods: Eighty-five participants from the Sino Longitudinal Study on Cognitive Decline were enrolled: 35 amyloid-beta negative normal controls (A β -NCs), 23 amyloid-beta positive normal controls (A β +NCs), 15 patients with amnesic mild cognitive impairment (aMCI), and 12 with Alzheimer's disease dementia (ADD). Patients with aMCI and ADD were grouped as cognitively impaired (CI). Cellular circadian period length was assessed using a serum-based assay. Clock gene expression in serum-treated cells and leukocytes was measured via real-time PCR. Plasma biomarkers were quantified using a single-molecule array immunoassay. Pineal parenchymal and hippocampal volumes were determined by magnetic resonance imaging.

Results: Serum from CI patients significantly extended the cellular circadian period compared to that from A β -NCs ($p < 0.01$). Treatment of cells with CI serum suppressed the expression of clock genes *Bmal1* and *Nr1d1*. Significant correlations among clock genes found in leukocytes of the A β -NC group diminished in the A β +NC and CI groups. In the A β -NC group, cellular circadian period length correlated with pineal volume, a correlation not observed in A β +NC and CI groups.

Conclusions: This study identified significant changes in blood-borne factors affecting circadian rhythms in AD, starting even at preclinical stages. These alterations could precede cognitive decline and contribute to AD pathogenesis. Further research is warranted to understand the mechanisms by which blood-borne factors modulate circadian regulation and their roles in AD.

Keyword: Alzheimer's disease, A β , Circadian rhythm, Blood-borne factors, Pineal parenchymal volume

Striatal astrocytes regulate behavioral patterns via extracellular K⁺ buffering during wakefulness

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During wakefulness, animals exhibit a spectrum of spontaneous behaviors. However, the mechanisms of coordinating the prevalence of these behaviors remain poorly understood. Striatum, a pivotal component of basal ganglia, anatomically connecting cortex and subcortical regions, involves in behavioral regulation. In this study, we categorized the behaviors during wakefulness into active and inactive behaviors, based on locomotory features. We found that dorsal striatal extracellular K⁺ levels, intracellular Ca²⁺ of astrocytes and medium spiny neurons (MSNs) rise consistently in active behaviors states and decrease upon inactive behaviors. Either Increasing local extracellular K⁺ levels or the downregulation of dorsal striatal astrocytic inwardly rectifying potassium channel 4.1 (Kir 4.1) significantly alters the prevalence of active and inactive behaviors. The current study reports that the ionic microenvironment of dorsal striatum is crucial in regulating behavioral patterns during wakefulness. The striatal astrocyte participates in behavioral regulation at least in-part via extracellular K⁺ buffering.

Keyword: Striatum, Behavioral states, astrocyte, Kir4.1, MSN

前包氏复合体的神经炎症损伤参与间歇低氧加重睡眠呼吸暂停的中枢机制

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【背景】阻塞性睡眠呼吸暂停以夜间反复上气道塌陷伴间歇低氧为特征，间歇低氧本身又可加重睡眠呼吸暂停、造成疾病进展。前包氏复合体（preBötC）是呼吸中枢呼吸节律的产生核团，间歇低氧有可能损伤前包氏复合体、造成呼吸节律发放的不稳，这可能是 OSA 疾病进展的中枢机制。

【方法】构建间歇性低氧加重睡眠呼吸暂停的 SD 大鼠模型。留取大鼠脑干呼吸中枢核团。通过电镜、尼氏染色、TUNEL 染色等对前包氏复合体的超微结构、形态功能和凋亡进行观察和分析。应用免疫组化、免疫荧光观察脑干呼吸中枢小胶质细胞与星形胶质细胞的活化情况。应用 PCR、ELISA 和生化法测定氧化应激和抗氧化应激相关指标。

【结果】间歇性低氧显著增加了 SD 大鼠的自发性呼吸暂停频率。间歇低氧使前包氏复合体 preBötC 神经元受损，尼氏染色可见异常深染的神经元，尼氏染色阳性细胞数量减少；电镜观察显示线粒体肿胀和空泡化等损伤现象。间歇低氧激活大鼠脑干呼吸中枢的小胶质细胞与星形胶质细胞，表现为细胞面积增大和分支数量增加，但小胶质细胞的 M1/M2 的极化状态未见明显改变。活化后的胶质细胞分泌产生了氧化应激反应，分泌的 NADPH 氧化酶活性升高，导致活性氧 ROS 产生增加等。

【结论】间歇低氧通过胶质细胞介导的氧化应激损伤了前包氏复合体（preBötC），造成呼吸节律异常、增加了自发性呼吸暂停。这可能是 OSA 疾病进展的中枢机制之一。

关键词：间歇低氧，前包氏复合体，神经炎症，胶质细胞

慢性间歇性低氧对哮喘小鼠气道炎症的影响

梁丽

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目的：探讨慢性间歇低氧（CIH）对哮喘小鼠气道炎症的影响。方法：选择6周龄SPF级雄性C57BL/6小鼠，随机分为对照组、卵清蛋白（ovalbumin, OVA）致敏的OVA组和OVA+CIH暴露组。CIH暴露28 d后收集支气管肺泡灌洗液（BALF），测定各组BALF中白细胞（WBC）、嗜酸性粒细胞（EOS）及中性粒细胞（NEU）计数；采用ELISA方法检测各组BALF炎症因子，包括白介素（IL）-6、IL-8、IL-17A、IL-17F浓度。结果：OVA+CIH暴露组、OVA组BALF中WBC、EOS、NEU均高于对照组，差异均有统计学意义（ $P < 0.05$ ）。OVA+CIH暴露组BALF中WBC、NEU计数高于OVA组，EOS计数低于OVA组，差异均有统计学意义（ $P < 0.05$ ）。OVA+CIH暴露组BALF中IL-6、IL-8、IL-17A和IL-17F水平分别为均高于OVA组及对照组，OVA组BALF中IL-6、IL-8、IL-17A和IL-17F水平分别为均高于对照组，差异均有统计学意义（ $P < 0.05$ ）。结论：CIH可以加重哮喘小鼠气道炎症，表现为炎性细胞以中性粒细胞浸润为主，气道炎症相关细胞因子释放增加。

关键词：慢性间歇低氧；哮喘；气道炎症；IL-17

TLR4 介导的慢性睡眠剥夺所致的脑白质损伤的机理研究

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背景与目的 慢性睡眠剥夺的人群中，颅脑 MRI 显示白质病变出现率高，Fazekas 量表评分高。大量证据显示，慢性睡眠剥夺可激活炎症反应，动物研究表明，慢性睡眠剥夺大鼠海马和基底前脑的 IL-1 β 、IL-6 及 TNF- α 水平升高、小胶质细胞活化，NLRP3 炎症小体表达升高及 TLR4 信号通路激活。脑白质由众多有髓鞘纤维组成，各种原因的髓鞘脱失会导致脑白质损伤。本研究旨在观察 TLR4 信号通路在慢性睡眠剥夺小鼠脑内炎症及脑白质变化中的作用。

材料与方法 健康成年雄性 c57BL/6n 小鼠随机分两组：对照组（CON）、睡眠剥夺组（SD），通过睡眠剥夺仪模拟人工轻抚对 SD 组睡眠干扰 8 周，每天连续干扰 20h。通过蛋白质印记观察 TLR4 特异性配体 HMGB1、IL-1 β 炎症因子表达改变；观察髓鞘相关蛋白 MAG、MBP 及小胶质细胞激活标志物 Iba-1 表达水平。通过免疫荧光检测 MBP 表达情况及电镜观察髓鞘结构改变。

结果 与 CON 组比较，蛋白印迹显示，SD 组小鼠脑白质区 HMGB1、IL-1 β 、Iba-1 表达增加；MBP 表达减少，MAG 表达变化不明显。免疫荧光显示，SD 组小鼠胼胝体区 MBP 的荧光强度明显减少。电镜观察显示，SD 组小鼠胼胝体区有髓鞘纤维数量减少。

结论 慢性睡眠剥夺导致小鼠脑白质区炎症反应激活，脑白质完整性受损。TLR4 信号通路以及干预对慢性睡眠剥夺小鼠脑白质影响的研究正在进行中。

关键词：关键词：TLR4；睡眠剥夺；白质损伤；髓鞘脱落；炎症反应

A gut microbiome-derived metabolite modulates sleep in the host

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Sleep interacts reciprocally with gut microbiota. However, the gut microbe-brain metabolic axis mechanisms responsible for sleep behavior have remained largely unknown. Here, we show that the absence of gut microbiota can alter sleep behavior. Sleep deprivation reduces butyrate levels in the fecal content and hypothalamus of SPF mice but not in germ-free (GF) mice. Microbial metabolite butyrate can promote sleep through modulating orexin neuronal activity in lateral hypothalamic area of mice. Additionally, insomnia patients also show lower butyrate in serum and a deficiency in butyrate-producing species within the gut microbiota. Transplantation of gut microbiota from insomnia patients to GF mice confers insomnia-like behaviors accompanied by a decreased butyrate level in serum. Oral administration of butyrate can rescue sleep disturbance in recipient mice. Overall, these findings reveal the causal role of microbial metabolic pathways in modulating sleep behavior, providing potential therapeutic strategies for treating sleep disorders.

Keyword: sleep, gut microbiota, insomnia, butyrate, orexin

间歇性爆发式脉冲刺激通过上调 SAMHD1 抑制海马细胞焦亡抗睡眠剥夺所致抑郁

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目的 睡眠障碍已经成为一种普遍的社会现象，而抑郁症是睡眠障碍常见且困扰患者生活质量的严重并发症。间歇性爆发式脉冲刺激（iTBS）是一种新型重复经颅磁刺激形式，在治疗神经系统疾病尤其是抑郁症有着广泛的应用前景。因此，本研究探讨 iTBS 对睡眠剥夺所致抑郁是否具有保护作用及其机制。

方法 通过改良多平台法剥夺雄性大鼠睡眠时间建立睡眠剥夺所致抑郁模型；构建 AAV9-SAMHD1-RNAi 抑制 SAMHD1 蛋白表达；采用糖水偏好实验、强迫游泳实验、新环境摄食抑制实验和悬尾实验检测睡眠剥夺大鼠抑郁行为学；免疫荧光法检测大鼠海马组织 NLRP3 和 ASC 的共定位；蛋白免疫印迹法检测海马组织中 SAMHD1、AIM2、NLRP3、ASC、pro-caspase-1、cleaved-caspase-1、GSDMD 和 GSDMD-N 的表达。酶联免疫吸附试验检测大鼠海马组织 IL-1 β 和 IL-18 水平。

结果 iTBS 治疗可通过上调 SAMHD1 表达、减少 NLRP3 和 ASC 共定位、下调焦亡相关蛋白表达及减少炎症因子分泌来改善大鼠抑郁样行为。而沉默 SAMHD1 表达可取消 iTBS 上述作用。

结论 iTBS 对睡眠剥夺所致抑郁具有拮抗作用，其机制在于通过上调 SAMHD1 进而抑制海马焦亡。

关键词： 间歇性爆发式脉冲刺激, 睡眠障碍, 抑郁, SAMHD1, 海马, 焦亡

Electro-Acupuncture with BL62 and KI6 Attenuates Disturbed Sleep-Wake Circadian Rhythm via NPY Up-Regulation in the Intergeniculate Leaflet

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The increasing prevalence of insomnia calls for novel approaches in its treatment, focusing on the regulation of sleep-wake circadian rhythm. In this study, we first induced sleep-wake circadian rhythm disturbances in animals using the DPS protocol. Subsequently, we examined the effects of electro-acupuncture on the sleep-wake circadian rhythm and its impact on neuropeptide Y (NPY) protein and gene expression in the intergeniculate leaflet (IGL) of the animal model. Furthermore, we employed cre-caspase technology to disrupt NPY in the IGL using PT-1914 rAAV-NPY-CRE-WPRE-bGH pA and rAAV-flex-taCasp3-TEVp-WPRE-p mixture, aiming to validate the relationship between the regulatory effects of electro-acupuncture and the IGL nucleus. The results demonstrated that electro-acupuncture intervention improved the diurnal distribution of sleep-wake rhythm in arrhythmia golden hamsters. ELISA and PCR analysis revealed that electro-acupuncture enhanced the expression of NPY protein and mRNA. Additionally, the disruption of NPY through cre-caspase technology interfered with the regulatory effects of electro-acupuncture on sleep-wake states. In summary, our study indicates that electro-acupuncture exerts a beneficial regulatory effect on sleep-wake states, and this modulation is associated with the IGL nucleus and its functional protein NPY, suggesting the potential application of electro-acupuncture in the treatment of sleep disorders and circadian rhythm-related diseases. These findings provide implications for the application of electro-acupuncture in the treatment of sleep disorders and circadian rhythm-related diseases, as well as insights into the mechanism by which electro-acupuncture modulates sleep disorders and their relationship with the central circadian rhythm.

Keyword: sleep-wake circadian rhythm, electroacupuncture, BL62, KI6, neuropeptide Y, intergeniculate leaflet

Social isolation associated with sleep behaviors among elderly people

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Objectives: To explore the associations of social isolation with sleep duration and sleep quality in community-dwelling elderly people.

Methods: A total of 7,762 community-dwelling elderly people aged 60 years and older in Ningbo were recruited from June 2022 to August 2022. Data were collected using a questionnaire. Multivariate logistic regression and population attributable risk (PAR) were used to analyze the associations of social isolation with sleep duration and sleep quality. The KHB mediating effect model was used to test the mediating effect of depression and anxiety on these associations.

Results: Among the participants, 2,656 (34.2%) had abnormal sleep duration (< 6 hours or > 8 hours), 1,115 (14.4%) had poor sleep quality, and 917 (11.8%) had social isolation. After adjusting for confounding factors, compared with the elderly without social isolation, the odds ratios (ORs) (95% confidence interval) of abnormal sleep duration and poor sleep quality in the elderly with social isolation were 1.49 (1.29 - 1.73) and 1.32 (1.09 - 1.59), respectively. Subgroup analysis showed the association only significant in the population of female older adults and those aged < 80 years. The multivariate-adjusted PAR analysis showed that 5.26% of the abnormal sleep duration cases and 3.18% of the poor sleep quality cases were attributable to social isolation. Depression partially mediated the associations of social isolation with sleep duration and sleep quality, accounting for 5.68% and 9.87% of the mediating effect, respectively.

Conclusions: Social isolation was found to be associated with sleep duration and sleep quality in community-dwelling elderly people. More attention should be paid to social isolation in the elderly, especially in female older adults and those aged < 80 years.

Keyword: Older adults; Sleep duration; Sleep quality; Social isolation; Population attributable risk

电针通过 ROR α 通路调节昼夜节律改善帕金森病的神经炎症和运动障碍

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目的：睡眠障碍是帕金森病（PD）最常见的非运动症状之一，使昼夜节律成为重要的治疗靶点。多项临床试验和已证明其治疗 PD 的有效性，但针刺操作方法众多、医者手法及腧穴处方多样，作用机制研究较少。视黄酸相关孤儿核受体（ROR α ）可调控炎症，在 PD 中具有神经保护作用。本实验拟基于 ROR α 通路开发调控昼夜节律的针刺模式，为 PD 的临床针刺治疗提供理论依据。

方法：使用 MPTP 诱导 PD 小鼠模型，开发晚 8 点针刺“百会、四神聪、大椎、合谷穴”，早 8 点针刺“内关、太冲、安眠穴”的固定针刺模式进行电针治疗，检测 ROR α 表达、炎症因子及小胶质细胞极化状态，行为学评对 PD 小鼠运动功能的改善效果。同时，使用 ROR α 全敲小鼠（Rora $^{+/-}$ ）进一步验证 ROR α 在调控小胶质细胞极化和抑制神经炎症中的关键作用。

结果：基于昼夜节律的电针治疗显著提高了 PD 小鼠中脑的 ROR α 表达，并促进小胶质细胞向抗炎 M2 型的极化，抑制了细胞炎症因子的表达，从而减轻神经炎症。在行为学测试中，电针治疗显著改善了 PD 小鼠的步态模式、步幅、运动协调性及总运动距离。然而，在 Rora $^{+/-}$ 小鼠中，电针治疗抑制异常胶质细胞激活效果减退，在步态改善、运动速度及运动协调性方面的改善明显减弱。

结论：基于昼夜节律开发固定针刺模式干预调节小鼠中脑 ROR α 表达，改善小胶质细胞抗炎表型转化，改善运动协调性，减缓 PD 进程。

关键词：帕金森病、针刺、昼夜节律、视黄酸相关孤儿核受体、神经炎症

脑活素在治疗阿尔茨海默病诱发的睡眠紊乱中的作用

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目的：阿尔茨海默病是一种常见的神经退行性疾病，其诱发的睡眠异常严重影响患者的生活质量。脑活素是一种 GABA 受体激动剂，并用于临床治疗阿尔茨海默病，但其是否能改善阿尔茨海默病诱发的睡眠异常尚不明确。因此，本研究旨在探究阿尔茨海默病小鼠中睡眠异常的发生发展过程，并进一步明确脑活素在治疗阿尔茨海默病诱发的睡眠异常中的作用，以期为临床改善阿尔茨海默病患者的睡眠异常提供有效的治疗手段。

方法：1) 建立淀粉样前体蛋白/Tau 蛋白/早老蛋白-1 (APP/Tau/PS1) 三转基因 (3xTg) 阿尔茨海默病小鼠模型； 2) 采用睡眠脑电记录监测并比较野生型小鼠和阿尔茨海默病小鼠的睡眠结构； 3) 探究连续一个月腹腔注射脑活素对阿尔茨海默病小鼠睡眠结构的影响。

结果：1) 3xTg 小鼠病理结果显示 A β 沉积和 tau 蛋白异常磷酸化，符合阿尔茨海默病诊断标准； 2) 与野生型小鼠相比，3xTg 小鼠在疾病早期 REM 睡眠减少、觉醒增加，疾病晚期 NREM 睡眠与 REM 睡眠均显著减少、觉醒增加； 3) 1ml/kg 脑活素注射可以显著增加 3xTg 小鼠的 NREM 与 REM 睡眠，减少觉醒。

结论：本研究发现 3xTg 阿尔茨海默病小鼠在疾病早期 REM 睡眠减少、觉醒增加，晚期出现 NREM 睡眠减少，而脑活素可以显著改善 3xTg 阿尔茨海默病小鼠的睡眠异常，为临床治疗阿尔茨海默病患者的睡眠异常提供了新的理论依据。

关键词：阿尔茨海默病，睡眠，三转基因小鼠

Orexin neurons to sublaterodorsal tegmental nucleus pathway prevents sleep onset REM sleeps and depressive disorders through relieving the REM sleep pressure

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Proper timing of vigilance states serves fundamental brain functions. Although disturbance of sleep onset REM (SOREM) sleep is frequently reported after orexin deficiency, their casual relationship still remains elusive. Here, we further study a specific subgroup of orexin neurons with convergent projection to the REM sleep promoting sublaterodorsal tegmental nucleus (OXSLD neurons). Intriguingly, although OXSLD and other projection-labeled orexin neurons exhibit similar activity dynamics during REM sleep, only the activation level of OXSLD neurons exhibits a significant positive correlation with the post inter-REM sleep interval duration, revealing an essential role for orexin-SLD neural pathway in relieving REM sleep pressure. Monosynaptic tracing reveals that multiple inputs may help shaping this REM sleep related dynamics of OXSLD neurons. Genetic ablation further shows that the homeostatic architecture of sleep/wakefulness cycles, especially avoidance of SOREM sleep-like transition, is dependent on this activity. A positive correlation between the SOREM sleep occurrence probability and depression states of narcoleptic patients further demonstrates the possible significance of orexin-SLD pathway on REM sleep homeostasis.

Keyword: Orexin, sublaterodorsal tegmental nucleus, rapid eye movement sleep pressure, sleep onset REM sleep, depression

Astrocyte-Specific Inhibition of Sleep by the BTBD9-IMPDH2 Signaling through Suppression of Adenosine Production

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Background

The BTBD9 gene has been identified as associated with the risk of various sleep disorders in multiple genome-wide association studies (GWAS). Despite this association, the specific brain regions and molecular mechanisms through which BTBD9 regulates sleep remain unclear. Our previous study indicate IMPDH2 as a key downstream ubiquitination modification target of BTBD9, which regulates purine metabolism. Adenosine, a product of purine metabolism, plays a critical role in sleep homeostasis, and astrocytes are known to be crucial in adenosine-mediated sleep regulation.

Research Objectives

This study aims to investigate the sleep regulatory function of the BTBD9-IMPDH2 axis in astrocytes in the basal forebrain and to elucidate the molecular mechanisms underlying this regulation.

Methods

We employed quantitative proteomics and ubiquitination modification proteomics to identify key interactions between BTBD9 and IMPDH2. To assess the impact of BTBD9 and IMPDH2 on sleep, we conducted gene knockout and overexpression experiments in astrocytes of the basal forebrain in mice. We used metabolomics analysis and in vivo fiber photometry recordings to measure changes in adenosine levels and their effects on sleep-wake transitions. Additionally, the role of adenosine receptors (A1R and A2R) in was tested using receptor-specific blockers DPCPX and SCH58261, respectively, and the effect of the IMPDH2 inhibitor MPA was examined.

Main Results

Knocking out the BTBD9 gene in basal forebrain astrocytes of mice led to increased sleep duration and enhanced recovery sleep after sleep deprivation. Conversely, overexpression of BTBD9 resulted in prolonged wakefulness. Systemic treatment and conditional knockout of IMPDH2 in basal forebrain astrocytes also promoted recovery sleep post-sleep deprivation. Metabolomics analysis revealed that knocking out BTBD9 and IMPDH2 significantly elevated intracellular adenosine levels and enhanced adenosine release during transitions from non-rapid eye movement sleep (NREM) to rapid eye movement sleep (REM) and wakefulness. The sleep-promoting effect of BTBD9 or IMPDH2 knockout was attenuated by blocking the A1 receptor (A1R), but not the A2 receptor (A2R). In vitro experiments showed that BTBD9's inhibition of IMPDH2 enzymatic activity is likely the primary mechanism affecting adenosine synthesis and release. This was further supported by the observation that MPA, an effective IMPDH2 inhibitor, blocked the wake-promoting effect of BTBD9. Overexpression of the K195R (a

primary ubiquitination site of) mutant IMPDH2 showed little effect on sleep patterns compared to wild-type IMPDH2.

Conclusions

These findings reveal a mechanism by which BTBD9 regulates sleep homeostasis by affecting adenosine metabolism in astrocytes in the basal forebrain through IMPDH2. This study provides new insights into the molecular basis of sleep regulation, highlighting the potential of targeting the BTBD9-IMPDH2 axis for therapeutic strategies in sleep disorders.

Keyword: BTBD9, IMPDH2, Astrocyte, Adenosine, Ubiquitination

GBA L444P 突变对 RBD 动物模型的睡眠、认知和运动的影响

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目的：探索 GBA L444P 突变与 iRBD 和神经退行性疾病之间的关联及可能涉及的分子机制。

方法：以 WT 和 Gba L444P 突变小鼠为研究对象，分别在 PFF 注射 2 个月和 5 个月时，通过 EEG/EMG 进行睡眠监测，采用转棒、爬杆和新物体识别实验评估 RBD 小鼠的运动和认知行为，应用免疫组化技术检测中脑 TH 阳性神经元和磷酸化的 α -syn 的表达。

结果：RBD 小鼠 PFF 注射 5 个月后，非活跃期 REM 睡眠量减少，活跃期觉醒量增加伴随着 NREM 睡眠量的减少，并且出现睡眠碎片化现象，且呈现随时间进展逐渐加重的运动障碍。GBA L444P 突变小鼠在注射 PFF 2 个月时，相较于 WT 小鼠，表现出非活跃期觉醒量增加、NREM 和 REM 睡眠量减少，睡眠碎片化现象显著增加。theta 功率升高，NREM 睡眠阶段的 delta 功率降低，提示睡眠深度变浅。GBA-AAV 过表达能够缓解 PFF 诱导的睡眠障碍和睡眠碎片化，降低 RBD 小鼠 REM 期间肌张力，并改善 RBD 小鼠的运动和认知障碍。免疫组化结果显示 GBA-AAV 过表达能够减轻 PFF 诱导的黑质致密部多巴胺能神经元的损伤和脑内磷酸化的 α -syn 的聚集。

结论：GBA L444P 突变加重了 RBD 模型小鼠的睡眠、运动和认知障碍，GBA-AAV 过表达促进了 REM 睡眠量的恢复，减轻了 PFF 导致的运动和认知的损害，减少了黑质多巴胺能神经元的丢失和病理性 α -syn 的沉积。

关键词：GBA 基因；快动眼睡眠行为障碍；脑桥被盖背外侧下核； α -突触核蛋白；帕金森病

补体 C3 加重 α -突触核蛋白病理和神经变性

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研究目的：神经炎症和自身免疫参与了帕金森病（Parkinson's disease, PD）的发病机制，本研究旨在探讨补体 C3 对 α -突触核蛋白（ α -synuclein, α -syn）病理和神经变性的影响。方法：利用 ELISA 方法检测 α -突触核蛋白预制原纤维（ α -syn PFF）模型小鼠血浆中补体 C3 水平。分别构建补体 C3 过表达慢病毒和补体 C3 干扰重组腺相关病毒，分别预处理 α -syn PFF 诱导的小鼠模型。通过转棒试验、爬杆试验检测补体 C3 对小鼠运动功能的影响；通过 Western blot、免疫组织化学染色或免疫荧光染色检测黑质、纹状体中酪氨酸羟化酶（TH）水平；通过免疫荧光或 Western blot 检测皮质、纹状体和黑质中磷酸化 α -syn 表达情况。结果：补体 C3 在 α -syn PFF 模型小鼠血浆中增高。上调补体 C3 可加重 α -syn PFF 诱导的小鼠运动障碍，降低纹状体、黑质 TH 水平和增加皮质、纹状体和黑质磷酸化 α -syn 表达。下调补体 C3 可降低 α -syn PFF 诱导的小鼠皮质、纹状体和黑质磷酸化 α -syn 表达。结论：补体 C3 在 α -syn PFF 小鼠血浆中增高，上调补体 C3 可加重 α -syn PFF 诱导的小鼠运动障碍、多巴胺能神经元丢失和磷酸化 α -syn 表达和聚集，而下调补体 C3 对 PD 小鼠模型有保护作用。补体 C3 可能是 PD 治疗的潜在靶点。

关键词：帕金森病，补体，C3，炎症

小脑梗死对多发腔隙性脑梗死患者觉醒功能的影响及其机制

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背景：小脑参与睡眠-觉醒周期的调控，P3a 成分反应觉醒功能，觉醒功能障碍常影响日间功能，研究小脑对觉醒功能的影响及其脑网络机制具有重要临床意义。

目的：探讨小脑梗死对多发腔隙性脑梗死 (multiple lacunar infarction, MLI) 患者觉醒功能影响及其机制。

方法：收集 2016 年 1 月-2022 年 5 月在开滦总医院神经内科住院符合入组标准的 210 例 MLI 患者，病例组 62 例，对照组 148 例。应用 Curry7 软件分析小脑梗死对 MLI 患者 P3a 成分波幅、潜伏期和脑区激活强度影响。

结果：在 FZ、CZ、PZ 导联上，与对照组相比，病例组 P3a 成分峰潜伏期均有延长 ($P < 0.05$)，病例组 P3a 成分峰波幅差异均无统计学意义 ($P > 0.05$)。相比于对照组，病例组在右侧钩回-Brodmann 20 区、右侧颞上回、右侧颞中回、右侧胼胝体下回、右侧小脑山顶脑区的激活强度明显减弱，病例组在右侧楔前叶、左侧楔前叶、右侧楔前叶-Brodmann 7 区、右侧扣带回-Brodmann 31 区、右侧扣带回、左侧颞中回-Brodmann 21 区、左侧颞中回、左侧小脑山顶、右侧胼胝体、左侧缘上回 - Brodmann 40 区的激活强度明显增强。

意义：小脑梗死导致 MLI 患者觉醒时间减少，可能是通过减弱右侧钩回-Brodmann 20 区等脑区的激活强度，增强右侧楔前叶等脑区的激活强度影响 MLI 患者的睡眠-觉醒周期。

关键词：小脑梗死;P3a;觉醒功能;源重建

SMND-309 可显著缓解脂质代谢紊乱，改善间歇性缺氧小鼠的认知缺陷

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慢性间歇性缺氧(CIH)是阻塞性睡眠呼吸暂停综合征(OSAS)的主要特征。CIH可引起严重的神经认知功能障碍。慢性间歇性缺氧(CIH)引起认知缺陷的机制尚不清楚。本研究发现，CIH处理可诱导C57BL/6小鼠海马神经细胞脂滴积累，造成严重的神经损伤，最终导致行为障碍。丹参的一种有效成分SMND-309显著减轻了这些损伤，改善了CIH小鼠的认知缺陷。

关键词：慢性间歇性缺氧, 阻塞性睡眠呼吸暂停综合征, 认知缺陷, 脂滴

Microbial reconstitution reverses antibody-induced sleep disturbance and metabolite profile dysbiosis in mice

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Emerging evidence underscores the pivotal role of the gut microbiota in maintaining brain function, with alterations linked to behavioral changes such as sleep, social interactions, and cognition. However, the precise metabolic and neural mechanisms by which the gut microbiota influences sleep behavior remain elusive. In this study, we demonstrate that antibiotic-induced gut microbiota dysbiosis results in significant alterations in neural activity across multiple brain regions, pronounced changes in the transcriptome of the paraventricular thalamus (PVT), and marked shifts in the serum metabolome. Notably, fecal microbiota transplantation (FMT) restored the gut microbiota composition, normalized brain activity, and ameliorated sleep disturbances. Additionally, our data reveal that peripheral metabolic changes mediate the effects of gut microbiota dysbiosis on sleep behavior, with increased serum DRG levels correlating with altered sleep patterns. Collectively, these findings establish that gut microbiota-driven metabolic alterations can modulate neuronal activity and sleep behavior, highlighting a potential microbiota-targeted therapeutic avenue for sleep disorders.

Keyword: Gut microbiota, sleep, PVT, serum metabolites, fecal microbiota transplantation

Bioluminescence-optogenetics-mediated gene therapy in a sleep-disordered breathing mouse model

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Obstructive sleep apnea (OSA) incurs a huge individual, societal, and economic burden. Specific and selective targeting of hypoglossal motor neurons could be an effective means to treat OSA. Bioluminescent-optogenetics (BL-OG) is a novel genetic regulatory approach in which luminopsins, fusion proteins of light-generating luciferase and light-sensing ion channels, increase neuronal excitability when exposed to a suitable substrate. Here we develop and validate the feasibility of BL-OG for sleep-disordered breathing (SDB). Upon confirming that diet-induced obese mice represent an excellent SDB model, we employed a method of targeting the hypoglossal nucleus (12N) by peripherally injecting retrogradely transported rAAV2/Retro. With AAV transduction, the eLM03 protein is expressed in hypoglossal motor neurons (HMN); administration of CTZ results in production of bioluminescence that in turn activates the tethered channelrhodopsin, leading to an increase in the firing of HMN and a 2.7 ± 0.8 -fold increase in phasic activity of the genioglossus muscle, a 7.6 ± 1.8 -fold increase in tonic activity, and improvements in hypoventilation and apnea index without impacting sleep structure. This is therefore the first study to leverage the rAAV2/Retro vector to execute the BL-OG approach in SDB, which amplified genioglossus muscle discharge activity and increased airflow in mice after activation. This study marks the pioneering utilization of BL-OG in SDB research.

Keyword: Bioluminescence-optogenetics; Obstructive sleep apnea; Adeno-associated virus; Genioglossus; Coelenterazine

The Medial Prefrontal Cortex Modulates Activity in the Nucleus Accumbens and Lateral Habenula to Maintain Wakefulness During Task Performance in Mice

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Beyond the natural rhythm of working at sunrise and resting at sunset, individuals can sustain wakefulness and counteract sleep when working overtime or pursuing interests. This specific context of arousal regulation may be top-down mediated by the medial prefrontal cortex (mPFC), but the neural circuitry mechanisms remain unclear. In a lever-pressing task of reinforcement learning, we found that mice maintain wakefulness during the task state, independent of immediate rewards. Fiber photometry recording showed that increased activity of mPFC, nucleus accumbens (NAc), and lateral habenula (LHb) neurons during the task. Further optogenetic manipulations revealed that mPFC neuron terminals projecting to the NAc or LHb were critical for the transition from non-rapid eye movement (NREM) sleep to wakefulness in mice. Chemogenetic interventions showed that the mPFC-NAcD1R and mPFC-LHbVglut2 pathways are crucial for arousal regulation during the task state. Overall, our study revealed top-down arousal regulation circuits based on reward motivation.

Keyword: lateral habenula, medial prefrontal cortex, motivation of reward, nucleus accumbens, task state, wakefulness

Nr1d1 Inhibition Mitigates Intermittent Hypoxia-Induced Pulmonary Hypertension via Dusp1-Mediated Erk1/2 Deactivation and Mitochondrial Fission Attenuation

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Abstract

Intermittent hypoxia (IH) precipitates pulmonary vasoconstriction, culminating in the onset of pulmonary hypertension (PH) among individuals afflicted with sleep apnea. While Nuclear receptor subfamily 1 group D member 1 (Nr1d1) is progressively recognized as pivotal regulator of cellular physiology, the role in the pathogenesis of IH-induced PH remains largely uncharted. The expression of Nr1d1 was examined in IH-induced rodent pulmonary hypertension and in IH-treated pulmonary artery smooth muscle cells (PASMCs). To elucidate the contribution of Nr1d1 to the development of IH-induced pulmonary hypertension, we employed siRNA to modulate Nr1d1 expression in vitro and employed serotype 1 adeno-associated virus (AAV1) in vivo. Nr1d1 protein levels were elevated in IH-induced rodents PH lung tissues and IH-treated PASMCs. Knocking down Nr1d1 expression by AAV1 effectively inhibited PH progression in chronic intermittent hypoxia induced PH models. Mechanistic investigations identified dual specificity phosphatase 1 (Dusp1), a negative regulator of MAPK signaling pathway, as a direct target that Nr1d1 trans-repressed, mediating Nr1d1's regulatory influence on extracellular regulating kinase 1/2 and dynamin-related protein 1 (Erk1/2/Drp1) signaling. Nr1d1 deficiency ameliorates mitochondrial dysfunction and fission by restoring Dusp1 dysregulation and Drp1 phosphorylation. Activation of Erk1/2 with PMA reversed the Dusp1-mediated regulation of Drp1 phosphorylation, indicating the involvement of the Erk1/2 pathway in Drp1 phosphorylation controlled by Dusp1. Meanwhile, intermittent hypoxia induced more severe pulmonary hypertension in Dusp1 knockout mice compared with wild-type mice. Our data unveil a novel role for nuclear receptor Nr1d1 in IH-induced PH pathogenesis and an undisclosed Nr1d1-Dusp1 axis in PASMCs mitochondrial fission regulation.

Keyword: Intermittent hypoxia; Pulmonary hypertension; Nuclear receptor subfamily 1 group D member 1 (Nr1d1); Mitochondrial fission

慢性间歇性低氧致单核细胞炎症及训练免疫

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目的：探讨慢性间歇低氧（CIH）下单核细胞炎症改变及训练免疫发生。

方法：（1）常氧或 CIH 处理雄性 C57BL/6J 小鼠（6.5% FiO₂ / 21% FiO₂, 30 cycles/h, 8 h/d, 8w），ELISA 检测外周血炎症因子；流式检测外周血免疫细胞改变；分选脾脏单核细胞，检测炎症改变；（2）C57BL/6J 小鼠分常氧组或 CIH 组处理 8 周后，置于常氧环境 4w，PBS 或 LPS 刺激检测外周血及单核细胞炎症改变。

结果：与常氧组相比，CIH 处理 8 周小鼠外周血 IL-6、ICAM-1 上调；Ly6Chigh 单核细胞比例上调，CIH 促进外周血和脾脏的单核细胞炎性活化，表现为 CD86 表达上调；分选脾脏单核细胞，CIH 组 TNF α 、CCR2、CCR5、CXCR1 表达上调。训练免疫模型中，常氧组或 CIH 组处理后置于常氧环境 4w，LPS 尾静脉注射后分选单核细胞，既往 CIH 组单核细胞炎症增强；PBS 尾静脉注射分选单核细胞体外予以刺激，CIH 组 IL6、TNF α 分泌增加。

结论：CIH 促进单核细胞炎症，诱导单核细胞训练免疫发生，进一步导致长期炎性损伤。

关键词：慢性间歇低氧，单核细胞，炎症，训练免疫

含 M20 结构域肽酶 1 抑制帕金森病病理的机制研究

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帕金森病 (Parkinson's disease, PD) 两大病理学特征为黑质多巴胺 (Dopamine, DA) 能神经元进行性丢失和 α 突触核蛋白 (α -synuclein, α -Syn) 聚集。尽管 DA 代谢产物可直接调节 α -Syn 病理, 而后者则可促进神经元死亡, 提示二者并非独立存在, 而是互为因果; 调节两大病理的共性机制却知之甚少。含 M20 结构域肽酶 1 基因 (peptidase M20 domain containing 1, PM20D1) 单核苷酸多样性与 PD 风险相关, 但其编码蛋白是否及如何调节 PD 两大病理尚未阐明。本研究通过蛋白纯化、液相色谱-质谱联用、蛋白免疫印记、蛋白质互作等方法, 证明 PM20D1 可催化 DA 转化为神经保护性代谢产物花生四烯酰 DA (N-Arachidonoyl Dopamine, NADA)。在体内外实验中, 过表达 PM20D1 和 NADA 处理皆可抑制 α -Syn 病理。NADA 除因其抗氧化性可保护神经元外, 还通过直接抑制 α -Syn 聚集、与 α -Syn 聚集体竞争结合二者共同受体抑制 α -Syn 病理。这些结果表明, NADA 是保护性 DA 代谢产物, 同时作用于 PD 两大病理。增强 PM20D1-NADA 通路作用、抑制 DA 向神经毒性产物转化是 PD 治疗的潜在新策略。

关键词: 帕金森病, α 突触核蛋白聚集和磷酸化, 含 M20 结构域肽酶 1, 花生四烯酰多巴胺

两条平行的黑质纹状体亚环路介导黑质致密部多巴胺能神经元的促觉醒作用

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目的: 日间过度嗜睡 (EDS) 是帕金森病 (PD) 中最常见的睡眠障碍之一, 但其病因及发病机制尚不明确。前期研究表明, PD 核心病变核团黑质致密部 (SNc) 参与觉醒-睡眠调控, 但其具体作用存在争议。本课题系统研究了 SNc 多巴胺能 (DA) 神经元在觉醒-睡眠调控中的作用, 并深入探究其神经环路机制, 旨在为 PD EDS 的发病机制提供新线索。

方法: 应用光纤记录和脑肌电记录方法观察 SNc DA 神经元在睡眠-觉醒周期的活动模式。采用光遗传和化学遗传技术操控 SNc DA 能神经元, 在行为学水平研究其在觉醒-睡眠调控中的作用。利用神经环路示踪和操控手段, 通过形态示踪和功能研究探索 SNc DA 神经元调控觉醒的神经环路机制。

结果: SNc DA 神经元钙活动在觉醒期和 REM 睡眠期均较为活跃。化学遗传学抑制 SNc DA 神经元减少觉醒, 增加睡眠。光遗传学结果表明, 激活 SNc DA 神经元促进睡眠向觉醒的转换, 而抑制 SNc DA 神经元降低觉醒概率。此外, 神经示踪结果显示, 背内侧纹状体 (DMS) 和背外侧纹状体 (DLS) 接受的 SNc DA 输入呈内-外分布。光纤钙信号记录发现 DMS-投射或 DLS-投射的 SNc 神经元均为觉醒期与 REM 期活跃。化学遗传学分别抑制 DMS-投射或 DLS-投射 SNc 神经元后, 小鼠觉醒量显著下降。

结论: SNc DA 神经元具有促觉醒功能, 且其觉醒调控作用由内侧 SNc→DMS 及外侧 SNc→DLS 两条通路共同介导。

关键词: 帕金森病, 日间过度嗜睡, 黑质致密部, 背内侧纹状体, 背外侧纹状体, 多巴胺能神经元

A potentiation of REM sleep-active neurons in the lateral habenula may be responsible for the sleep disturbance in depression

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Psychiatric disorders with dysfunction of the lateral habenula (LHb) show sleep disturbance, especially a disinhibition of rapid eye movement (REM) sleep in major depression. However, the role of LHb in physiological sleep control and how LHb contributes to sleep disturbance in major depression remain elusive. Here, we found that functional manipulations of LHb glutamatergic neurons bidirectionally modulated both non-REM (NREM) sleep and REM sleep. Activity recording revealed heterogeneous activity patterns of LHb neurons across sleep/wakefulness cycles, but LHb neurons were preferentially active during REM sleep. Using an activity-dependent tagging method, we selectively labeled a population of REM sleep-active LHb neurons and demonstrated that these neurons specifically promoted REM sleep. Neural circuit studies showed that LHb neurons regulated REM sleep via projections to the ventral tegmental area but not to the rostromedial tegmental nucleus. Furthermore, we found that the increased REM sleep in a depression mouse model was associated with a potentiation of REM sleep-active LHb neurons, including an increased proportion, elevated spike firing, and altered activity mode. Importantly, inhibition of REM sleep-active LHb neurons not only attenuated the increased REM sleep but also alleviated depressive-like behaviors in a depression mouse model. Thus, our results demonstrated that REM sleep-active LHb neurons selectively promoted REM sleep, and a potentiation of these neurons contributed to depression-associated sleep disturbance.

Keyword: lateral habenula, REM sleep, depression

不同酸枣仁提取物改善睡眠剥夺大鼠失眠伴抑郁样行为的比较研究

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摘要：目的：基于血清代谢组学和肠道菌群技术，探讨酸枣仁水提物、石油醚提取物改善睡眠剥夺模型大鼠失眠伴抑郁样行为的作用机制。

方法与结果：采用改良多平台水环境睡眠剥夺法成功建立睡眠剥夺模型，大鼠出现失眠伴抑郁样行为。酸枣仁石油醚提取物能显著升高大鼠糖水偏好指数（ $P<0.05$ ）、降低大鼠强迫游泳静止不动时间（ $P<0.01$ ）；血清代谢组学结果显示，共鉴定出 25 种与睡眠剥夺导致的失眠伴抑郁样行为相关的差异代谢物；与模型组相比，酸枣仁水提物组与酸枣仁油组分别鉴定 15 和 17 种差异代谢物。苯丙氨酸代谢、色氨酸代谢等 5 条是酸枣仁水提物、石油醚提取物共有的调控途径；酸枣仁石油醚提取物可单独调控亚油酸代谢通路；通过 16S rRNA 基因测序及免疫荧光实验发现，酸枣仁水提物和石油醚提取物可改变睡眠剥夺大鼠的肠道菌群结构及丰度，也可显著增加结肠中 Occludin、Claudin 1、ZO-1 屏障蛋白的表达（ $P<0.001$ ）；GC-MS 测定大鼠粪便中短链脂肪酸含量结果显示，酸枣仁石油醚提取物可显著增加大鼠粪便中乙酸、丙酸、丁酸、异丁酸等的含量（ $P<0.01$ ）。

结论：酸枣仁水提物、石油醚提取物均可回调血清中差异代谢物，调控氨基酸代谢、能量代谢相关通路，改变肠道菌群结构并改善肠道黏膜通透性，从而发挥改善抑郁样行为的作用；酸枣仁石油醚提取物在改善抑郁样行为和回调大鼠粪便中短链脂肪酸含量方面发挥的效果优于酸枣仁水提物。

关键词：酸枣仁；水提物；石油醚提取物；睡眠剥夺；抑郁样行为；血清代谢组学；肠道菌群。

Hippocampal reactivation for temporal association memory in mice

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Aims The hippocampus has been demonstrated to support the acquisition of temporal association among time-separated events. Nevertheless, how the temporal association memory is off-line consolidated remains not fully understood.

Methods Here, we investigated the features of temporal association memory off-line consolidation using trace eyeblink conditioning (tEBC) paradigm for consecutive 5 days training in C57/BJ mice. This paradigm consists of presentation of a neutral conditioned stimulus (CS; a light flash), which was followed by the presentation of a reinforcing unconditioned stimulus (US; a corneal airpuff) with a 250-ms time interval. Multiple unit recordings were performed to consecutively monitor the firing activities of hippocampal pyramidal cells (PYRs) pre-, during and post-tEBC training. Closed-loop optogenetics was used to interrupt the activity feature of hippocampal PYRs, such as reactivation, during post-training sleep.

Results We found that hippocampal PYR firing activity during the CS-US interval period was required for the acquisition of tEBC. The acquisition of tEBC showed apparent separated two-stage specificity: the initial-learning stage (ILS, days 1-3) with few CRs and the well-learning stage (WLS, days 4-5) with asymptotic CR level. The hippocampal PYRs exhibited CS-evoked firing activity in the CS-US interval period. In particular, the CS-evoked PYR firing activity was learning-related with greater response at the ILS, instead of the WLS. Moreover, the CS-evoked PYR firing activity coincided with the generation of conditioned eyeblink responses (CRs) at the ILS, instead of the WLS. Following tEBC training, more frequently occurrence of hippocampal sharp wave ripples (SWRs) occurred during post-training sleep at the ILS. The CS-evoked firing PYRs were modulated by post-training hippocampal SWRs. The CS-evoked firing PYRs showed greater reactivation strength during post-training sleep. However, reactivation of the CS-evoked firing PYRs diminishes across distinct learning stages. Closed-loop optogenetic inhibition disrupted the reactivation of CS-evoked firing PYRs and impaired the off-line consolidation of tEBC.

Conclusions Our findings highlight the dynamic properties of hippocampal PYR reactivation during post-training sleep supporting the consolidation of temporal association and memory.

Keyword: Trace conditioning, Memory consolidation, Reactivation, Sleep, Sharp wave ripple, Hippocampus

Loss of Ribosomal RNA Methyltransferase Nsun5 Leads to Hypomyelination and Reduced Sleep Amount in Mice

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Sleep is regulated by intricate homeostatic and circadian systems and is influenced by genetic, environmental, and lifestyle factors. However, the roles of the epitranscriptome in sleep-wake regulation remain to be clarified. Here, we found that mice lacking the rRNA methyltransferase Nsun5 exhibited prolonged wakefulness. The absence of Nsun5 decreased 28S rRNA m5C levels, impaired the translational efficiency of nascent proteins associated with myelination, microtubule-based movement, and ribosome binding. This led to a reduced number of oligodendrocytes and hypomyelination, resulting in increased excitability, particularly within the cortex. By restoring myelination properties with clemastine or blocking the abnormally exposed voltage-gated potassium channels, we were able to rescue the sleep phenotype, suggesting reduced sleep was associated with hypomyelination. These findings highlighted the significant role of epigenetic modifications in sleep regulation and offer broad mechanistic and therapeutic implications for brain disorders involving both myelin and sleep disturbances.

Keyword: myelin sheath, Nsun5, RNA methylation modification, sleep

Control of anesthetic state transitions by centromedial thalamic circuits in mice

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The neural mechanisms underlying anesthetic-induced unconsciousness and its recovery remain unclear. Electrophysiological and pharmacological studies suggest that the centromedial thalamic nucleus (CMT) may act as a key hub in anesthetic state transitions to the loss of consciousness (LOC) as well as to the recovery of consciousness (ROC). Here, we investigated the specific roles of neurons in the CMT and their downstream pathways in the context of anesthetic state transitions in Vglut2-Cre mice. Electroencephalogram/electromyography recordings and righting reflex tests were used to determine LOC and ROC. We found that population activities of CMT neurons decreased drastically at the onset of LOC, and started to increase before ROC. Chemogenetic inhibition of CMT neurons increased sevoflurane sensitivity, expedited onset and prolonged return of righting reflex, whereas chemogenetic activation led to opposite effects. In addition, during the steady unconsciousness state maintained with continuous sevoflurane exposure, brief optogenetic stimulations of CMT neurons induced ROC at cortical and behavioral levels with a latency of less than 2 s. Moreover, photoactivations of axonal terminals in the nucleus accumbens restored both cortical activity and arousal behaviors. In contrast, photoactivations of axonal terminals in the insular cortex and ventral tegmental area restored either cortical activity or arousal behaviors respectively. Collectively, our findings illuminate a pivotal role for CMT neuronal circuits in orchestrating of anesthetic state transitions at the cortical and behavioral levels.

Keyword: centromedial thalamic nucleus, sevoflurane, induction, emergence, optogenetics

Calretinin-Expressing Neurons in the Parasubthalamic Nucleus Modulate Anesthetic-Induced Unconsciousness and Recovery

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The processes by which anesthetics induce unconsciousness and how consciousness is subsequently restored remain incompletely understood. The parasubthalamic nucleus (PSTN), which is implicated in the induction and maintenance of the awake state—associated with exploration, motivation, feeding and hunting behaviors—contains a majority of neurons expressing calretinin (CR). In this study, we investigated the specific roles of CR-expressing neurons in the PSTN during anesthetic state transitions in CR-Cre mice. Using fiber photometry recordings, we observed a marked decrease in PSTNCR neuronal activity at the onset of LOC, with activity increasing prior to the return of consciousness (ROC). Chemogenetic inhibition of PSTNCR neurons heightened sevoflurane sensitivity, accelerating LOC onset and prolonging the return of righting reflex. Conversely, chemogenetic activation of these neurons had the opposite effects. Furthermore, during sustained unconsciousness under continuous sevoflurane exposure, brief optogenetic stimulation of PSTNCR neurons elicited cortical arousal as evidenced by electroencephalogram recordings, resulting in delayed induction and expedited emergence. Our findings suggest that activation of PSTNCR neurons facilitates the transition from general anesthesia to an arousal state, offering a potential strategy to reduce recovery time following sevoflurane anesthesia.

Keyword: parasubthalamic nucleus, sevoflurane, induction, emergence, consciousness

The function and mechanism study of lncRNA LOC105369165 and its gene polymorphism on sleep fragmentation in OSA patients

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Obstructive sleep apnea (OSA) causes sleep fragmentation and abnormal sleep-wake structure, while its underlying mechanism is still unknown. Our previous large-scale genome-wide association study (GWAS) found for the first time that the single nucleotide polymorphism (SNP) site rs75414369 (G>A) was significantly correlated with the increased duration of wakefulness in OSA patients, which is located in the first intron of gene lncRNA *LOC105369165* whose function is unknown. How lncRNA *LOC105369165* regulates sleep and wake and how rs75414369 affects the sleep-wake cycle in OSA patients via regulation of lncRNA *LOC105369165* are still unknown.

In this study, we found that lncRNA *LOC105369165* is highly expressed in the human central nervous system and G>A base substitution of rs75414369 has significantly decreased the expression level of lncRNA *LOC105369165* in SH-SY5Y cell line probably via epigenetic inhibition. Further, through delivering the lncRNA *LOC105369165* to the nucleus accumbens (NAc) of mice brain by combining stereotaxic injection and adeno-associated virus (AAV) transfection, we discovered that ectopic overexpression of lncRNA *LOC105369165* observably reduced the transition bouts of sleep-wake and prolonged the duration of each sleep and wake bout in mice. Moreover, we identified one conserved GPCR protein as the downstream target of lncRNA *LOC105369165* employing integration of multi-omics approaches. Finally, utilizing conditional neuron-specific knockout (cKO) mice, patch-clamp and RNA Scope, we preliminarily revealed that the target GPCR protein prolonged the interval time of sleep-wake transition by increasing hyperpolarization of D1R/D2R-GABAergic neurons in NAc.

In conclusion, our study initially uncovered that lncRNA *LOC105369165* could ameliorate sleep fragmentation in mice partially through hyperpolarizing of D1R/D2R-GABAergic neurons in NAc by decreasing expression of its target GPCR protein, and that SNP rs75414369 might affect the sleep quality of OSA patients by inhibition of lncRNA *LOC105369165* expression. These findings enrich the physiological sleep regulation theory and provide novel insights for the clinical treatment of sleep fragmentation in OSA patients.

Keyword: Obstructive sleep apnea (OSA), sleep fragmentation, lncRNA, SNP, NAc

Impact of sleep deprivation on aperiodic activity: a resting-state EEG study

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Sleep deprivation (SD) has been shown to have a negative impact on alertness, as evidenced by behavioral and electroencephalographic studies. Nevertheless, conventional fixed-bandwidth spectral analysis confused the aperiodic and periodic components, and ignored some important periodic parameters (i.e., center frequency, bandwidth). Here, based on a large open access dataset of SD, we employed a standardized process for multiple electrode analysis and group inference. We found that, compared to SC, the aperiodic offset shifted overall after SD, primarily in the occipital region. And this shift was associated with a reduction in subjective alertness. For periodic component, we did not find any power change in alpha rhythm, but there is an increase in bandwidth of alpha. And the increased regions distributed in the occipital and temporal lobes. These findings highlight the potential significance and value of aperiodic parameters in behavioral and electrophysiological researches.

Keyword: sleep deprivation, electroencephalography, aperiodic activity, alpha rhythm, sleepiness

睡眠障碍相关的基因网络和药物靶标分析

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背景：睡眠是一种高度遗传的生理现象，受到一系列基因的调控。虽然全球范围内的遗传学研究已鉴定出许多与睡眠相关的风险基因，但这些基因如何发挥作用，以及它们是否参与核心生物学过程和信号途径，仍然不明。本研究旨在通过多维组学数据的分析，揭示睡眠相关基因的核心网络，深化对睡眠障碍及其分子调控机制的理解，并结合药物相互作用组学，探讨潜在的靶向药物。

方法：（1）从欧洲生物信息学研究所 GWAS 数据中心获取与失眠、OSA、不宁腿症和日间嗜睡等睡眠障碍显著相关的风险位点，识别与睡眠相关的调控基因，并构建基因与睡眠表型之间的关系网络。（2）利用 String 和 GeneMANIA 等工具构建睡眠相关基因的互作网络，分析这些基因的功能关联；通过全脑基因表达数据集和单细胞基因表达数据集，研究相关基因的表达定位特征。

结果：（1）整合多个遗传数据集后，共鉴定出 522 个与不同睡眠障碍相关的核心基因。

（2）String 和 GeneMANIA 网络分析显示，这些基因在蛋白质层面形成了紧密的互作网络，并广泛参与包括神经突触传递在内的生物学过程和信号途径。（3）表达特征分析表明，睡眠相关基因在中脑和下丘脑的核团中高度富集，并且在细胞层面表现出协同表达。（4）这些基因中存在大量潜在的药物结合靶点，多数集中在与钙信号途径相关的基因上。

我们的研究揭示了睡眠相关基因的网络和生物学功能，为理解睡眠障碍分子遗传机制及开发靶向药物提供了重要线索。

关键词：睡眠障碍，风险基因，基因网络，单细胞转录组分析，药物靶标

阿戈美拉汀调节黄嘌呤氧化酶影响帕金森病模型中的多巴胺能神经元保护作用

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目的：多巴胺能（DA）神经元的丢失是帕金森病（PD）的典型病理特征，与神经炎症和氧化应激密切相关。Agomelatine（Ago），作为一种非选择性褪黑素受体激动剂和 5-HT_{2c} 血清素受体拮抗剂，在多种神经退行性疾病中显示具有抗炎和抗氧化作用。本研究旨在探讨 Ago 在 PD 中对 DA 能神经元的潜在保护作用及其底层机制。

方法：采用 MPP⁺诱导的 SH-SY5Y 细胞 PD 模型，评估 Ago 的神经保护作用。细胞经 Ago 预处理后，暴露于 MPP⁺，通过测定活性氧（ROS）含量、超氧化物歧化酶（SOD）活性、丙二醛（MDA）含量及流式细胞仪分析凋亡率，评估其抗氧化和抗凋亡效果。进一步，通过代谢组学分析与 KEGG 富集分析，探讨 Ago 对嘌呤代谢通路的影响，特别是对黄嘌呤氧化酶（XO）的调控。通过与 XO 抑制剂非布司他（FEB）的联合应用验证 Ago 的作用机制。

结果：Ago 显著提高了 SH-SY5Y 细胞的存活率，减少了氧化应激反应，并降低了细胞凋亡率。代谢组学分析显示，Ago 主要影响了嘌呤代谢通路，其中黄嘌呤氧化酶 XO 的表达上调。FEB 的应用减弱了 Ago 的神经保护效果，表明 Ago 通过调节 XO 表达发挥作用。

结论：Agomelatine 通过调节嘌呤代谢通路中的 XO，减轻 PD 氧化应激及凋亡，进而发挥神经保护作用，为 PD 治疗提供了新的分子靶点和作用机制。

关键词：帕金森病、阿戈美拉汀、黄嘌呤氧化酶、氧化应激、凋亡、代谢组学分析

Integrative multi-omic analysis revealed the associations of SIK3 signaling pathway genes with human sleep traits

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Objective: The SIK3 signaling pathway plays a vital role in the regulation of sleep in mice; however, its role in human sleep regulation has not been determined. This study aimed to explore whether genetic variations in SIK3 pathway genes, namely, SIK3, STK11, and HDAC4/5, are associated with human sleep traits using integrative multicomics analysis.

Method: Analyses of GWAS datasets from the UKB and the Shanghai Sleep Health Study cohort were performed to investigate the associations of SIK3, STK11, and HDAC4/5 with different human sleep traits. Whole-brain gene expression data from the Brain Atlas and single-nucleus transcriptomic profiling datasets of the human substantia nigra, striatum, and thalamus organoids were utilized to analyze the expression patterns of the indicated genes and their correlations.

Results: Our investigation revealed robust associations of genetic variants in SIK3, STK11 and HDAC4/5 with insomnia, sleep duration, and chronotype.

Concurrently, our analysis revealed no substantial correlation between the four genes and obstructive sleep apnea (OSA). Nevertheless, nuanced correlations emerged between the SIK3 variant and N3 sleep in OSA patients and between variants of STK11 and HDAC4 and REM sleep.

Moreover, these four genes demonstrated widespread expression in critical sleepregulating deep brain structures. Intriguingly, there was a noteworthy correlation between the expression of SIK3 and that of HDAC4/5. Delving into single-cell transcriptomics datasets revealed that SIK3 is prominently expressed in oligodendrocytes within the substantia nigra and striatum, as well as in GABAergic neurons of the striatum. This expression pattern is intricately linked with an array of neuroregulatory functions in these distinct cell types, underscoring the pivotal role of the gene in sleep regulatory mechanisms.

Conclusion: Our investigation revealed a significant association between genes in the SIK3 signaling pathway and various human sleep phenotypes. These findings illuminate the potential involvement of the SIK3 signaling pathway in the modulation of sleep regulation in humans.

Keyword: GWAS, SIK3, Sleep regulation, OSA, NREM

静坐少动大学生睡眠质量与 Epworth 嗜睡量表及心境状态量表的相关性研究

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目的：本文探讨静坐少动大学生睡眠质量与 Epworth 嗜睡量表及心境状态量表的相关性。
方法：本研究选取北京市海淀区 100 名 18-28 岁睡眠质量不佳的静坐少动在校本科生及研究生为研究对象（年龄 22.16 ± 2.09 ）。研究受试者的睡眠质量、嗜睡程度和心境状态等指标及其关系，测试内容有个人问卷、匹兹堡睡眠质量指数（PSQI）、Epworth 嗜睡量表（ESS）、心境状态量表（POMS）。所有数据均以平均数 \pm 标准差（ $M \pm SD$ ）表示，且所有数据均进行正态性检验。应用 Person 相关系数及 Spearman 相关系数分析各因子间的相关关系（相关系数 r ），以 $p < 0.05$ 为差异有统计学意义。结果：1. 睡眠时间与嗜睡程度的相关性：PSQI 的睡眠时间分数与日间嗜睡程度呈负相关（ $r = -0.224$, $p = 0.026$ ）。2. 嗜睡程度与心境状态的相关性：日间嗜睡程度与 POMS 中的慌乱分量呈正相关（ $r = 0.215$, $p = 0.032$ ）。3. 年龄与嗜睡程度及睡眠时间的关系：年龄与日间嗜睡程度呈正相关（ $r = 0.283$, $p = 0.004$ ）；年龄与 PSQI 中的睡眠时间分数呈负相关（ $r = -0.287$, $p = 0.004$ ）。结论：在有睡眠障碍的静坐少动的大学生人群中夜晚睡眠时间越长日间的嗜睡程度越高；高日间嗜睡程度可能会导致慌乱的心境状态；高年龄段大学生人群可能会存在更高程度的日间嗜睡状态及更长时间的夜间睡眠时长。

关键词：静坐少动, 大学生, 睡眠障碍, 嗜睡, 心境状态

Systematic Bibliometric Analysis and Visualization of Research Trends and Hotspots in Obstructive Sleep Apnea Neuroimaging

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Background: Patients with obstructive sleep apnea (OSA) frequently experience neurological symptoms, which has sparked extensive research within sleep medicine and clinical neurology. Specialists in neurology and radiology investigate methods for detecting unique neural characteristics associated with OSA. Neuroimaging studies on OSA focus on analyzing the brain's structural, functional connectivity, and neurometabolic characteristics. However, research faces challenges due to limited medical resources and the heterogeneous nature of OSA, complicating effective neuroimaging.

Methods: This study retrieved publications from the Web of Science Core Collection database on neuroimaging from January 1, 1993, to November 14, 2023. Bibliometric analysis was performed using Bibliometric.com, CiteSpace.6.1.R6, VOS viewer, and R4.3.2.

Results: A total of 374 papers were published across 35 countries, comprising 333 articles and 41 reviews. The United States emerged as the leading contributor, with the University of California system producing the highest number of publications, particularly in the journal *Sleep*. The study identified 200 authors, with Macey, PM being the most prolific. Recent trends highlighted burst keywords such as regional homogeneity, integrity, functional connectivity, and brain activity. Keyword cluster analysis over time revealed that "magnetic resonance spectroscopy" had the longest duration of relevance.

Conclusions: The focus on neuroimaging in OSA research has been increasing. This bibliometric analysis aims to help researchers identify potential collaborators, key institutions, and major themes in the field. Additionally, investigating neuroimaging findings related to the psychological and behavioral aspects of OSA may offer new perspectives for diagnosis and intervention, encouraging further exploration.

Keyword: obstructive sleep apnea, neuroimaging, bibliometric analysis, visualization, Web of Science

Prevalence of daytime sleepiness and fatigue and their related influencing factors among the Chinese population during the corona virus disease 2019 pandemic

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Abstract

Objective: This study aimed to investigate the prevalence of daytime sleepiness and fatigue and their related influencing factors among the Chinese population during the COVID-19 pandemic in 2022.

Methods: This cross-sectional study targeted adults aged 18 years and older. Online surveys were used to collect demographic data, and the Epworth Sleepiness Scale (ESS) and Fatigue Scale (FS-14) were used to assess daytime sleepiness and fatigue, respectively.

Results: Among the 2557 adults included in the study, the prevalence of daytime sleepiness (ESS > 10) during the COVID-19 pandemic in China was 27.3%, and the prevalence of fatigue (FS-14 > 3) was 76%. Logistic regression analysis showed that "unmarried status," "mental illness," and "daily consumption of caffeinated beverages" were risk factors for daytime sleepiness; "female gender," "graduate or higher education," "underlying diseases," and "mental illness" were risk factors for fatigue, while regular physical activity was a protective factor for fatigue.

Conclusions: This study suggests that the prevalence of daytime sleepiness and fatigue significantly increased during the COVID-19 pandemic and were significantly associated with multiple factors. This is of great significance for understanding post-COVID-19 syndrome and providing therapeutic suggestions.

Keyword: Keywords: daytime sleepiness, fatigue, pandemic, COVID-19, Epworth Sleepiness Scale, Fatigue Assessment Scale.

痛性不安腿综合征与阿片类药物

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不安腿综合征（RLS）是临床上一种常见的睡眠障碍疾病，其主要临床表现为卧床或安静休息后腿部的不适感，这种不适感带来腿部活动的冲动，活动腿部后这种不适感明显缓解。夜间或长时间休息后症状加重。RLS 患者对这种不适感有很多不同的描述，包括麻木、蚁爬感、酸胀感、空感、痒感等。其中，20-60%患者会主诉疼痛。研究表明，痛性 RLS 患者的临床症状较非痛性 RLS 患者严重，夜间睡眠质量更差。阿片受体激动剂能够缓解 RLS 的症状，并改善 RLS 患者的睡眠质量。阿片类药物在 RLS 中的作用机制仍然不是很清楚。研究表明，内源性阿片系统的功能减退可能与 RLS 的发病机制有关。阿片类药物可能通过激活中脑多巴胺神经元以及增加伏隔核中多巴胺的释放起到治疗 RLS 的作用。自 1993 年羟考酮在 RLS 患者中进行第一次小的对照研究，阿片类药物已被认为是一种有效的治疗重度 RLS 患者的药物。最近的一项研究证实了羟考酮/纳洛酮缓释剂治疗 RLS 的疗效。羟考酮/纳洛酮缓释剂现已被批准为欧洲第一个治疗 RLS 的阿片类药物。目前，阿片类药物治疗 RLS 的短期和长期研究结果表明，阿片类药物能够缓解重度 RLS（包括痛性 RLS）以及出现“症状恶化”的 RLS 患者的症状。总之，临床上我们应重视痛性 RLS，对于痛性 RLS 和难治性 RLS，我们可以应用阿片类药物进行治疗。

关键词：不安腿综合征；疼痛；阿片受体激动剂；症状恶化

慢性阻塞性肺疾病患者的睡眠呼吸障碍

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慢性阻塞性肺疾病和睡眠呼吸障碍疾病均为常见的慢性呼吸系统疾病，而睡眠呼吸障碍中又以阻塞性睡眠呼吸障碍更为常见，当两种疾病共存时，称为重叠综合征（OS）。OS患者低氧血症和高碳酸血症更严重，更易患心脑血管等疾病及增加全因死亡率。因此，在慢阻肺患者的长程管理中需关注OS的存在，及时干预和治疗，改善患者预后。

关键词：慢性阻塞性肺疾病；睡眠呼吸障碍；阻塞型睡眠呼吸暂停；重叠综合征

《本草纲目》治疗不眠病部分药物特色

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《本草纲目》为明代著名本草学家，医学家，博物学家李时珍所撰写，被誉为“东方药学巨典”，它集中体现了中国古代医学所取得的伟大成就，是取之不尽的中华医学知识宝库，素享“医学之渊海”“格物之通典”之美誉。李时珍在前代医家基础上，丰富了治疗不眠的药物及其思想。本文将具有李时珍医学思想的代表性药物，结合现代研究成果，简要地概述《本草纲目》治疗不眠病的部分特色药物，以酸枣仁和灯心草为例。

关键词：本草纲目 不眠 酸枣仁 灯心草

青中年失眠患者睡眠特征与认知功能的相关性及其机制研究

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目的：探索青中年失眠患者的睡眠特征及失眠所致的认知功能受损特征。

方法：选取 2022 年 1 月至 2023 年 12 月就诊于睡眠心理科诊断为“失眠症”的年龄为 18-50 岁患者入组为失眠组，共纳入符合要求的失眠患者 40 名，51 名健康人，均完善主观性的睡眠特征收集、认知功能评估，完成 21 名失眠患者的多导睡眠监测（PSG）数据采集。评估匹兹堡睡眠质量指数、失眠严重指数、福特应激失眠反应测试及蒙特利尔认知功能量表（MoCA）。

结果：失眠组较健康组在 PSQI 及 ISI 所示的失眠症状严重程度中，存在明显差异，本组中青年患者失眠多存在压力易感的特点。失眠患者的多导睡眠监测特点为：总睡眠时间缩短，睡眠维持困难（夜间多发觉醒），睡眠效率下降，N3 期及 REM 期睡眠比例下降，N1 期睡眠增多。失眠组较健康组存在广泛认知功能受损，主要表现在命名及延迟回忆受损。

结论：1、失眠患者存在主观睡眠感受与客观睡眠结构受损。

2、失眠患者存在总体认知功能受损，其认知受损领域为命名和与记忆功能。

3、失眠患者认知功能受损或与失眠病程、睡眠觉醒次数及睡眠结构中 N1%及 N3%期睡眠相关。

关键词：失眠；认知功能；青中年失眠；易感性

内蒙古自治区成年人年龄和性别的交互作用对失眠障碍的影响研究

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目的 探究年龄及性别对失眠障碍的交互作用。 **方法** 采用分层多阶段不等概率抽样方法抽取内蒙古自治区18岁及以上常住居民进行面对面调查；采用国际疾病分类第10版中F51.0非器质性失眠症的诊断标准诊断失眠障碍；使用复合型国际诊断交谈表3.0作为调查工具；采用二分类logistic回归模型计算相乘交互作用指标；限制性立方样条模型分析不同性别中年龄与失眠障碍的剂量反应关系。 **结果** 55-64岁女性（OR=2.64, 95%CI: 1.48~4.70）、65-74岁女性（OR=2.06, 95%CI: 1.15~3.67）是失眠障碍的危险因素，75岁及以上男性（OR=0.37, 95%CI: 0.15~0.87）是失眠障碍的保护因素；无论男性还是女性，年龄与失眠障碍患病率均呈非线性剂量反应关系（ $P < 0.05$ ），模型均“倒U”型，但失眠障碍患病风险在具体年龄上略有差别；55岁及以上各年龄组的女性失眠障碍患病风险较同龄男性高。 **结论** 年龄和性别存在交互作用，且55-75岁女性失眠障碍患病风险高。

关键词：失眠障碍；相关因素；横断面研究；性别；年龄

CBTI 联合药物治疗失眠的研究进展

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失眠是最为常见的睡眠问题之一，能够降低生活质量，损害身体健康，并影响社会关系，带来经济损失。失眠的治疗方式多样，CBTI 治疗联合药物治疗是治疗失眠的一种有效的治疗方式。通过联合治疗，能够降低患者对药物的依赖，减少甚至停用失眠药物。本文就 CBTI 联合不同药物的治疗效果，CBTI 联合药物治疗对药物减量和停用的影响，CBTI 联合药物治疗在失眠共病焦虑抑郁中的应用，对特殊人群进行 CBTI 联合药物治疗效果等方面进行阐述。

关键词：CBTI;失眠;药物;疗效;

通过心率变异性结合随机森林算法筛查中重度阻塞性睡眠呼吸暂停

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目的：超过 80%的中重度阻塞性睡眠呼吸暂停患者仍未得到及时的诊断，我们基于随机森林算法，通过患者心率变异、部分临床及人口学特征建立中重度阻塞性睡眠呼吸暂停的预测模型，从而及时发现这类高危人群。方法：研究共纳入 362 例研究对象，按照 7:3 比例将研究对象随机划入训练集 (n=253) 及测试集 (n=109)，并使用训练集中研究对象整夜多导睡眠监测数据中提取的 13 个特征建立中重度 OSA 的 RF 预测模型；网格搜索用于确定 RF 模型最佳参数；10-折交叉验证用于评估 RF 模型预测性能，并与 Logistic 回归模型预测结果进行比较。结果：362 例研究对象中，男性 289 例，女性 73 例，平均年龄 40.13 岁，平均体质指数 25.21。RF 模型预测中重度 OSA 患者的灵敏度、特异度、准确度、F1 评分及受试者工作特征曲线下面积分别为：91.32%、70.58%、89.76%、0.92 及 0.81；Logistic 回归模型预测中重度 OSA 患者的灵敏度、特异度、准确度、F1 评分及 AUC 分别为：71.65%、83.49%、72.38%、0.82 及 0.78。RF 模型的整体表现优于 Logistic 回归模型。结论：建立的 RF 模型可有效地区分中重度 OSA 患者，有望在一般人群中开展高危患者筛查，并有助于持续评估 OSA 治疗措施效果，做到疾病的早诊早治，具有重要的公共卫生学意义。

关键词：阻塞性睡眠呼吸暂停, 心率变异性, 机器学习, 随机森林, 筛查

Three-Step Screening: Combining STOP-Bang, ESS, and Berlin Questionnaires for Improved OSA Detection

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Objective: To evaluate the application value of combining STOP-Bang (STOP-Bang questionnaires), ESS(the Epworth Sleepiness Scale), and Berlin (Berlin questionnaires) in screening for obstructive sleep apnea-hypopnea syndrome (OSA) by comparing their predictive values with each individual questionnaire.

Methods: From September 1, 2016, to October 31, 2020, 2208 suspected OSA patients at the Sleep Medicine Center of the First Affiliated Hospital of Guangzhou Medical University completed the NoSAS (Neck circumference, Obesity, Snoring, Age and Sex), ESS, STOP-Bang and Berlin questionnaires, followed by polysomnography (PSG) monitoring. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and receiver operating characteristic (ROC) curves were calculated for each scale. The accuracy and predictive value of the combined STOP-Bang, ESS, and Berlin for OSA were analyzed.

Results: Among the independent scales, Berlin had the largest AUC and the best diagnostic performance, with the highest PPV. ESS had the smallest AUC, highest specificity, and lowest sensitivity and NPV. STOP-Bang had the highest sensitivity and NPV but the lowest specificity and PPV. When combined, the AUC of all combinations was less than 0.7, indicating a decrease in diagnostic performance compared to the independent scales, with the three-questionnaire combination having the highest AUC. Combining the questionnaires resulted in increased specificity and PPV but decreased sensitivity and NPV. Among the two-questionnaire combinations, the sensitivity and NPV of ESS combined with STOP-Bang were higher than those of ESS combined with Berlin, while the specificity and PPV were lower. The three-questionnaire combination had the highest specificity and PPV but the lowest sensitivity and NPV.

Conclusion: With the addition of more scales, sensitivity and NPV decreased, while specificity and PPV increased. Therefore, we recommend a three-step strategy combining a STOP-Bang score of 3, an ESS score of 9, and the Berlin Questionnaire to enhance the specificity and PPV in screening OSA patients.

Keyword: OSA, Epworth Sleepiness Scale, STOP-Bang questionnaires, Berlin questionnaires, diagnosis

PFKFB3 调控糖酵解介导慢性间歇性低氧致血管内皮炎症

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背景与目的: 慢性间歇性低氧 (CIH) 致内皮炎症是 OSA 相关心血管损伤的重要原因。内皮细胞 (ECs) 代谢途径改变调控细胞功能。本课题拟探讨 CIH 所致内皮细胞代谢重编程在 CIH 相关血管内皮损伤中的作用机制。

方法: 建立细胞 CIH 模型及血浆刺激模型, 基于转录组学分析 CIH 致内皮损伤的关键机制。体内研究建立动物 CIH 模型, 检测血浆炎症因子分泌; 尾压法监测血压; 免疫荧光检测血管内皮炎症; 细胞流式技术检测主动脉炎性细胞浸润; 油红染色观察粥样硬化斑块形成。代谢研究观察 CIH 下 ECs 关键糖代谢途径改变, 检测代谢检查点 PFKFB3 表达改变, 进一步通过病毒过表达或干扰 PFKFB3 表达, 或靶向 PFKFB3 药物抑制剂, 明确 PFKFB3 对 CIH 致内皮炎症和血管损伤的作用。

结果: CIH 促进血管内皮细胞炎症, 导致血压升高、动脉炎性细胞浸润及粥样硬化斑块形成增加。CIH 致代谢重编程, 表现为糖酵解通量增加, 线粒体呼吸及磷酸戊糖途径受抑制。

PFKFB3 为 CIH 内皮炎症代谢机制的关键蛋白, CIH 促进 PFKFB3 表达, 病毒干扰或药物抑制 PFKFB3 可改善 CIH 所致内皮炎症及血管损伤。

结论: 本研究立足内皮细胞代谢重编程角度, 描绘了 CIH 下 ECs 代谢改变, 明确 PFKFB3 为 CIH 所致 ECs 代谢改变驱动炎症损伤的关键因素, 为靶向 HIF-1 α -PFKFB3 轴防治 OSA 相关血管损伤的药物研发奠定基础。

关键词: 阻塞性睡眠呼吸暂停, 慢性间歇低氧, 内皮炎症, 糖酵解, PFKFB3

Inhibiting the CB1 receptor in CIH-induced animal model alleviates colon injury

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Obstructive sleep apnea (OSA) can lead to intestinal injury, endotoxemia, and disturbance of intestinal flora. Additionally, as a crucial component of the endocannabinoid system, some studies have demonstrated that cannabinoid 1 (CB1) receptors are closely linked to the multiple organ dysfunction triggered by OSA. However, the role of the CB1 receptor in alleviating OSA-induced colon injury remains unclear. Here, through the construction of the OSA classic model, we found that the colon tissue of chronic intermittent hypoxia (CIH) - induced mice exhibited an overexpression of the CB1 receptor. The results of hematoxylin-eosin staining and transmission electron microscopy revealed that inhibition of the CB1 receptor could decrease the gap between the mucosa and muscularis mucosae, alleviate mitochondrial swelling, reduce microvilli shedding, and promote the recovery of tight junctions of CIH-induced mice. Furthermore, CB1 receptor inhibition reduced the levels of metabolic endotoxemia and inflammatory responses, exhibiting significant protective effects on the colon injury caused by CIH. At the molecular level, through western blotting and real-time polymerase chain reaction techniques, we found that inhibiting the CB1 receptor can significantly increase the expression of ZO-1 and Occludin proteins, which are closely related to the maintenance of intestinal mucosal barrier function. Through 16S rRNA high-throughput sequencing and short-chain fatty acid (SCFA) determination, we found that inhibition of the CB1 receptor increased the diversity of the microbial flora and controlled the makeup of intestinal flora. Moreover, butyric acid concentration and the amount of SCFA-producing bacteria, such as Ruminococcaceae and Lachnospiraceae, were both markedly elevated by CB1 receptor inhibition. The results of the spearman correlation study indicated that Lachnospiraceae showed a positive association with both ZO-1 and Occludin but was negatively correlated with the colon CB1 receptor, IL-1 β , and TNF- α . According to this study, we found that inhibiting CB1 receptor can improve CIH-induced colon injury by regulating gut microbiota, reducing mucosal damage and promoting tight junction recovery.

Keyword: CB1 receptor, Chronic intermittent hypoxia, Colon injury, Intestinal flora, Metabolic endotoxemia, Obstructive sleep apnea

四、心身医学、航天（海）医学、行为医学、流行病学、生物医学工程等中的睡眠问题

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运动员睡眠节律特征及其对训练的影响研究——以某高水平运动队为例

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目的：本研究旨在通过监测分析运动员的睡眠节律特征和训练负荷，以为运动员提供科学的睡眠指导，提升训练效果。方法：通过华为智能手环 6 记录了 2023 年 4 月-8 月期间 23 名江苏省击剑队运动员的睡眠和训练数据。采用校正后的休息日睡眠中点（MSFsc）和社会时差（SjL）作为反映睡眠时型和昼夜节律紊乱程度的指标，采用训练时的平均心率、最大心率和训练冲量（TRIMP）来反映训练负荷。结果：共采集运动员 2459 天睡眠数据和 1798 天训练数据。在 2459 天的睡眠监测中，有 57.2% 的晚上睡眠时长不足 8 小时；女运动员达标率高于男运动员，运动等级高的运动员达标率高于等级低的运动员；运动员的 MSFsc 平均为 $4:52 \pm 1:30$ ，60.87% 的运动员睡眠时型为中间型，39.13% 为夜晚型，没有清晨型；运动员平均 SjL 为 $1.50 \pm 1.08h$ ，65.22% 的运动员的社会时差超过 1 小时，社会时差与 MSFsc 呈强相关性；观察星期一至星期日睡眠节律的变化发现在早上没有训练的星期一、星期三和星期五，运动员的出睡时间和睡眠中点均显著后移；夜晚型运动员在训练期间的平均心率、最大心率和 TRIMP 值较中间型运动员要低，社会时差大的运动员的平均心率和最大心率也要比社会时差较小的运动员要低。结论：运动员普遍存在睡眠不足和昼夜节律紊乱的问题，运动员的睡眠节律受睡眠时型和训练安排的影响，睡眠节律紊乱会使运动员承受运动负荷的能力降低。

关键词：睡眠节律；睡眠时型；社会时差；击剑运动员；训练负荷

The association of parental insomnia symptoms with adolescent insomnia and depressive symptoms: A child-parent dyad study

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Intergenerational transmission may be present in adolescents' sleep and mental health problems, but there is limited evidence currently available. The current study aimed to examine the effects of parental insomnia symptoms on adolescent insomnia and depressive symptoms. From 21 April to 12 May 2021, this study conducted a large-scale cross-sectional survey in south China, 68,751 valid child-parent matched data were collected. The current study measured parental insomnia symptoms, adolescent insomnia symptoms, adolescent depressive symptoms, and demographic characteristics. In this sample, maternal and paternal insomnia has a prevalence of 8.2% and 7.5%. Among adolescents whose mother or father had insomnia, the prevalence of insomnia reached to 15.7% and 15.1%, and the prevalence of depressive symptoms reached to 17.6% and 15.6%. Adolescents whose parents have insomnia were more likely to suffer from insomnia and depressive symptoms. Moreover, mediation analysis showed that parents' insomnia positively affects adolescent depressive symptoms via child's insomnia. This study encouraged a rethink of family health dynamics in clinical practice and public health policy, resulting in a more comprehensive approach to adolescent sleep and depressive symptoms.

Keyword: parental insomnia, adolescent insomnia, depressive symptoms, child-parent dyad, mediation

Association between exposure to outdoor artificial light at night, executive function and sleep timing among patients with depression

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Background: Depression is a highly prevalent psychiatric disorder that impairs the executive function of individuals. Recent evidences emphasized the potential impact of outdoor artificial light at night (ALAN) on executive function. However, the available literature on the relationships between outdoor ALAN and executive function in depressed patients is limited, and the mechanism involved remained unclear. Sleep timing refers to the time of day that sleep occurs, which can be affected by age, lifestyle, and light exposure, resulting in bedtimes and wake-up times that differ from individual preferences. It has been shown that later sleep timing (e.g., bedtime, wake-up time) may be a potential risk factor of executive dysfunction. Therefore, we aimed to investigate the relationship between outdoor ALAN exposure, sleep timing and executive function among depressed patients.

Methods: 538 patients with depression were enrolled from inpatient department of the Fourth People's Hospital of Hefei from 2017 to 2021. The average 1-year outdoor ALAN exposure of each patient was estimated using satellite images, based on patients' geographical coordinates, prior to the patient was hospitalized. All participants were reassessed sleep conditions through the Pittsburgh Sleep Quality Index (PSQI) and executive function through the Behavior Rating Inventory of Executive Function - Adult Version (Brief-A). We used multiple linear regression models to investigate the association between outdoor ALAN exposure, sleep timing and executive function, adjusted for potential confounders (including sex, age, family income, educational level, employment, BMI, drinking status, smoking status, physical activity, season of visit, use of antidepressants). Furthermore, mediation models were used to figure out the mediating role of sleep timing (bedtime and waketime) on the association between outdoor ALAN exposure and executive function.

Results: This study found that brighter outdoor ALAN exposure was associated with later bedtime and waketime. An interquartile range (IQR 26.79 nW/cm²/sr) increase in outdoor ALAN, a 14.04-minute [95% confidence interval (CI): 2.88 - 25.2] delay in bedtime and a 20.28-minute (95%CI: 3.42 - 37.14) delay in waketime, after fully adjusted for confounders. Meanwhile, outdoor ALAN exposure was positively associated with the total score of Brief-A, each IQR increase in exposure of outdoor ALAN was associated with 5.22 (95%CI: 1.23 - 9.21) of increases in total score of Brief-A. Further Mediation analysis shows that both bedtime and waketime significantly mediated the relationship of outdoor

ALAN on executive function, the mediated proportion of them on executive function were 10.57% and 9.54%, respectively.

Conclusions: The results provided evidence that brighter outdoor ALAN was related to poor executive function in depressed patients. And later sleep timing may mediate the association between outdoor ALAN exposure and executive function. Future studies should elucidate whether interventions to reduce exposure to ALAN may positively affect executive function.

Keyword: Outdoor artificial light at night, Depression, executive function, sleep timing

Association of habitual sleep duration with abnormal bowel symptoms: a cross-sectional study of the 2005 - 2010 National Health and Nutrition Examination Survey

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Objectives

Nowadays, few studies have examined the relationships between sleep duration and abnormal gut health. In this study, we used data from the National Health and Nutrition Examination Survey (NHANES) to investigate the correlations between habitual sleep duration and abnormal bowel symptoms in adults.

Methods

This study included 11,533 participants aged ≥ 20 years from the NHANES conducted during 2005 - 2010. Chronic constipation and chronic diarrhea were defined based on the Bristol Stool Form Scale (BSFS) and frequency of bowel movements. Sleep duration was assessed based on the self-report questionnaire and classified into three groups: short sleep duration (< 7 hours), normal sleep duration (7-9 hours), and long sleep duration (> 9 hours). Weighted data were calculated according to analytical guidelines. Logistic regression models and restricted cubic spline curves (RCS) were used to assess and describe the association between sleep duration and chronic diarrhea and constipation. Univariate and stratified analyses were also performed.

Results

There were 949 (7.27%) adults aged 20 years and older with chronic diarrhea and 1120 (8.94%) adults with constipation among the 11533 individuals. A positive association was found between short sleep duration and chronic constipation, with a multivariate-adjusted OR of 1.32 (95% CI: 1.05-1.66). Additionally, long sleep duration was significantly associated with an increased risk of chronic diarrhea (OR: 1.75, 95% CI: 1.08-2.84, $P = 0.026$). The RCS models revealed a statistically significant nonlinear association (P for non-linearity < 0.05) between sleep duration and chronic diarrhea. Furthermore, obesity was found to modify the association between sleep duration and chronic diarrhea and constipation (p for interaction = 0.033).

Conclusions

This study suggests that both long and short sleep durations are associated with a higher risk of chronic diarrhea and constipation in the general population. Furthermore, a non-linear association between sleep duration and these conditions persists even after adjusting for case complexities.

Keyword: Keywords: habitual sleep duration, diarrhea, constipation, NHANES, obesity

The impact of COVID-19 on subjective and objective sleep in good sleepers

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Background

The COVID-19 pandemic has had significant psychological and behavioral implications, including alterations in sleep patterns. This longitudinal observational study investigated the impact of COVID-19 infection on both subjective and objective sleep assessments in a general population sample.

Methods

We recruited 17 healthy volunteers with complete baseline data (T0) from the pool of healthy subjects, and conducted subjective and objective sleep evaluations, including Pittsburgh sleep quality index (PSQI) and polysomnography (PSG), within the first month after COVID-19 infection (T1) and six months after COVID-19 infection (T2). Fifteen volunteers completed both T1 and T2 follow-up assessments for inclusion in the statistical analysis.

Results

Subjective sleep quality, the PSQI scores escalated from a median of 3.00 pre-infection to 5.00 post-infection, with the change from T0 to T1 and T2 being statistically significant ($p=0.020$). Objective sleep measures, such as total sleep time and sleep efficiency, remained relatively stable. However, sleep latency (SL) presented a noteworthy pattern, decreasing significantly from T0 to T2 ($p=0.017$). This was complemented by our finding of decreased N2 sleep percentage (N2%) at T2 compared to T1 ($p=0.008$). Pairwise comparisons highlighted significant changes in PSQI scores between the pre-infection and post-infection phases, especially from T0 to T1 ($p=0.014$, adjusted $p=0.041$), and in the N2%, particularly from T1 to T2 ($p=0.002$, adjusted $p=0.006$).

Conclusions

In healthy people, COVID-19 infection led to a transient impairment in subjective sleep quality, which eventually returned to baseline levels. Despite the subjective changes, objective sleep parameters remained relatively stable, with some subtle alterations in sleep latency and architecture. These findings contribute to the understanding of the sleep-related consequences of COVID-19 and highlight the importance of considering both subjective and objective measures in sleep research.

Keyword: COVID-19, subjective sleep, objective sleep, PSQI, PSG

Effects of online therapist-guided mindfulness-based cognitive therapy on chronic insomnia disorder: study protocol for a randomized controlled trial

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Abstract

Background: Chronic insomnia disorder (CID) is a prevalent sleep disorder in China. It impacts individuals' physiological, psychological and social functions. Though cognitive behavioral therapy for insomnia (CBT-I) is the recommended first-line treatment option for CID, there are still about 20% patients exhibiting limited effectiveness. Literature showed that mindfulness can benefit CBT-I protocols and mindfulness-based cognitive therapy (MBCT) was effective to insomnia. Considering the large, widespread population suffering from insomnia and limited mental health resources in China, the online mindfulness-based cognitive therapy for insomnia (MBCT-I) is expected to be a promising treatment approach for CID. However, little is known about its feasibility and efficacy.

Objective: To evaluate the effect of online therapist-guided MBCT-I on chronic insomnia among Chinese adults.

Methods: This study is an open-labeled, parallel group, randomized controlled trial of 80 CID patients. Participants will be randomized to the online MBCT-I program or sleep hygiene education (SHE) program with an allocation ratio of 1:1 using simple randomization. Online assessments will be carried out at baseline, by the end of the intervention (week 8) and at the scheduled follow-up time (week 20). Statistical analyses will follow the intention-to-treat (ITT) principle.

Discussion: This is the first study to investigate the efficacy of the online therapist-guided MBCT-I compared with sleep hygiene education on CID patients. It will provide evidence for clinical practitioners, therapists and patients to consider a new psychotherapeutic option, and for technicians to operate self-guided online MBCT-I application in the future.

Keyword: Mindfulness-based cognitive therapy, insomnia, sleep, internet intervention

The trajectories and associations of sleep disturbance symptoms with suicidal ideation in adolescents: A three-wave longitudinal study

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Abstract

Background: This study aimed to investigate the developmental trajectories of sleep disturbance symptoms and examine whether specific trajectory memberships of sleep disturbance symptoms could prospectively predict suicidal ideation (SI) among a large sample of Chinese adolescents over one year.

Methods: A three-wave longitudinal study was conducted from April 2021 to June 2022, with a sample of 19,095 adolescents from Shenzhen in Guangdong Province, China (51.2% males; mean age = 12.4 ± 1.6 years at baseline). Socio-demographics (at baseline), SI, sleep disturbance symptoms (at each assessment), depressive symptoms (at the last follow-up), and negative life events (at two follow-ups) were assessed. Data were analyzed employing Growth Mixture Modeling and binary logistic regressions.

Results: The Growth Mixture Modeling identified four trajectories of sleep disturbance symptoms over one year: resistant group (76.2%), delayed-dysfunction group (8.8%), recovery group (7.4%), and chronic-dysfunction group (7.6%).

Binary logistic regression analysis revealed that adolescents in the group of delayed-dysfunction (OR = 2.86, 95% CI = 2.51-3.27) and chronic-dysfunction (OR = 2.14, 95% CI = 1.84-2.47) exhibited higher risks of developing SI compared to those in the resistant group, even after controlling for socio-demographics, negative life events, depressive symptoms, and baseline SI.

Conclusions: These findings underscore the importance of identifying individuals at higher risks of sleep disturbance and providing personalized and effective mental health services to reduce the incidence of SI.

Keyword: Sleep disturbance, Group-based trajectories, Suicidal ideation, Adolescent, Longitudinal study

The relationship between Problematic internet use and mental health symptoms and the mediating role of sleep quality in children and adolescents

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Background: Problematic internet use (PIU) is a behavioral problem of increasing concern, especially for children and adolescents, and is associated with adverse physical and mental health outcomes. The aim of this study was to assess PIU among children and adolescents in Hubei Province, China, and examine the association with sleep quality, depression, and anxiety symptoms.

Methods: A cross-sectional study was conducted in 2024 in Hubei Province, and face-to-face questionnaires were conducted after parents' informed consent was obtained. The study included children and adolescents Socio-demographic and behavioral information, Pittsburgh sleep quality index (PSQI), Internet Addiction Test (IAT), Patient Health Questionnaire (PHQ-9), and General Anxiety Disorder-7 (GAD-7) were collected and evaluated for all participants. Cutoff scores of 7 for PSQI, 50 for IAT, 9 for the GAD-7, 9 for the PHQ-9 were adopted to detect poor sleep quality, PIU, symptoms of moderate or severe depression and anxiety. logistic regression was used to analyze the relationship between PIU and mental health symptoms, and the structural equation model examines the mediation effect of sleep quality.

Results: A total of 37678 children and adolescents, 16673 (44.3%) females and 21005 (55.7%) males, with an average age: 15.3 ± 1.70 years were included in the study. 8548 (22.7%) of children and teenagers had Problematic internet use. The average sleep time was 7.10 ± 1.53 , and 15762 (41.8%) of children and teenagers had poor sleep quality. The detection rates symptoms of moderate or severe anxiety and depression were 15.4% (5820) and 21.2% (7969), respectively. Children and adolescents with Problematic internet use were 3.5 (95%CI=3.3-3.7, $P < 0.001$) times more likely to have moderate or severe anxiety symptoms than those without Problematic internet use, while the risk of moderate or severe depressive symptoms was 4.8 (95%CI=4.6-5.1, $P < 0.001$) times that of non-problematic internet use. The mediation model test showed that the direct effect value of IAT on the GAD-7 score of children and adolescents was 0.33, and PSQI could significantly mediate between the level of IAT and GAD-7 score, with the intermediary effect value of 0.35 and the effect size of 52.0% ($P < 0.001$). The direct effect of IAT on PHQ-9 scores of children and adolescents was 0.40 ($P < 0.001$). PSQI could significantly mediate between IAT and PHQ-9 scores, with the mediating effect size of 0.37 and effect size of 64.0% ($P < 0.001$).

Conclusion: In general, the mental health of children and adolescents needs attention. Internet addiction increases the risk of depression and anxiety in Chinese children and adolescents, and sleep quality plays an important mediating role in this. Possible interventions for mental health problems include monitoring for Internet addiction problems, improving sleep quality, and ensuring sleep duration to reduce the risk of anxiety and depressive symptoms.

Keyword: Problematic internet use; sleep quality; anxiety symptoms; depressive symptoms

An Analysis of Sleep Duration, Quality, and Chronotypes Across Different Age Groups

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Background: Sleep profoundly influences physiological development, psychological well-being, and cognitive function, playing a pivotal role in human health and quality of life. Sleep requirements and patterns vary significantly across age groups. However, there is a lack of comprehensive data on sleep characteristics at all ages. This study aims to provide a descriptive analysis of sleep patterns and statuses in diverse populations and compare sleep characteristics across different groups.

Methods: The data for this study were sourced from two cross-sectional studies, one targeting the adolescent population and the other targeting the general population. Participants were grouped by age into adolescents (12–17 years), young adults (18–34 years), middle-aged adults (35–54 years), and older adults (≥ 55 years). Socio-demographic and behavioral information, the Pittsburgh Sleep Quality Index (PSQI) and the Morningness-Eveningness Questionnaire-5 (MEQ-5) were collected and evaluated for all participants. A self-reported sleep duration of less than 6 hours is defined as short sleep duration, whereas PSQI score ≥ 7 is classified as poor sleep quality. Descriptive statistics were utilized. For continuous variables following a normal distribution, means \pm standard deviations were reported. Non-normally distributed variables were described using medians and interquartile ranges. Categorical variables were summarized using frequencies and proportions.

Results: After data cleaning, a total of 59748 participants were included, comprising 29048 males (48.62%) and 30700 females (51.38%). Participants' ages ranged from 12 to 99 years, with a median age of 22.00 (15.30, 35.00) years. The mean sleep duration was 6.76 ± 1.20 hours. As age increased, the average sleep duration showed a decreasing trend. Adolescents had the longest average sleep duration of 6.89 ± 1.28 hours, while older adults had the shortest average sleep duration of 6.40 ± 1.11 hours. The highest incidence of short sleep duration was observed among older adults (19.04%), followed by middle-aged adults (14.79%), adolescents (12.72%), and young adults (10.91%). Based on the PSQI score, 29115 participants (48.73%) had poor sleep quality. Poor sleep quality was most prevalent among young adults (52.65%), followed by middle-aged adults (51.58%), older adults (48.24%), and adolescents (44.56%). Regarding chronotype, except for older adults, the distribution of sleep types across all age groups followed the sequence of evening type, intermediate type, and morning type, with the highest proportion of evening type observed among

adolescents(56.12%). As age increased, the proportion of evening types gradually decreased, shifting to intermediate types (excluding older adults), while in older adults, evening types gradually shifted to morning types.

Conclusion: This study provides a comprehensive analysis of sleep patterns and statuses, revealing variations in sleep duration, quality, and chronotype across different age groups. The results indicate that older adults have shorter sleep durations, while young adults aged 18-34 exhibit the poorest sleep quality. In contrast, adolescents generally experience better sleep duration and quality. These findings underscore the need for targeted interventions to address the specific sleep needs and challenges of different age groups, particularly young adults and older adults.

Keyword: Sleep duration, sleep quality, chronotype, age

The asymmetric moderating role of intolerance of uncertainty in the longitudinal reciprocal associations between sleep disturbance and internalizing symptoms: A two-wave study among 54240 adolescents

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Reciprocal links between sleep disturbance and internalizing symptoms, such as anxiety and depression, have been extensively explored both cross-sectionally and longitudinally. However, although intolerance of uncertainty (IU) has been identified as a risk factor for sleep disturbance and internalizing symptoms, the effect of IU on their longitudinal reciprocal associations remains unknown. To fill this gap, a cohort of 54,240 Chinese adolescents was recruited to provide self-reported data on sociodemographic information, internalizing symptoms (including symptoms of anxiety and depression), sleep disturbance, and IU. As a result, longitudinal reciprocal associations between sleep disturbance and internalizing symptoms were again observed, while IU was found to exacerbate these longitudinal reciprocal relationships. Notably, this moderating impact was asymmetric, exerting a stronger influence on predicting internalizing symptoms through sleep disturbance than vice versa. Therefore, beyond its direct impact on sleep disturbance and internalizing symptoms, our research first identified the exacerbating effect of IU in their longitudinal reciprocal relationships, which underscores the importance of early assessments and timely interventions related to IU among adolescents. Moreover, given that asymmetric moderation may suggest that sleep disturbance and IU may have synergistic effects on internalizing symptoms, IU-based assessments and interventions should give priority to adolescents with sleep disturbance.

Keyword: Intolerance of uncertainty, moderating, sleep disturbance, internalizing symptoms, adolescents

基于倾向性评分匹配法的阻塞性睡眠呼吸暂停患者糖脂代谢紊乱关联性研究

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目的 比较阻塞性睡眠呼吸暂停（OSA）患者与健康体检人群之间以及不同严重程度OSA患者间血糖、血脂水平。**方法** 选择2023年6月—2024年3月期间在克拉玛依市中心医院经多导睡眠监测（PSG）确诊的成年OSA患者251例，同期选择体检中心健康体检人群550例，对OSA患者与健康人群间的影响因素进行倾向性评分匹配，比较不同严重程度OSA患者组间及与健康人群间血脂水平的差异。**结果** 共匹配148对，OSA组[年龄：平均(45.9±9.4)岁，呼吸暂停指数AHI(43.0±23.0)次/小时，男/女：121/27]，体检健康人群[年龄：平均(45.4±10.0)岁，男/女：122/26]。1. 匹配后OSA人群与体检健康人群间比较：两组间在BMI[、血糖、尿酸、高密度脂蛋白、低密度脂蛋白、红细胞计数、血红蛋白间差异存在统计学意义($p<0.05$)。2. OSA人群男、女性组间在尿酸、甘油三酯、高密度脂蛋白、红细胞计数、血红蛋白间差异存在统计学意义($p<0.05$)。3. 轻度OSA患者高密度脂蛋白高于中、重度OSA患者($p<0.05$)，轻、中、重度OSA组间BMI、血糖、尿酸、总胆固醇、甘油三酯、低密度脂蛋白、红细胞计数、血红蛋白间差异无统计学意义($P>0.05$)。**结论** OSA患者存在尿酸、糖、脂类代谢紊乱，且男性OSA患者高于女性OSA患者，但与OSA严重程度关系尚不明确，值得进一步研究。

关键词：阻塞性睡眠呼吸暂停；脂代谢紊乱；体检人群；倾向性评分匹配

Cross-lagged panel networks of sleep inertia across its distinct change patterns among intern nurses with shift work in China

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Purpose: Although experimental psychopathology using PET, EEG, and fMRI is at the forefront of understanding the underlying mechanisms of sleep inertia, many questions concerning causality remain unanswerable due to ethical constraints and the use of small and heterogeneous samples in experimental methods. There is a pressing need for a novel perspective in a large and relatively homogeneous population to fully capture and elucidate longitudinal processes and dynamic causality that culminate in episodes of sleep inertia over time. Therefore, this study aimed to reveal the causal relationships between symptoms of sleep inertia across its distinct patterns.

Patients and methods: A total of 1,636 intern nurses participated in the first survey (94.1% validity rate), then 1,277 intern nurses were followed up (82.9% tracing rate). Symptoms of sleep inertia were self-reported using the Sleep Inertia Questionnaire. The cross-lagged panel network models were used to examine unique longitudinal relationships between symptoms of sleep inertia across distinct trajectories.

Results: Four distinct trajectories of sleep inertia were established. Additionally, we found differences in those symptoms with the highest influence on other symptoms at the subsequent point across the networks of four trajectories, particularly, “Difficulty in concentrating” in the persistent-high group and “Feeling tense” in the deteriorating groups.

Conclusions: The current study highlights changes in sleep inertia based on the long-term course over time. Notably, symptoms of “Difficulty in concentrating” and “Feeling tense” are imperative to address these specific symptoms within subpopulations.

Keyword: Sleep inertia, change patterns, network structures, intern nurse, shift work

移居高原人群主观睡眠质量及疲劳程度研究

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目的：了解移居高原人群的主观睡眠质量及疲劳程度情况。方法：本研究在西藏各海拔地区进行抽样调查，使用自编《高原睡眠效能调查问卷》（包括一般情况、匹兹堡睡眠质量指数量表（PSQI）、多维疲劳量表（MFI-20）等），收集了710名移居高原人群睡眠质量、疲劳程度等主观评价指标。结果：①移居高原人群组PSQI量表总分以及因子分（入睡时间、睡眠时间、睡眠效率、催眠药物）均显著高于平原人群组， $P < 0.05$ ；②在不同年龄组间（20-30岁、31-40岁、41-50岁），PSQI量表总分、因子分（睡眠质量、入睡时间、睡眠时间、睡眠效率、日间功能障碍）以及MFI-20量表总分具有显著差异， $P < 0.01$ ；随年龄增长，PSQI量表总分、以上因子分及MFI-20量表总分升高；③在不同移居时长组间（ ≤ 60 月、61-120月、 > 120 月），PSQI量表总分以及MFI-20量表总分具有显著差异， $P < 0.05$ ；随移居高原时间延长，PSQI总分及MFI-20总分升高；④在不同海拔高度组间（ $\leq 3000\text{m}$ 、3001-4000m、 $> 4000\text{m}$ ），PSQI总分以及因子分（入睡时间、睡眠效率、睡眠障碍、日间功能障碍）具有显著差异， $P < 0.05$ ；随居住海拔高度上升，PSQI总分及以上因子分升高。结论：移居高原人群的总体睡眠质量较平原人群差，其中年龄越大、移居高原时间越长、居住海拔越高，睡眠质量越差，疲劳程度增加。

关键词：移居高原, 睡眠质量, 疲劳程度

The asymmetric moderating role of intolerance of uncertainty in the longitudinal reciprocal associations between sleep disturbance and internalizing symptoms: A two-wave study among 54240 adolescents

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Reciprocal links between sleep disturbance and internalizing symptoms, such as anxiety and depression, have been extensively explored both cross-sectionally and longitudinally. However, although intolerance of uncertainty (IU) has been identified as a risk factor for sleep disturbance and internalizing symptoms, the effect of IU on their longitudinal reciprocal associations remains unknown. To fill this gap, a cohort of 54,240 Chinese adolescents was recruited to provide self-reported data on sociodemographic information, internalizing symptoms (including symptoms of anxiety and depression), sleep disturbance, and IU. As a result, longitudinal reciprocal associations between sleep disturbance and internalizing symptoms were again observed, while IU was found to exacerbate these longitudinal reciprocal relationships. Notably, this moderating impact was asymmetric, exerting a stronger influence on predicting internalizing symptoms through sleep disturbance than vice versa. Therefore, beyond its direct impact on sleep disturbance and internalizing symptoms, our research first identified the exacerbating effect of IU in their longitudinal reciprocal relationships, which underscores the importance of early assessments and timely interventions related to IU among adolescents. Moreover, given that asymmetric moderation may suggest that sleep disturbance and IU may have synergistic effects on internalizing symptoms, IU-based assessments and interventions should give priority to adolescents with sleep disturbance.

Keyword: Intolerance of uncertainty, moderating, sleep disturbance, internalizing symptoms, adolescents

五、中医中药

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参乌益智胶囊联合认知行为疗法对卒中后认知障碍的疗效观察

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[摘要] 目的：观察参乌益智胶囊联合认知行为疗法（CBT）治疗卒中后认知障碍（PSCI）的疗效及安全性。方法：使用随机号码表，将 90 例 PSCI 患者分为对照组和治疗组，每组各 45 例。对照组予以脑卒中基础治疗和认知行为疗法，治疗组在其基础上加用参乌益智胶囊，两组均治疗 28 天。比较治疗前后 2 组患者简易智力状态检查（MMSE）量表、蒙特利尔认知评估（MoCA）量表、中医症候量表评分和日常生活活动能力（ADL）评价、肿瘤因子（TNF- α ）指标、白细胞介素 6（IL-6）指标、同型半胱氨酸（Hcy）指标及临床疗效。结果：治疗 28 天后，两组患者 MMSE、MoCA、ADL 评分均较前改善（ $P < 0.05$ ），治疗组评分较对照组高（ $P < 0.05$ ）；两组患者炎症指标、中医症候量表评分较前降低（ $P < 0.05$ ），治疗组评分较对照组低（ $P < 0.05$ ）。结论：参乌益智胶囊联合认知行为疗法能有效提高 PSCI 患者的认知功能，降低炎症反应，改善日常生活能力。

关键词：参乌益智胶囊；认知行为疗法；卒中后认知障碍；认知功能；临床疗效

基于疏肝健脾法观察解郁安神汤治疗围绝经期失眠的疗效

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目的 观察基于疏肝健脾法拟定的解郁安神汤联合佐匹克隆治疗围绝经期失眠的临床疗效。
方法 将实际纳入的肝郁脾虚型围绝经期失眠患者 90 例，随机分成对照组 45 例(予佐匹克隆片口服治疗)，治疗组 45 例(在对照组的基础上加用解郁安神汤)。治疗 4 周后应用 SPSS26.0 统计疗效，比较两组治疗前后的匹兹堡睡眠质量指数评分、改良 Kupperman 评分、中医证候评分、促卵泡生成激素(FSH)、黄体生成激素(LH)、雌二醇(E2)水平。结果 治疗组总有效率明显高于对照组($P<0.05$)。两组患者的 PSQI、改良 Kupperman 评分均低于治疗前($P<0.05$)，且治疗组明显低于对照组($P<0.05$)。两组患者的中医证候评分较治疗前均降低($P<0.05$)，和对照组相比，除主症外($P>0.05$)，次症和舌脉及中医症状总评分均存在统计学差异($P<0.05$)。两组患者 LH、FSH 水平均较治疗前降低($P<0.05$)，E2 水平均较治疗前升高($P<0.05$)，且治疗组 LH、FSH 降低幅度均优于对照组($P<0.05$)，E2 升高幅度优于对照组($P<0.05$)。结论 基于疏肝健脾法拟定的中药煎剂解郁安神汤联合佐匹克隆治疗肝郁脾虚型围绝经期失眠患者临床疗效明确，能有效改善睡眠质量、围绝经期症状及中医证候、调节性激素水平，且无严重不良反应发生。

关键词：疏肝健脾法；肝郁脾虚；解郁安神汤；围绝经期失眠；肝脾论治

基于“脾肾相济”理论的女性围绝经期失眠症临床观察

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目的：女性围绝经期失眠诊治不当后失眠慢性化是老年女性慢性失眠的重要原因之一，我们基于“脾肾相济”的中医理念，初步评价更年安神方的临床疗效和对防治老年女性慢性失眠的潜在价值。

方法：2021年1月1日-2022年1月31日在上海市第七人民医院门诊招募女性围绝经期失眠症患者，开展随机双盲对照，试验组采用自拟方更年安神方，对照组采用中医经典名方二仙汤，治疗周期均为12周。观察两组治疗前及治疗后4周、8周、12周PSQI，HAMA、HAMD，根据PSQI减分率及中医证候积分减分率进行疗效分析。

结果：本研究共纳入96例患者，最终完成12周观察治疗患者为84例，对照组41例，试验组43例。组内结果：两组患PSQI、HAMA、HAMD以及中医证候评分较治疗前评分均有统计学意义（ $P < 0.05$ ）。组间结果：两组间PSQI、HAMA、HAMD及中医证候评分差异有显著性（ $P < 0.05$ ）。PSQI减分率：对照组总有效率87.80%，试验组总有效率97.67%，两组间减分率无统计学意义（ $P > 0.05$ ）。中医证候临床疗效：对照组总有效率为63.41%，试验组总有效率为95.34%，两组间中医证候疗效评价差异有统计学意义（ $P < 0.05$ ）。

结论：更年安神方能够有效改善围绝经期患者失眠状况，显著降低PSQI、HAMA、HAMD评分，有助于提高并维持患者睡眠质量，改善焦虑、抑郁心境，有助于预防老年女性慢性失眠的发生。

关键词：脾肾相济；围绝经期失眠；女性失眠；中医

脑安宁院内制剂治疗新冠康复期肝肾阴虚型不寐病的 临床疗效观察

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摘要 目的：探讨脑安宁院内制剂对新型冠状病毒感染康复期肝肾阴虚型不寐病患者睡眠质量的影响。方法：选取 2022 年 11 月—2023 年 4 月上海市第七人民医院神经内科门急诊收治的新冠康复期肝肾阴虚不寐病患者 60 例，采用随机数字表法分为治疗组和对照组，每组 30 例，两组患者均给予新冠康复期对症药物和康复治疗。对照组给予阿普唑仑 0.4mg 睡前 1h 口服治疗，治疗组给予脑安宁制剂煎服，水煎取汁 250ml，每日 2 剂，早晚饭后温服。两组疗程均为 12 周。比较两组患者中医证候临床疗效，治疗前后匹兹堡睡眠质量指数量表 (PSQI) 评分、焦虑自评量表 (SAS) 评分。结果：治疗组中医证候临床疗效优于对照组，差异有统计学意义 ($P < 0.05$)。治疗后，两组 PSQI 评分、SAS 评分均较治疗前降低，且治疗组 PSQI 评分、SAS 评分低于对照组，差异均有统计学意义 ($P < 0.05$)。

结论：脑安宁制剂治疗新冠康复期肝肾阴虚型不寐病疗效确切，可明显改善临床症状、睡眠质量。

关键词：脑安宁；肝肾阴虚；睡眠质量

上下两济丹对对氯苯丙氨酸诱导失眠小鼠的抗失眠作用研究

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目的：探讨上下两济丹对对氯苯丙氨酸(PCPA)诱导失眠小鼠的抗失眠机制。方法：昆明小鼠随机分为空白组、模型组；上下两济丹低、中、高剂量组和地西洋组。采用腹腔注射 PCPA，连续 2 d，建立小鼠失眠模型。建模后，上下两济丹低、中、高剂量组和地西洋组灌胃给药，空白组、模型组小鼠每日灌胃等体积 0.9%NaCl 溶液，连续 7d。睡眠翻转实验观察睡眠潜伏期及睡眠持续时间；旷场实验观察总距离、平均速度和中央距离；HE 染色观察海马组织病理学；ELISA 检测小鼠海马组织 5-HT、5-HIAA、IL-1 β 、IL-6 和 TNF- α 含量；RT-qPCR 检测小鼠海马 GFAP 的 mRNA 表达水平；免疫荧光法检测海马 GFAP 蛋白表达。结果：与空白组比较，模型组睡眠潜伏期延长和睡眠持续时间缩短；总距离、平均速度和中央距离 增加；细胞损伤率增加；5-HT、5-HIAA 含量减少；IL-1 β 、IL-6 和 TNF- α 含量增加；GFAP 的 mRNA 及 GFAP 蛋白表达增加。与模型组比较，上下两济丹各组睡眠潜伏期缩短和睡眠持续时间延长；总距离、平均速度和中央距离减少；细胞损伤率减少；5-HT、5-HIAA 含量增加，IL-1 β 、IL-6 和 TNF- α 含量减少；GFAP 的 mRNA 及 GFAP 蛋白表达减少。结论：上下两济丹能改善小鼠失眠，其机制可能与增加脑内 5-HT 和 5-HIAA 水平，抑制星形胶质细胞的活性，减轻炎症反应有关。

关键词：上下两济丹；失眠；5-HT；星形胶质细胞；GFAP

上下两济丹对对氯苯丙氨酸诱导失眠小鼠的神经元的保护作用

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目的：探讨上下两济丹对对氯苯丙氨酸(PCPA)诱导失眠小鼠神经元的保护作用。方法：昆明小鼠随机分为空白组、模型组；上下两济丹低、中、高剂量组和地西洋组。采用腹腔注射PCPA(300mg/kg)，连续2 d，建立小鼠失眠模型。建模后，上下两济丹低、中、高剂量组和地西洋组灌胃给药，空白组、模型组小鼠每日灌胃等体积0.9%NaCl溶液，连续7d。睡眠翻转实验观察小鼠的睡眠潜伏期及睡眠持续时间；旷场实验观察小鼠的总距离、平均速度和中央距离；尼氏染色观察海马组织病理学；ELISA检测小鼠海马5-HT、DA、NE的含量；RT-qPCR检测小鼠海马NeuN和BDNF的mRNA表达；免疫荧光检测海马NeuN和BDNF蛋白表达。结果：与空白组比较，模型组睡眠潜伏期延长，睡眠持续时间缩短；总距离、平均速度和中央距离增加；尼氏体减少；5-HT、DA、NE含量减少；NeuN和BDNF的mRNA表达减少；NeuN和BDNF蛋白减少。与模型组比较，上下两济丹各组睡眠潜伏期缩短，睡眠持续时间延长；总距离、平均速度和中央距离降低；尼氏体增加；5-HT、DA、NE含量增加；NeuN和BDNF的mRNA表达增加；NeuN和BDNF蛋白表达增加。结论：上下两济丹可能是通过增加NE、DA、5-HT的含量，促进NeuN和BDNF表达水平，减轻神经元损伤，对失眠小鼠的神经元发挥保护作用。

关键词：上下两济丹；失眠；5-HT；NeuN；BDNF

中医不寐五神分型诊断法在不寐病防治中的应用价值

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本文深入探讨了中医在不寐病症治疗领域中五神分型诊断法的应用价值。在医学研究中，不寐病作为一种常见的睡眠障碍，其病因复杂，病机多变，给临床治疗带来了极大的挑战。为了应对这一难题，张星平教授通过深入分析和梳理不寐病的发病机制与成因，紧密结合中医独有的五神理论，创造性地提出了中医不寐五神分型诊断法。这一诊断方法不仅是对中医理论的一次重要拓展，更是对临床实践的一次大胆尝试。在研究中，我们详细阐述了五神分型诊断法的理论依据，即通过辨识患者的神志、魂魄、意志、思虑、情绪等五神状态，来精准判断不寐病的类型与程度。同时结合了大量的临床案例，深入探讨了这一诊断方法在不寐病治疗中的具体应用及效果。通过研究发现，五神分型诊断法不仅能够为患者提供更加精准的个性化治疗方案，而且在治疗过程中也能够根据患者的具体病情变化及时调整治疗策略。这一诊断方法的出现，不仅为中医在不寐病的预防和治疗方面提供了全新的理论支持，也为临床医生在实际操作中提供了更加明确和具体的指导。展望未来，随着研究的不断深入和临床实践的不断拓展，中医不寐五神分型诊断法有望在中医领域得到更广泛的应用。通过中医与现代医学的深度融合，能够为广大不寐病患者提供更加高效、精准和个性化的医疗服务，为人类的健康事业作出更大的贡献。

关键词：中医, 不寐病, 五神分型诊断法, 应用价值

Mechanism of *Salvia miltiorrhiza* Bunge extract to alleviate Chronic Sleep Deprivation-Induced cognitive dysfunction in rats

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Background: Bidirectional communication between the gut microbiota and the brain may play an essential role in the cognitive dysfunction associated with chronic sleep deprivation (CSD). *Salvia miltiorrhiza* Bunge (Danshen, DS), a famous Chinese medicine and functional tea, is extensively used to protect learning and memory capacities, although the mechanism of action remains unknown.

Purpose: The purpose of this research was to explore the efficacy and the underlying mechanism of DS in cognitive dysfunction caused by CSD.

Methods: DS chemical composition was analyzed by UPLC-QTOF-MS/MS. Forty rats were randomly assigned to five groups (n = 8): control (CON), model (MOD), low-dose (1.35g/kg, DSL), high-dose (2.70g/kg, DSH) DS group, and Melatonin (100mg/kg, MT) group. A CSD rat model was established over 21 days. DS's effects and the underlying mechanism were explored using the open-field test (OFT), Morris water-maze (MWM), tissue staining (Hematoxylin and Eosin Staining, Nissl staining, Alcian blue-periodic acid SCHIFF staining, and Immunofluorescence), enzyme-linked immunosorbent assay, Western blot, quantitative real-time polymerase chain reaction (qPCR), and 16S rRNA sequencing.

Results: We demonstrated that CSD caused gut dysbiosis and cognitive dysfunction. Furthermore, 16S rRNA sequencing demonstrated that Firmicutes and Proteobacteria were more in fecal samples from model group rats, whereas Bacteroidota and Spirochaetota were less. DS therapy, on the contrary hand, greatly restored the gut microbial community, consequently alleviating cognitive impairment in rats. Further research revealed that DS administration reduced systemic inflammation via lowering intestinal inflammation and barrier disruption. Following that, DS therapy reduced Blood Brain Barrier (BBB) and neuronal damage, further decreasing neuroinflammation in the hippocampus (HP). Mechanistic studies revealed that DS therapy lowered lipopolysaccharide (LPS) levels in the HP, serum, and colon, consequently blocking the TLR4/MyD88/NF- κ B signaling pathway and its downstream pro-inflammatory products (IL-1 β , IL-6, TNF- α , iNOS, and COX2) in the HP and colon.

Conclusion: DS treatment dramatically improved spatial learning and memory impairments in rats with CSD by regulating the composition of the intestinal flora, preserving gut and brain barrier function, and reducing inflammation mediated by the LPS-TLR4 signaling pathway. Our findings provide novel insight into the mechanisms by which DS treats cognitive dysfunction caused by CSD.

Keyword: Chronic sleep deprivation; Cognitive dysfunction; *Salvia miltiorrhiza* Bge.; Toll-Like Receptor 4.

基于“脾-脑”相关矿物药蛇含石水提取物改善小鼠睡眠和对脑组织钙信号通路的影响研究

韩君*

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目的 基于“脾-脑”相关蛇含石水提取物改善小鼠睡眠的研究和对脑组织钙信号通路的影响。**方法** 采用戊巴比妥钠阈下、阈上睡眠实验和自主活动实验等行为学测试评估蛇含石水提取物对小鼠睡眠的改善效果。进一步通过对小鼠脾组织和脑组织进行转录组测序和非靶代谢组学分析。检测小鼠血清和脑组织中的金属离子浓度。并进行相关的免疫组化实验。**结果** 蛇含石水提取物成分包含钠、铁、镉、钙、铝等元素。蛇含石水提取物能减少小鼠睡眠潜伏期，增加睡眠时间和入睡率。脾组织免疫浸润分析及免疫组化验证显示，相较于对照组，中性粒细胞在给药组中免疫丰富度增加 ($P < 0.05$)。转录组数据分析揭示了 *Atp1b2* 基因是脾组织和脑组织中的交集基因，并与中性粒细胞表达呈正相关，与脑组织中的油酸代谢物表达呈负相关。金属离子检测结果表明，与对照组相比，给药组小鼠的脑组织和血清中铁离子浓度显著增高 ($P < 0.05$)。免疫组化结果显示，在高剂量给药组中，*Atp2a3* 蛋白表达降低，而 *Plcg1* 蛋白表达增加，两者差异均具有统计学意义 ($P < 0.05$)。小鼠脾和脑组织中 *Atp1b2* 蛋白水平呈正相关 ($R = 0.829$, $P = 0.038$)。Western blot 结果证明，在高剂量组中，脑和脾脏中 *Atp1b2* 蛋白水平显著增加 ($P < 0.05$)。**结论** 蛇含石水提取物具有改善小鼠睡眠作用，其机制可能与脾-脑轴上相关基因和脑组织中钙信号通路有关。

关键词：蛇含石；矿物药；脾-脑轴；中性粒细胞；钙信号通路；睡眠

六、青年优秀论文

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Association of Disrupted Delta Wave Activity During Sleep With Long-Term Cardiovascular Disease and Mortality

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BACKGROUND Delta wave activity is a prominent feature of deep sleep, which is significantly associated with sleep quality.

OBJECTIVES We hypothesized that delta wave activity disruption during sleep could predict long-term cardiovascular disease (CVD) and CVD mortality risk.

METHODS We employed a comprehensive power spectral entropy-based method to assess delta wave activity during sleep based on overnight polysomnograms in 4058 participants in the Sleep Heart Health Study (SHHS) and 2193 participants in the Osteoporotic Fractures in Men Study (MrOS) Sleep study.

RESULTS During 11.0 ± 2.8 years of follow-up in SHHS, 729 participants had incident CVD and 192 participants died due to CVD. During 15.5 ± 4.4 years of follow-up in MrOS, 547 participants had incident CVD, and 391 died due to CVD. In multivariable Cox-regression models, lower delta wave entropy during sleep was associated with higher risk of coronary heart disease (CHD) [SHHS: hazard ratio (HR) 1.46 (1.02–2.06), $P = 0.03$; MrOS: HR 1.79 (1.17–2.73), $P < 0.01$], CVD [SHHS: HR 1.60 (1.21–2.11), $P < 0.01$; MrOS: HR 1.43 (1.00–2.05), $P = 0.05$], and CVD mortality [SHHS: HR 1.94 (1.18–3.18), $P < 0.01$; MrOS: HR 1.66 (1.12–2.47), $P = 0.01$] after adjusting for covariates. The Shapley Additive Explanations method indicates that low delta wave entropy was more predictive of CHD, CVD, and CVD mortality risks than conventional sleep parameters.

CONCLUSIONS Our results suggest that delta wave activity disruption during sleep may be a useful metric to identify those at increased risk for CVD and CVD mortality.

Keyword: Delta wave activity, Spectral entropy, Cardiovascular disease, Mortality

ACC controls chronic pain induced insomnia and memory deficits

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Chronic pain often precipitates sleep disturbances and memory deficits, yet the precise neural circuit mechanisms responsible for sleep disorders in chronic pain have remained largely elusive. More significantly, whether chronic pain-induced insomnia contributes to memory deficits is yet to be fully understood. Here, we have demonstrated that the hyperactivity of pyramidal neurons (PNs) in the anterior cingulate cortex (ACC) drives insomnia in a mouse model of chronic pain. Notably, our investigation reveals that the ACC projection to the dorsal medial striatum (DMS) underpins chronic pain-induced insomnia through augmented activity and plasticity of ACC-DMS dopamine D1R neuron synapses. However, the DMS does not appear to directly influence spatial memory. Subsequently, we identified that the hyperactivity of ACC PNs contributes to spatial memory deficits via an indirect pathway involving hypothalamic projections. These findings illuminate the pivotal role of ACC PNs in the development of chronic pain-induced sleep disorders and memory deficits.

Keyword: insomnia, chronic pain, memory, ACC

简化失眠认知行为治疗对抑郁症伴失眠症状患者的疗效分析

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目的：验证简化失眠认知行为治疗（Cognitive Behavioral Therapy for Insomnia-Simplified, CBTI-S）的有效性与对抑郁症患者的适用性。

方法：采用随机平行对照设计，符合入组标准的抑郁症伴失眠患者，按 1: 2 比例随机分配到对照组和研究组。对照组接受常规药物治疗+睡眠卫生教育，研究组进行常规药物治疗+CBTI-S 治疗。于基线、干预后 2 周末、干预后即刻、干预后 1 月、干预后 6 月进行随访，采用 PSQI、ISI、HAMD-17、QOL-6、WAI 等评估，明确治疗效果。

结果

（1）两组患者受教育年限、家庭经济情况等差异均无统计学意义，平均年龄差异有统计学意义；两组患者治疗前 PSQI、ISI、HAMD-17、QOL-6、WAI 评分比较差异均无统计学意义。

（2）治疗后，两组患者 PSQI 总分、入睡时长、ISI 总分、HAMD-17 评分均较治疗前降低，将年龄作为协变量，重复测量方差分析结果显示两组患者在 PSQI 量表中的入睡时长的交互作用显著。两组患者 HAMD-17、ISI、QOL-6 指标的时间效应均显著，组间效应及交互效应均不显著。

（3）治疗后 1 月随访及 6 月随访，两组患者 PSQI 总分、入睡时长、ISI 总分、HAMD-17 评分的时间效应均显著，组间效应及交互效应均不显著。

结论

CBTI-S 能有效缩短患者入睡时长，可适当增加 CBTI-S 治疗次数，增加随访时间。

关键词：失眠，认知行为治疗，抑郁障碍，

Circadian rhythm dysfunction and psychopathology in offspring of parents with bipolar disorder: a high-risk study in the Chinese population

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Background: Understanding the evolution of circadian rhythm dysfunction and psychopathology in the high-risk population has important implications for the prevention of bipolar disorder, but the previous evidence on psychopathology was inconsistent, while the association between parental history of bipolar disorder and circadian dysfunction among offspring was rarely investigated.

Aims: To examine rates of sleep and circadian dysfunctions as well as mental disorders and their symptoms in the offspring of parents with (O-BD) and without bipolar disorder (O-Control).

Method: The sample included 191 O-BD and 202 O-Control aged 6-21 from the Greater Bay Area, China. Diagnoses and symptoms of sleep/circadian rhythm and mental disorders dysfunction were assessed by the Diagnostic Interview for Sleep Patterns and Disorders and the Schedule for Affective Disorders and Schizophrenia for School-Age Children - Present and Lifetime Version, respectively. Generalized Estimating Equations and shared frailty proportional hazards models of survival analysis were applied to compare the outcomes in the offspring.

Results: Adjusting for age, sex, and region of recruitment, there was a significantly higher risk of delayed sleep phase symptoms (9.55% vs. 2.58%, adjusted OR: 4.04) in O-BD than in the O-Control. O-BD had nearly 5-fold risks of mood disorders (11.70% vs. 3.47%, adjusted OR: 4.68) and social anxiety (6.28% vs. 1.49%, adjusted OR: 4.70), 4-fold risks of depressive disorders (11.17% vs. 3.46%, adjusted OR: 3.99), and 3-fold risks of mood symptoms (20.74% vs. 10.40%, adjusted OR: 2.59) than O-Control. Subgroup analyses revealed that O-BD children had nearly 2-fold risks of any mental symptoms and behavioral symptoms than O-Control, while there were nearly 4-fold risks of delayed sleep phase symptoms, 7.5-fold risks of social anxiety, and 3-fold risks of mood symptoms in O-BD adolescents.

Conclusion: There was an increase in delayed sleep phase symptoms in O-BD adolescents compared to their counterparts, confirming the central role of circadian rhythm dysfunction in bipolar disorder. The findings of the specific age and stage-related developmental patterns of psychopathologies and circadian dysfunction in children and adolescent offspring of parents with bipolar disorder paved the way to develop specific and early clinical intervention and prevention strategies.

Keyword: sleep, offspring, circadian rhythm dysfunction, bipolar disorder, high-risk

Exploring Sleep Characteristics in Chinese Patients with Narcolepsy: Insights from the nocturnal Sleep Onset Rapid Eye Movement Period (nSOREMP)

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Study Objectives

This study aims to investigate the unique characteristics and clinical significance of the nocturnal sleep onset rapid eye movement period (nSOREMP) in the Chinese population with narcolepsy, enhancing our understanding and management of the disorder globally.

Methods

This retrospective analysis investigated narcolepsy in Chinese patients from six hospitals, using International Classification of Sleep Disorders. A parallel retrospective analysis of the Chinese Clinical Sleep Database (CCSD) focused on polysomnography (PSG) records was conducted to evaluate nSOREMP prevalence in other sleep disorders.

Results

The study found a 2.51% nSOREMP prevalence in other sleep disorders of CCSD. Significant differences in age, N2 and rapid eye movement (REM) percentages, REM latency, and various indexes were noted among narcolepsy with/without nSOREMP, and other sleep disorders with nSOREMP of CCSD. nSOREMP prevalence in NT1 was 33.33% and in NT2, 28.30%. Noteworthy disparities in NT1 included N2 percentages, REM latency, and SOREMPs in multiple sleep latency test (MSLT). In NT2, differences were significant in age, sleep latency, N2 and REM latencies, arousal index, mean sleep latency in MSLT, and MSLT SOREMPs.

Conclusions

This study highlights nSOREMP's distinct characteristics in the Chinese population. Patients exhibiting symptoms suggestive of the onset of narcolepsy are advised to undergo an MSLT, irrespective of the occurrence of SOREMP during nocturnal PSG.

Keyword: Narcolepsy, Nocturnal Sleep Onset Rapid Eye Movement Period, Sleep, Polysomnography, Multiple Sleep Latency Test

Mediating effects of sleep quality between clinical characteristics and quality of life in children with epilepsy: A cross-sectional study from Southwest China

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Background: Although sleep quality (SQ) reportedly affects the health-related quality of life (QOL) of patients with epilepsy, little is known about the potential association between SQ and QOL, particularly in children with epilepsy (CWE). Our study aimed to investigate the mediating effect of SQ on the QOL of CWE to obtain more information for the prevention and treatment of epilepsy in children.

Methods: We collected general demographic and clinical data of 212 CWE and 79 controls (children who visited the Health Examination Department), and their guardians were instructed to answer the Children's Sleep Habits Questionnaire (CSHQ) and the optimized Quality of Life in Childhood Epilepsy Questionnaire-16 (QOLCE-16). The t-test, analysis of variance, chi-square test, and Fisher's exact test were used for between group comparisons. The Pearson correlation was used to analyze the correlation between variables. The direct, indirect, and total effects of predictors on the QOL of CWE were estimated based on an adjusted mediation model.

Results: CWE had significantly smaller long-term urban residence rates, less educated guardians, higher total CSHQ score, higher incidence of poor SQ, higher bedtime resistance, more sleep anxiety, worse sleep-disordered breathing, increased parasomnia, more daytime sleepiness, more frequent night waking, and greater sleep onset delay than controls ($P < 0.05$ for all). The univariable analysis showed significant differences in total CSHQ scores between CWE with different seizure frequency in the last month, whether or not drug-resistant epilepsy (DRE), and with different video electroencephalogram (VEEG) findings ($P < 0.05$ for all). Differences in QOLCE-16 scores between CWE with different guardian's employment status, age at diagnosis, number of anti-seizure medication (ASM) types, seizure frequency in the last month, DRE status, seizure type, VEEG findings, neuropsychological evaluation findings, magnetic resonance imaging (MRI) findings, and etiology were statistically significant ($P < 0.05$ for all). The correlation study indicated that the total CSHQ score was negatively correlated with the QOLCE-16 score ($P < 0.05$). The mediation analysis showed that DRE and VEEG abnormalities had a standardized direct effect on the QOL. Seizure frequency in the last month, DRE, and VEEG abnormalities had an indirect effect on the QOL through SQ, and their mediating effect values of SQ were 31.61%, 13.45%, and 14.35%, respectively.

Conclusion: Our findings uncovered the relationship of some clinical characteristics with SQ and QOL and characterized the nature of factors affecting the QOL of CWE. SQ could be a key factor in the prognosis of CWE experiencing epileptic seizures, and more attention should be paid on the management of SQ in interventions for epilepsy.

Keyword: children with epilepsy, quality of life, sleep quality, mediating effect

多发腔隙性脑梗死患者抑郁症状与睡眠-觉醒昼夜节律的关系

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目的：探讨多发腔隙性脑梗死（MLI）患者抑郁症状与睡眠觉醒昼夜节律的关系。方法：选取2020-2021年开滦总医院住院治疗的MLI患者，根据DSM-5和SDS量表，分为PSD组和NPSD组。应用智能睡眠监测系统监测睡眠参数，评估睡眠-觉醒昼夜节律日间稳定性（IS）和昼夜变异性（IV）；应用昼夜节律类型（CTI）量表评估睡眠-觉醒昼夜调节能力。比较两组基本临床特征、睡眠参数、昼夜节律指标，应用多因素logistic回归分析探讨MLI患者抑郁症状与睡眠-觉醒昼夜节律的关系。结果：①PSD组年龄、NIHSS评分、HHcy、焦虑症状及梗死病灶位于额叶、颞叶等的比例高于NPSD组（ $P < 0.05$ ）②PSD组IS、灵活性/刚性（CTI-FR）评分低于NPSD组，IV、困倦/活力（CTI-LV）评分高于NPSD组（ $P < 0.05$ ）③PSD组夜间总睡眠时间、REM时间、REM%和夜间睡眠效率（SE）均低于NPSD组（ $P < 0.05$ ）；PSD组入睡后清醒时间、睡眠潜伏期及浅睡眠%高于NPSD组（ $P < 0.05$ ）④多因素Logistic回归分析结果显示，REM%、夜间SE、IS、CTI-FR、CTI-LV与MLI患者抑郁症状独立相关（均 $P < 0.05$ ）。结论：睡眠-觉醒昼夜节律与MLI抑郁症状密切相关，REM%、夜间SE、IS、CTI-FR降低或CTI-LV增高，MLI患者发生抑郁症状的危险性增高。

关键词：多发腔隙性脑梗死，抑郁症状，睡眠，昼夜节律

急性缺血性脑卒中患者睡眠-觉醒生物节律变化与预后的关系研究

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目的 探讨大脑中动脉急性缺血性脑卒中患者昼夜睡眠-觉醒生物节律变化与预后的关系。**方法** 选取大脑中动脉急性缺血性脑卒中患者 71 例为病例组。另纳入同期无急性缺血性脑卒中且无脑血管狭窄者 67 例作为对照组。收集患者一般资料, 比较 2 组昼夜生物节律、日间睡眠-觉醒节律、夜间睡眠-觉醒节律、昼夜睡眠-觉醒节律指标的差异。多因素 Logistic 逐步回归分析大脑中动脉急性缺血性脑卒中预后的影响因素。受试者工作特征 (ROC) 曲线分析相关变量的预测价值。**结果** 病例组年龄、男性、高血压、糖尿病、高脂血症、吸烟及饮酒史比例均高于对照组。病例组日间稳定性低于对照组 (P<0.05)。昼夜睡眠增多、日间睡眠增多、夜间睡眠效率低下比例高于对照组 (P<0.05)。Logistic 回归分析显示日间 REM 睡眠潜伏期是大脑中动脉急性缺血性脑卒中预后的影响因素。日间 REM 睡眠期 ROC 曲线下的面积 (AUC) 为 0.705, 敏感度为 0.811, 特异度为 0.611。**结论** 大脑中动脉急性缺血性脑卒中后昼夜睡眠-觉醒节律呈失衡状态, 表现为日间稳定性差, 日间睡眠增多, 昼夜睡眠增多, 夜间睡眠效率低下, 日间 REM 睡眠期对大脑中动脉急性缺血性脑卒中预后具有预测价值。

关键词: 大脑中动脉; 卒中; 睡眠障碍, 昼夜节律性; 生物节律; 预后

卒中伴阻塞性睡眠呼吸暂停患者认知功能损害与睡眠参数的关系

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目的：探讨急性缺血性卒中伴阻塞性睡眠呼吸暂停（OSA）患者认知损害与睡眠参数的关系。

方法：选取急性缺血性卒中伴 OSA 患者 343 例，应用简易智力状态检查量表（MMSE）评估认知功能，将患者分为认知功能损害组 119 例，无认知功能损害组 224 例。收集患者的一般资料、TOAST 病因分型及脑梗死病灶的脑区分布；应用睡眠监测系统计算出 AHI，评估 OSA；进行夜间客观睡眠监测参数的采集：患者入院 24 h 内进行睡眠监测，连续监测 ≥ 3 个夜晚，每晚持续监测时长 ≥ 7 h，得到夜间睡眠参数。应用多因素 Logistic 回归分析急性缺血性卒中伴 OSA 患者认知损害与睡眠参数的关系。

结果：与无认知功能损害组比较，认知功能损害组年龄、糖尿病史和 HHcy 病史比例，梗死病灶位于额叶、颞叶、顶叶、枕叶、丘脑、基底节、脑干、半卵圆中心的患者比例升高，受教育年限降低，清醒次数、浅睡眠占比、AHI 增加，夜间睡眠效率、深睡眠期减少，深睡眠占比下降（ $P < 0.05$ ）。Logistic 回归分析显示，控制了受教育年限、年龄等因素的干扰作用后，夜间睡眠效率和 AHI 与急性缺血性卒中伴 OSA 患者认知功能损害密切相关（ $P < 0.05$ ），夜间睡眠效率升高是保护因素，AHI 升高是危险因素。

结论：急性缺血性卒中伴 OSA 患者认知功能损害与睡眠参数密切相关，其中夜间睡眠效率升高是保护因素，AHI 升高是危险因素。

关键词：卒中；睡眠呼吸暂停，阻塞性；认知功能障碍；呼吸暂停低通气指数；睡眠结构

Differences in Polysomnographic and Craniofacial Characteristics of Catathrenia Phenotypes: A Cluster Analysis

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Purpose: Catathrenia is a rare sleeping disorder characterized by repetitive nocturnal groaning during prolonged expirations. Patients with catathrenia had heterogeneous polysomnographic, comorbidity, craniofacial characteristics, and responses to treatment. Identifying phenotypes of catathrenia might benefit the exploration of etiology and personalized therapy.

Patients and methods: Sixty-six patients diagnosed with catathrenia by full-night audio/video polysomnography seeking treatment with mandibular advancement devices (MAD) or continuous positive airway pressure (CPAP) were included in the cohort. Polysomnographic characteristics including sleep architecture, respiratory, groaning, and arousal events were analyzed. Three-dimensional (3D) and 2D craniofacial hard tissue and upper airway structures were evaluated with cone-beam computed tomography and lateral cephalometry. Phenotypes of catathrenia were identified by K-mean cluster analysis, and inter-group comparisons were assessed.

Results: Two distinct clusters of catathrenia were identified: cluster 1 (n=17) was characterized to have more males (71%), a longer average duration of groaning events (18.5 ± 4.8 and 12.8 ± 5.7 s, $p=0.005$), and broader upper airway (volume 41386 ± 10543 and 26661 ± 6700 mm³, $p<0.001$); cluster 2 (n=49) was characterized to have more females (73%), higher respiratory disturbance index (RDI) (median 1.0 [0.3, 2.0] and 5.2 [1.2, 13.3]/h, $p=0.009$), more respiratory effort-related arousals (RERA) (1 [1, 109] and 32 [13, 57]), $p=0.005$), smaller upper airway (cross-sectional area of velopharynx 512 ± 87 and 339 ± 84 mm², $p<0.001$) and better response to treatment (41.2% and 82.6%, $p=0.004$).

Conclusions: Two distinct phenotypes were identified in patients with catathrenia, primary catathrenia, and catathrenia associated with upper airway obstruction, suggesting respiratory events and upper airway structures might be related to the etiology of catathrenia, with implications for its treatment.

Keyword: subtype, groaning, upper airway, treatment, OSA, sleep-disordered breathing

Bidirectional associations between short sleep duration, insomnia symptoms, and psychotic-like experiences in adolescents

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This study investigates the prospective associations between short sleep duration, insomnia symptoms, and psychotic-like experiences (PLEs) in a large sample of Chinese adolescents. This study utilized a three-timepoint repeated cross-sectional survey with two nested longitudinal subsamples. A total of 17,722 adolescents were assessed at baseline (April 21 to May 12, 2021) and six months later (December 17 to 26, 2021). Out of these, 15,694 adolescents provided complete responses to the questions at baseline and one year later (May 17 - June 6, 2022). A self-administered questionnaire was used to measure sample characteristics (at baseline), sleep duration, insomnia symptoms, and PLEs (at each assessment), and negative life events (at two follow-ups). Baseline short sleep duration and insomnia symptoms predicted frequent PLEs at both follow-up assessments. Additionally, baseline frequent PLEs also predicted insomnia symptoms at six months and one year later. However, when controlling for confounders, PLEs at baseline only predicted short sleep duration at six months, and not at one year. This study reveals bidirectional prospective relationships between short sleep duration, insomnia symptoms, and PLEs, even after controlling for covariates. Therefore, it is crucial to assess both sleep patterns and PLEs in order to promote optimal sleep and mental health among adolescents.

Keyword: Sleep duration, Insomnia symptoms, Psychotic-like experiences, Bidirectional associations, Longitudinal study, Adolescents

Association of objective sleep duration with cognition and brain aging biomarkers in older adults

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The neuropathological mechanisms underlying the association between sleep duration and mild cognitive impairment remain poorly understood. This population-based study included 2032 dementia-free people (age ≥ 60 years; 55.1% women) derived from participants in the Multimodal Interventions to Delay Dementia and Disability in Rural China; of these, data were available in 841 participants for Alzheimer's plasma biomarkers (e.g. amyloid- β , total tau and neurofilament light chain), 1044 for serum microvascular biomarkers (e.g. soluble adhesion molecules) and 834 for brain MRI biomarkers (e.g. white matter, grey matter, hippocampus, lacunes, enlarged perivascular spaces and white matter hyperintensity WMH). We used electrocardiogram-based cardiopulmonary coupling analysis to measure sleep duration, a neuropsychological test battery to assess cognitive function and the Petersen's criteria to define mild cognitive impairment. Data were analysed with multivariable logistic and general linear models. In the total sample (n = 2032), 510 participants were defined with mild cognitive impairment, including 438 with amnesic mild cognitive impairment and 72 with non-amnesic mild cognitive impairment. Long sleep duration (>8 versus 6-8 h) was significantly associated with increased likelihoods of mild cognitive impairment and non-amnesic mild cognitive impairment and lower scores in global cognition, verbal fluency, attention and executive function (Bonferroni-corrected $P < 0.05$). In the subsamples, long sleep duration was associated with higher plasma amyloid- β 40 and total tau, a lower amyloid- β 42/amyloid- β 40 ratio and smaller grey matter volume (Bonferroni-corrected $P < 0.05$). Sleep duration was not significantly associated with serum-soluble adhesion molecules, white matter hyperintensity volume, global enlarged perivascular spaces and lacunes ($P > 0.05$). Alzheimer's and neurodegenerative pathologies may represent common pathways linking long sleep duration with mild cognitive impairment and low cognition in older adults.

Keyword: brain aging; mild cognitive impairment; neurodegeneration; population-based study; sleep duration

经颅直流电刺激在急性意识障碍患者治疗中的安全性及有效性研究

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目的：探索经颅直流电刺激（tDCS）在急性意识障碍（DOC）患者治疗中的安全性及有效性。

方法：所有急性非外伤性 DOC 患者入组后随机分为常规治疗组和 tDCS 治疗组。所有患者均在入组后第 1 天和第 15 天，进行临床评估记录格拉斯哥昏迷评分、全面无反应性评估量表（FOUR）评分及修订版昏迷恢复量表（CRS-R）评分，进行事件相关电位检查记录失匹配负波（MMN）及脑电图（electroencephalogram, EEG）检查记录 ABCD 模型分型。常规治疗组患者不接受任何神经调控治疗；tDCS 治疗组患者在常规治疗基础上，接受 tDCS 治疗 14 天。并于入组后 6 个月后进行电话随访，记录格拉斯哥预后评分（GOS），GOS 1-2 分为预后不良，GOS 3-5 分为预后良好。

结果：共纳入 tDCS 组 20 名，常规治疗组 20 名。入组第 1 天和第 15 天评估对比，tDCS 组患者的 FOUR 评分和 CRS-R 评分有显著提高，MMN 振幅增加（ $P < 0.05$ ）。常规治疗组患者各临床评分及神经电生理指标均无统计学差异。与 tDCS 组 DOC 患者早期临床改善比例，以及 6 个月时预后良好比例明显高于常规治疗组（ $P < 0.05$ ）。

结论：tDCS 应用于急性 DOC 患者是安全可行的，可以改善 DOC 患者的意识状态及长期预后。

关键词：经颅直流电刺激，意识障碍，失匹配负波

Associations of 24-hour movement behaviors with depressive symptoms in rural-dwelling older adults: a compositional data analysis

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Background: We aimed to explore the association of sleep duration with depressive symptoms among rural-dwelling older adults in China, and to estimate the impact of substituting sleep with sedentary behavior (SB) and physical activity (PA) on the association with depressive symptoms.

Methods: This population-based cross-sectional study included 2001 rural-dwelling older adults (age ≥ 60 years, 59.2% female). Sleep duration was assessed using the Pittsburgh Sleep Quality Index. We used accelerometers to assess SB and PA, and the 15-item Geriatric Depression Scale to assess depressive symptoms. Data were analyzed using restricted cubic splines, compositional logistic regression, and isotemporal substitution models.

Results: Restricted cubic spline curves showed a U-shaped association between daily sleep duration and the likelihood of depressive symptoms (P -nonlinear $<.001$). Among older adults with sleep duration <7 hours/day, reallocating 60 minutes/day spent on SB and PA to sleep were associated with multivariable-adjusted odds ratio (OR) of 0.81 (95% confidence interval [CI]=0.78-0.84) and 0.79 (0.76-0.82), respectively, for depressive symptoms.

Among older adults with sleep duration ≥ 7 hours/day, reallocating 60 minutes/day spent in sleep to SB and PA, and reallocating 60 minutes/day spent on SB to PA were associated with multivariable-adjusted OR of 0.78 (0.74-0.84), 0.73 (0.69-0.78), and 0.94 (0.92-0.96), respectively, for depressive symptoms.

Conclusions: Our study reveals a U-shaped association of sleep duration with depressive symptoms in rural older adults and further shows that replacing SB and PA with sleep or vice versa is associated with reduced likelihoods of depressive symptoms depending on sleep duration.

Keyword: sleep duration, sedentary behavior, physical activity; depressive symptoms, accelerometer, population-based study

Exogenous Ang-(1-7) Inhibits Autophagy via HIF-1 α /THBS1/BECN1 Axis to Alleviate Chronic Intermittent Hypoxia-enhanced Airway Remodeling of Asthma

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Introduction Obstructive sleep apnoea (OSA)-induced chronic intermittent hypoxia (CIH) has been considered a risk factor for severe asthma. Airway remodelling, which could be modulated by autophagy, plays a key role in severe asthma. However, the extent of autophagy's involvement in CIH-potentiated airway remodelling remains largely unexplored. Furthermore, we had found that angiotensin-(1-7) [Ang-(1-7)] has therapeutic effects on airway remodelling in asthma, but the underlying mechanism is either unclear. This study aimed to explore how CIH aggravates asthma and mechanism of protective effects of Ang-(1-7) on airway remodelling, with a focus on autophagy.

Method and Results We observed that CIH promoted epithelial-to-mesenchymal transition (EMT), indicated by elevated EMT and fibrotic markers such as Snail and Collagen IV, both in vitro and in vivo. CIH intensified cell autophagy, evident from increased LC3B expression and reduced p62 levels. Ang-(1-7) reversed the CIH-enhanced expression of Snail, Collagen IV, and LC3B. To explore how CIH enhanced autophagy in cellular and animal model of asthma, overexpression of hypoxia-inducible factor 1-alpha (HIF-1 α) and Thrombospondin 1 (THBS1) were identified in CIH-exposure mice lung compared with normal mice lung tissues from the GEO database. Finally, through chromatin immunoprecipitation and immunoprecipitation assays, we verified that Ang-(1-7) inhibits CIH-induced binding of HIF-1 α to the promoter of THBS1, and also disrupts the protein-protein interaction between THBS1 and the autophagy-associated protein Beclin 1 (BECN1), ultimately leading to autophagy inhibition.

Conclusion Exogenous Ang-(1-7) can inhibit autophagy via HIF-1 α /THBS1/BECN1 axis, thereby alleviating CIH-enhanced airway remodelling in asthma. These findings imply the potential therapeutic effect of Ang-(1-7) in asthma with OSA.

Keyword:

Novel Susceptibility Genes and Biomarkers for Obstructive Sleep Apnea: Insights from Genetic and Inflammatory Proteins

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Study Objectives: Numerous observational studies link obstructive sleep apnea (OSA) to inflammatory proteins, yet the directionality of these associations remains ambiguous. Therefore, we aimed to clarify the potential associations of gene-predicted inflammatory proteins with OSA.

Methods: Based on genome-wide association study data, we applied Mendelian randomization (MR) to explore potential connections between circulating inflammatory proteins and OSA, primarily using the inverse variance weighting method for robustness. Cochran's Q test, MR-Egger intercept test, MR-PRESSO, and leave-one-out method were used to perform sensitivity tests for pleiotropy and heterogeneity. Replication analyses and meta-analyses were performed using other independent data. Steiger tests and multivariate MR assessed the independent effects of exposure factors, and the functional mapping and annotation (FUMA) platform was used to identify key genes to enhance the understanding of genetics.

Results: Our investigation revealed 21 circulating inflammatory proteins significantly associated with OSA-related phenotypes. Notably, IL-10RA, IL-18R1, TNFSF14, CCL23, ADA, and SLAMF1 had significant effects on multiple phenotypes. After FDR correction, IL-18R1, SLAMF1, IL-10RA, and IL-17C were identified as important candidates for OSA, and multivariate MR analysis strengthened the independent heritability of 20 inflammatory factors. The FUMA platform revealed seven overlapping genes: ROBO1, PRIM1, NACA, SHBG, HSD17B6, RBMS2, and WWOX. All reverse MR analyses and sensitivity analyses confirmed the robustness of these associations.

Conclusions: Our results underscore crucial associations between inflammatory proteins and OSA pathogenesis, revealing new correlates and susceptibility genes. These findings advance biomarker identification for OSA risk and highlight the importance of genetic and inflammatory profiles in OSA management.

Keyword: Obstructive sleep apnea; Snoring; Apnea-hypopnea index; Inflammatory proteins; Mendelian randomization.

Anterior cingulate cortex projections to the dorsal medial striatum underlie insomnia associated with chronic pain

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Chronic pain often leads to the development of sleep disturbances. However, the precise neural circuit mechanisms responsible for sleep disorders in chronic pain have remained largely unknown. Here, we present compelling evidence that hyperactivity of pyramidal neurons (PNs) in the anterior cingulate cortex (ACC) drives insomnia in a mouse model of nerve-injury-induced chronic pain. After nerve injury, ACC PNs displayed spontaneous hyperactivity selectively in periods of insomnia. We then show that ACC PNs were both necessary for developing chronic-pain-induced insomnia and sufficient to mimic sleep loss in naive mice. Importantly, combining optogenetics and electrophysiological recordings, we found that the ACC projection to the dorsal medial striatum (DMS) underlies chronic-pain-induced insomnia through enhanced activity and plasticity of ACC-DMS dopamine D1R neuron synapses. Our findings shed light on the pivotal role of ACC PNs in developing chronic-pain-induced sleep disorders.

Keyword: insomnia, chronic pain, anterior cingulate cortex, dorsal medial striatum, dopamine

40 Hz light flickering promotes sleep through cortical adenosine signaling

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Flickering light stimulation has emerged as a promising non-invasive neuromodulation strategy to alleviate neuropsychiatric disorders. However, the lack of a neurochemical underpinning has hampered its therapeutic development. Here, we demonstrate that light flickering triggered an immediate and sustained increase (up to 3 h after flickering) in extracellular adenosine levels in the primary visual cortex (V1) and other brain regions, as a function of light frequency and intensity, with maximal effects observed at 40 Hz frequency and 4000 lux. We uncovered cortical (glutamatergic and GABAergic) neurons, rather than astrocytes, as the cellular source, the intracellular adenosine generation from AMPK-associated energy metabolism pathways (but not SAM-transmethylation or salvage purine pathways), and adenosine efflux mediated by equilibrative nucleoside transporter-2 (ENT2) as the molecular pathway responsible for extracellular adenosine generation. Importantly, 40 Hz (but not 20 and 80 Hz) light flickering for 30 min enhanced non-rapid eye movement (non-REM) and REM sleep for 2-3 h in mice. This somnogenic effect was abolished by ablation of V1 (but not superior colliculus) neurons and by genetic deletion of the gene encoding ENT2 (but not ENT1), but recaptured by chemogenetic inhibition of V1 neurons and by focal infusion of adenosine into V1 in a dose-dependent manner. Lastly, 40 Hz light flickering for 30 min also promoted sleep in children with insomnia by decreasing sleep onset latency, increasing total sleep time, and reducing waking after sleep onset. Collectively, our findings establish the ENT2-mediated adenosine signaling in V1 as the neurochemical basis for 40 Hz flickering-induced sleep and unravel a novel and non-invasive treatment for insomnia, a condition that affects 20% of the world population.

Keyword: 40 Hz light flickering, sleep, adenosine, visual cortex, equilibrative nucleoside transporter-2

注意缺陷多动障碍儿童睡眠障碍的影响因素分析

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目的 探讨注意缺陷多动障碍（ADHD）儿童睡眠障碍的影响因素。**方法** 对244例的6-12岁ADHD儿童采用儿童睡眠紊乱量表（SDSC）评估ADHD儿童的睡眠（SDSC总分 ≥ 39 分判定为有睡眠障碍）、SNAP-IV量表评估ADHD核心症状（注意缺陷和多动冲动）、Das-Naglieri认知功能评估系统评估认知信息加工过程（计划和注意）、中国韦氏儿童智力量表第2版评估言语智商和操作智商。**结果** ADHD儿童睡眠障碍的发生率为76.6%。单因素Logistic回归分析结果表明，年龄、性别、计划、注意、言语智商和操作智商对ADHD儿童睡眠障碍的影响无统计学意义（ $P > 0.05$ ）；注意缺陷（ $P < 0.001$, OR=3.72, 95% CI:2.12-6.54）和多动冲动（ $P=0.004$, OR=1.98, 95% CI:1.25-3.14）症状严重程度的增加会增加ADHD儿童睡眠障碍发生的风险。多因素Logistic回归分析结果表明，在控制了年龄、性别、计划、注意、言语智商和操作智商后，注意缺陷（ $P < 0.001$, OR = 3.39, 95% CI: 1.77-6.51）症状的增加将显著增加ADHD儿童患睡眠障碍（SDSC总分 > 39 分）的风险。**结论** 多动冲动症状、言语智商、操作智商、计划和注意功能不会直接影响ADHD儿童睡眠。ADHD的注意缺陷症状越严重，ADHD儿童睡眠障碍的发生率越高。

关键词：儿童；睡眠障碍；睡眠；注意缺陷多动障碍；Das-Naglieri认知功能评估系统；认知信息加工过程

Sleep disturbance and suicidal ideation mediated by psychotic-like experiences in adolescents: a two-wave longitudinal study

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Study Objectives: Sleep disturbance may cause suicidal ideation (SI). This study aimed to examine their co-occurrence rate among adolescents and investigate whether psychotic-like experiences (PLEs) mediate this association. **Methods:** A total of 17,722 Chinese adolescents were included in this two-wave longitudinal study. The baseline survey (time 1, T1) was conducted between April 21 and May 12, 2021, and the follow-up survey (time 2, T2) was implemented between December 17 and 26, 2021. At T1, participants completed questionnaires to assess their sleep disturbance, sleep duration, PLEs, SI, depressive symptoms, and sociodemographic characteristics. At T2, participants reported their PLEs, SI, and negative life events. **Results:** The SI prevalence decreased from 20.2% (T1) to 18.4% (T2). Participants with SI showed significantly higher prevalence of sleep disturbance and short sleep duration compared to those without SI. Baseline sleep disturbance and short sleep duration were both associated with the increased risk of SI 6 months later. These longitudinal links were mediated by PLEs, independent of baseline covariates and negative life events. **Conclusions:** These findings provide a novel insight into the mechanism linking sleep problems and suicidality, and stress the significance of assessing and addressing sleep problems and PLEs for adolescent suicide prevention and intervention.

Keyword: sleep disturbance, sleep duration, psychotic-like experiences, suicidal ideation, longitudinal survey, adolescents

Negative life events and sleep disturbance among adolescents: Intolerance of uncertainty as mediator and moderator

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Background: While negative life events (NLEs) have been linked to an increased risk of sleep disturbance among adolescents, the mechanisms of this impact still lack further examination. The current study aimed to explore whether intolerance of uncertainty (IU), a dispositional transdiagnostic vulnerability factor for psychopathology, could act as a mediator and/or moderator in the link from NLEs to sleep disturbance.

Methods: A longitudinal nested subsample of 54,240 Chinese adolescents (aged 9–19) were surveyed at baseline (Timepoint 1) and six months later (Timepoint 2). They completed questionnaires to assess their IU, NLEs, sleep disturbance and sociodemographic characteristics. Mediation and moderation analyses were conducted to test our hypotheses.

Results: Upon adjusting for covariates, IU was found to mediate the relationship between NLEs and residual changes in sleep disturbance over a six-month period, with the mediation effect accounting for 31.8%. Additionally, the moderating role of IU in this relationship was also identified, suggesting that a high level of IU exacerbated the effect of NLEs on sleep disturbance.

Conclusions: In conclusion, our findings shed light on the dual roles of IU in the link from NLEs to sleep disturbance, holding significant practical implications for preventing and intervening in sleep disturbance among adolescents. To mitigate the risk of sleep disturbance among adolescents experiencing NLEs, timely assessments of IU and tailored interventions to enhance uncertainty tolerance are necessary.

Keyword: Intolerance of uncertainty, Negative life events, Sleep disturbance, Mediator, Moderator, Adolescents

Mechanism of action of the Banxia - Xiakucao herb pair in sleep deprivation: New comprehensive evidence from network pharmacology, transcriptomics and molecular biology experiments

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Ethnopharmacological relevance: Chinese herb pairs are the most basic and compressed examples of Chinese herbal combinations and can be used to effectively explain the fundamental concepts of traditional Chinese medicine prescriptions. These pairings have gained significant interest due to their subtle therapeutic benefits, minimal side effects, and efficacy in treating complicated chronic conditions. The Banxia - Xiakucao Chinese herb pair (BXHP) consists of *Pinellia ternata* (Thunb.) Breit. (Banxia) and *Prunella vulgaris* L. (Xiakucao). This formula was documented in The Medical Classic of the Yellow Emperor approximately 2000 years ago, and clinical research has demonstrated that BXHP effectively treats insomnia. Aim of the study: This study aimed to evaluate the efficacy and therapeutic mechanism of the BXHP through a comprehensive strategy involving network pharmacology, molecular docking, transcriptomics, and molecular biology experimental validation. Materials and methods: The composition of BXHP was characterized using the UPLC-Q-TOF-MS. The active compounds were screened to find drug-likeness compounds by analyzing the ADME data. To predict the molecular mechanism of BXHP in sleep deprivation (SD) by network pharmacology and molecular docking. We established a rat model of SD and the in vivo efficacy of BXHP was verified through the pentobarbital sodium righting reflex test, behavioral assays, enzyme-linked immunosorbent assay, transmission electron microscopy, HE staining, and Nissl staining, and the underlying molecular mechanism of BXHP in SD was revealed through transcriptomic and bioinformatic analyses in conjunction with quantitative real-time PCR, Western blot, and immunofluorescence staining. Results: In the present study, we showed for the first time that BXHP reduced sleep latency, prolongs sleep duration, and improves anxiety; lowered serum CORT, IL6, TNF- α and MDA levels; decreased hypothalamic Glu levels; and elevated hypothalamic GABA and 5-HT levels in SD rats. We found 16 active compounds that acted on 583 targets, 145 of which are related to SD. By modularly dissecting the PPI network, we discovered three critical targets, Akt1, CREB1, and PRKACA, all of which play important roles in the effects of BXHP on SD. Molecular docking resulted in the identification of 16 active compounds that strongly bind to key targets. The results of GO and KEGG enrichment analyses of network pharmacology and transcriptomics focused on both the regulation of circadian rhythm and the cAMP signaling pathway, which strongly demonstrated that BXHP affects SD via the cAMP-PKA-CREB-Circadian rhythm pathway. Molecular biology experiments verified this hypothesis. Following BXHP administration, PKA and CREB phosphorylation levels were elevated in SD rats, the cAMP-PKA-CREB signaling pathway was activated,

the expression levels of the biological clock genes CLOCK, p-BMAL1/ BMAL1, and PER3 were increased, and the rhythmicity of the biological clock was improved.

Keyword: Banxia-xiakucuo Chinese herb pair, Sleep deprivation, Circadian rhythm, cAMP signaling pathway, Transcriptomics, Network pharmacology

Implications of depressive mood in OSAHS patients: insights from event-related potential

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Background: Obstructive sleep apnea-hypopnea syndrome (OSAHS) is a chronic breathing disorder characterized by recurrent upper airway obstruction during sleep. Although previous studies have shown a link between OSAHS and depressive mood, the neurobiological mechanisms underlying mood disorders in OSAHS patients remain poorly understood. This study aims to investigate the emotion processing mechanism in OSAHS patients with depressive mood using event-related potentials (ERPs).

Methods: Seventy-four OSAHS patients were divided into the depressive mood and non-depressive mood groups according to their Self-rating Depression Scale (SDS) scores. Patients underwent overnight polysomnography and completed various cognitive and emotional questionnaires. The patients were shown facial images displaying positive, neutral, and negative emotions and tasked to identify the emotion category, while their visual evoked potential was simultaneously recorded.

Results: The two groups did not differ significantly in age, BMI, and years of education, but showed significant differences in their slow wave sleep ratio ($P=0.039$), ESS ($P=0.006$), MMSE ($P<0.001$), and MOCA scores ($P=0.043$). No significant difference was found in accuracy and response time on emotional face recognition between the two groups. N170 latency in the depressive group was significantly longer than the non-depressive group ($P=0.014$ and 0.007) at the bilateral parieto-occipital lobe, while no significant difference in N170 amplitude was found. No significant difference in P300 amplitude or latency between the two groups. Furthermore, N170 amplitude at PO7 was positively correlated with the arousal index and negatively with MOCA scores (both $P<0.01$).

Conclusion: OSAHS patients with depressive mood exhibit increased N170 latency and impaired facial emotion recognition ability. Special attention towards the depressive mood among OSAHS patients is warranted for its implications for patient care.

Keyword: Obstructive sleep apnea-hypopnea syndrome, Depressive mood, Facial emotion recognition, Event-related potential

Association Between EEG Power During Sleep and Attention Levels in Patients with Major Depressive Disorder

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Purpose: Major depressive disorder (MDD) is associated with cognitive impairment through unclear mechanisms. We examined the relationship between sleep electroencephalogram (EEG) power and attention level in MDD. Patients and **Methods:** Forty-seven untreated patients with MDD and forty-seven age- and sex-matched controls were included. We examined relative EEG power during non-rapid eye movement (NREM) sleep and rapid eye movement (REM) sleep by fast Fourier transform. The Attention Network Test (ANT) was performed to evaluate attention levels. **Results:** Compared to controls, patients with MDD had lower theta power during NREM ($P = 0.018$) and REM ($P = 0.002$) sleep, while higher beta power ($P = 0.050$) during NREM sleep and delta power ($P = 0.018$) during REM sleep. Regarding attention level, patients with MDD had lower levels of accuracy ($P = 0.021$), longer mean reaction time ($P < 0.001$), poorer manifestations of the alerting effect ($P = 0.038$) and worse executive control ($P = 0.048$). Moreover, decreased theta power during NREM sleep was correlated with worsened accuracy ($\beta = 0.329$, $P = 0.040$), decreased theta power during REM sleep was correlated with worsened alerting effect ($\beta = 0.355$, $P = 0.020$), and increased delta power during REM sleep was correlated with longer mean reaction time ($\beta = 0.325$, $P = 0.022$) in patients with MDD. No association between ANT performance and other frequency bands was observed in patients with MDD. **Conclusion:** Our findings suggest that patients with MDD manifest impaired selective attention function that is associated with decreased theta power during NREM/REM sleep and increased delta power during REM sleep.

Keyword: major depressive disorder, sleep, EEG power, attention

七、优秀博士后

目 录

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Relationship Between Prefrontal Function and Hyperarousal in Sleep Deprivation: Electroencephalogram Spectral and Microstate Analyses

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Object: Sleep deprivation is a common consequence of several everyday situations. The prefrontal cortex (PFC) and hyperarousal are associated with wakefulness, sleepiness, and sleep patterns, but limited evidence exists regarding the relationship between PFC and hyperarousal in sleep deprivation. **Method:** We examined the relationship between PFC and hyperarousal in sleep deprivation using electroencephalograms (EEGs). We analyzed data from the open-source database “A resting-state EEG dataset for sleep deprivation” from Nanfang Hospital. We used power spectral density (PSD) and microstate analyses to compare brain functional activity during normal sleep (NS) and sleep deprivation. **Result:** Our analyses included awake resting-state EEGs of 37 participants (37 recordings after NS and 37 after sleep deprivation for 24 h). Compared with NS, PSD values after sleep deprivation increased in all brain areas ($p < 0.0001$) and the PFC ($p < 0.0001$). Compared with NS, the duration (states A–D: $p = 0.0248$, 0.0169 , < 0.0001 , and 0.0058 , respectively) and frequency (states A–D: $p = 0.0002$, 0.0003 , < 0.0001 , and 0.0014 , respectively) of the four microstates decreased after sleep deprivation. Conversely, coverage of the four states (state A–D: $p = 0.8256$, 0.6837 , 0.191 , and 0.2399 , respectively) did not change significantly between NS and sleep deprivation. **Conclusion:** This study suggests that hyperarousal in the PFC plays an important role in sleep deprivation, and satisfactory sleep can help recover from hyperarousal, evidenced in EEG changes.

Keyword: Sleep deprivation, EEG, microstate analysis, power spectral density, prefrontal cortex

The different roles of homocysteine metabolism in hypertension among normal-weight and obese patients with obstructive sleep apnea

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Background

Obstructive sleep apnea (OSA) is associated with hypertension. However, the differential mechanisms underlying OSA-related hypertension between normal-weight vs. obese patients is limited.

Methods

We studied 92 patients with OSA and 24 patients with continuous positive airway pressure (CPAP) treatment. Blood pressure (BP) was measured twice during awake and continuously monitored during sleep. Obesity was defined as body mass index ≥ 28 kg/m². Serum metabolite levels were assessed by metabolomics.

Results

Among 59 normal-weight and 33 obese patients, 651 and 167 metabolites showed differences between hypertension and normotension or were associated with systolic and diastolic BP (SBP, DBP) after controlling confounders. These metabolites involved 16 and 12 Kyoto Encyclopedia of Genes and Genomes enrichment pathways in normal-weight and obese patients respectively, whereas 6 pathways overlapped. Among these 6 overlapping pathways, 4 were related to homocysteine metabolism and 2 were non-specific pathways. In homocysteine metabolism pathway, 13 metabolites were identified. Interestingly, the change trends of 7 metabolites associated with SBP (all interaction- $p \leq 0.083$) and 8 metabolites associated with DBP (all interaction- $p \leq 0.033$) were opposite between normal-weight and obese patients. Specifically, increased BP was associated with down-regulated folate-dependent remethylation and accelerated transsulfuration in normal-weight patients, whereas associated with enhanced betaine-dependent remethylation and reduced transsulfuration in obese patients. Similar findings were observed in ambulatory BP during sleep. After CPAP treatment, baseline low homocysteine levels predicted greater decrease in DBP among normal-weight but not obese patients.

Conclusions

Mechanisms in OSA-related hypertension differ between normal-weight and obese patients, which are explained by different changes in homocysteine metabolism.

Keyword: Obstructive sleep apnea, Hypertension, Homocysteine, Weight, Obesity

Metabolic disturbances in patients with narcolepsy

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Objectives: Narcolepsy is a chronic sleep-wake disorder driven by selective and irreversible orexin neuron deficiency. Patients with narcolepsy also present various metabolic alterations, proven to be with increased susceptibility than the control population. We performed a systematic review and meta-analysis to delineate the prevalence rates of respective metabolic disturbances in narcolepsy.

Methods: A meta-analysis was conducted on the prevalence rates of ‘any’ metabolic disturbances in patients with narcolepsy. Four databases (i.e., PubMed, Web of Science, EBSCO, and Cochrane Library) were searched up to date on 07 September 2023. The effect size (ES) of the prevalence rate was the pooled mean with the random model. An age cut-off of 18 years was chosen for sensitive analysis. For the ES with insufficient values to perform meta-analysis, a systematic review was performed.

Results: A total of 28 studies (n=15281) were included in this study. Ten studies (n=2351) were on narcoleptic subjects under 18 years old, and the other 18 studies (n=12930) were on older ones ($\geq 18y$). We found four metabolic disturbances were primarily reported in narcolepsy and the meta-analysis showed the prevalence rates were 31.9% (95%CI: 27.7%–36.1%) in overweight and 27.1% (95%CI: 21.5%–32.7%) in obesity, 28.8% (95%CI: 9.5%–48.1%) in dysglycaemia, 28.7% (95%CI: 16.7%–40.7%) in dyslipidemia, and 43.9% (95%CI: 20.7%–67.2%) in hypertension, respectively. Moreover, the prevalence rate of metabolic syndrome was 36.1% (95%CI: 14.6%–57.6%), which was found to be more prevalent in narcolepsy type 1. In addition, precocious puberty was also crossly recounted in pediatric narcoleptic studies, with a prevalence rate being 6.9% (95%CI: 12.7%–21.0%). Whilst, Vitamin D (54.8%, 95%CI: 37.1%–72.5%) and Vitamin 12 deficiency were found in adult narcoleptic patients. In terms of the subgroup analysis of age, the prevalence rate of overweight was increased from underage ($<18y$: 27.4%, 95%CI: 23.7%–31.1%) to adults ($\geq 18y$: 36.0%, 95%CI: 27.7%–43.8%); conversely, obesity decreased from 34.4% (95%CI: 26.4%–42.4%) to 22.8% (95%CI: 16.0%–29.5%). The dysglycaemia ($<18y$: 61.5%, 95%CI: 11.2%–61.9% vs. $\geq 18y$: 15.0%, 95%CI: 6.3%–23.7%) and dyslipidemia ($<18y$: 36.5%, 95%CI: 11.2% to 61.9% vs. $\geq 18y$: 26.8%, 95%CI: 12.4% to 41.1%) were both less prevalent along with age. Findings also showed both rapid weight gain during the early onset period and precocious puberty were predicted by earlier onset and diagnostic age in pediatric narcoleptic subjects. Long-term follow-up studies illustrated a slowness in weight gain but an increased risk of type 2 diabetes.

Conclusion: We found a large spectrum of metabolic disturbances in narcolepsy, with more than one-third fulfilling the diagnosis of metabolic syndrome. In addition, an increased trend of the prevalence of overweight but decreased obesity, dysglycaemia, and dyslipidemia with age in narcolepsy may indicate that the early period of narcolepsy was an important window time for metabolic deterioration. Nevertheless, given that the inconclusive literature findings and insufficient research on deficits regarding the metabolic spectrum remain, further studies necessitate a better characterization of the metabolic disturbances in narcolepsy, particularly hereof the risk factors and the

potential mechanism related to orexin dysfunction, as well as the long-term consequences of the metabolic disturbances in patients with narcolepsy.

Keyword: Narcolepsy, metabolic syndrome, orexin, obesity, dysglycaemia, dyslipidemia

八、睡眠医学中心建设

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睡眠医学中心设备信息互联互通研究

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目前国内睡眠医学中心多数以多学科协作的方式存在，包含有神经、精神、呼吸、口腔以及一些相关涉及科室，主要进行睡眠疾病的诊断、治疗及科研综合性管理。中心仪器种类复杂，涵盖多品类睡眠监测、心理测评、心理治疗、声光电磁相关物理康复治疗以及中医治疗设备，且互相独立，信息化程度低、无法有效联动、数据分散，难以实现跨科室数据共享和整合，最终影响睡眠中心的整体运营。为了解决这些问题，协和武汉市红十字会医院与杭州迈动数康科技有限公司合作，以期研发一套标准化睡眠医学中心设备信息管理系统，优化睡眠医学中心医护技人员的工作流程，提高工作效率。通过对医院现有的HIS（医院信息管理系统）、LIS（实验室信息管理系统）、PACS（影像归档和通信系统）等进行详细调研，通过模块化设计构建，建立可与上述系统信息对接的标准化睡眠医学中心设备管理系统，包括设备管理平台、患者全息档案管理、科研数据库、管理信息可视化等核心模块，通过该管理系统，与各个仪器供应商联合开发，建立各个仪器与该管理系统的对接端口，实现以睡眠中心管理系统为中心的睡眠中心内仪器之间以及与全院已有管理平台之间可进行信息交互的管理平台，支持睡眠中心患者的全息档案的实时更新与管理。该平台实现了睡眠中心各个分散设备之间的互联以及这些仪器与医院传统平台的互联，打破了现有睡眠医学中心的信息隔绝状态，高效服务临床，为睡眠中心信息化提供范例，有广泛推广前景。

关键词：眠医学中心建设，信息化管理平台，睡眠医学中心运营，信息互通，医院管理

睡眠医学中心的建设与发展

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当前我国建立的睡眠医学中心据统计大约有 3000 家，但大多数只是在呼吸科、耳鼻喉科、神经科、精神科等原传统科室内建 1-2 个睡眠监测室，缺乏专业技术人员和完整学科建制；没有专门的睡眠门诊，或者没有独立的病房。涉及的病种无法涵盖全睡眠疾病谱，营运能力差，没有得到医院的重视和支持。有完整大睡眠意义的中心特别少。所以要推动中国睡眠医学发展，学科建设尤为关键。

关键词：睡眠医学中心的现状，建设与发展

九、睡眠医学病例讨论

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儿童异态睡眠 3 例病例报道

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目的 分析儿童异态睡眠的临床特征及诊治经过，提高对儿童异态睡眠的认识。

方法 回顾性分析深圳市儿童医院 2021 年 1 月至 2023 年 12 月收治的 3 例确诊儿童睡行症的病例资料，分析其临床资料及诊治经过。

结果 3 例患儿均为男孩。出生情况无特殊，起病年龄分别为 7 岁、10 岁及 11 岁，病例 1 患者妈妈幼儿时期有“梦游”史，该患者主要表现为就诊前 3 个月开始出现夜间坐起或无目的的走动，发作多见于前半夜，与其对话含糊不清，不易唤醒，几乎每晚均发作 1-2 次，早晨起床后对夜间发作过程全然不知。病例 2 和病例 3 均否认相关家族史，主要临床表现均为就诊前 2 个月出现夜间坐起，病例 2 每月发作约 1-2 次，病例 3 每周发作 2-3 次，均无离床走动的情况，坐起数秒后躺下自行入睡，早晨起床对于夜间坐起无记忆。3 例患者完善夜间多导睡眠监测均可见部分 N3 期睡眠存在突然觉醒，同步视频可见坐起或走动的动作，REM 期睡眠未见异常动作及觉醒。病例 1 给予口服氯硝西洋治疗 2 月余随访夜间异态睡眠明显减少，逐渐减量停药，随访 1 年，夜间发作频繁明显减少，近半年发作 1-2 次；病例 2 和病例 3 由于发作频率低，白天无明显的功能障碍，给予加强睡眠卫生教育、定期唤醒等行为治疗后，随访 1 年，患者夜间异态睡眠均消失。

结论 儿童异态睡眠采取策略性唤醒等行为策略可能见效。儿童 NREM 期异态睡眠通常为良性、自限性，症状常在 1-2 年内可自发消退。

关键词：异态睡眠；儿童；睡行症

一例儿童发作性睡病同时合并快速眼动睡眠行为障碍 及非快速眼动睡眠相关异态睡眠的病例报告

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目的：总结儿童发作性睡病临床特点及儿童表现异态睡眠叠加综合征可能病因。方法：回顾性分析1例儿童发作性睡病的临床资料。7岁患儿，因“睡眠中行为异常1年”入院。患者于入院前1年睡眠中行为异常，夜间睡眠中大声喊叫，拳打脚踢，可叫醒，醒后诉梦见与人打架并能描述梦中生动画面，每晚均有发作，晨起后疲倦。有时睡眠中坐起哭闹，经安抚可再次入睡。追问病史，发病前感冒后白天困倦，并有白天嬉闹玩耍后出现猝倒，不能控制，伴入睡视听幻觉。神经科专科查体未见阳性体征。辅助检查：T细胞亚群：辅助/诱导性T淋巴细胞绝对计数 1546个/u1（414-1123），总T淋巴细胞绝对计数：3197个/u1（770-2041），辅助/诱导性T淋巴细胞百分比34.8%，抑制/细胞毒性T淋巴细胞绝对计数1386个/u1（238-874）。结果：多导睡眠监测(PSG)结果显示：睡眠效率81.3%，睡眠潜伏期9.4min，睡眠结构紊乱。监测过程中见3次发作，其中一次发作表现为睡眠中坐起，言语，持续4-5分钟，发作前为N3期睡眠脑电，发作时转为混合频率波，发作后转为N2期睡眠脑电，另外2次发作表现为睡眠中双手舞动，持续10余分钟停止，发作期脑电为R期睡眠脑电。多次小睡睡眠潜伏时间试验(MSLT)结果显示：5次小睡见3次R期睡眠，平均睡眠潜伏期缩短，时间为1.1分钟。结论：儿童出现异态睡眠叠加综合征需考虑是否为发作性睡病继发。

关键词：儿童发作性睡病，异态睡眠叠加综合征

Integrative Use of TMS and tDCS for Treating Chronic Insomnia: A Case Study

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Long-term insomnia affects the normal life and work of individuals and increases the risk of various health problems, including mental illness. Therefore, there is an urgent need for an efficient and safe treatment for improving sleep. In this study, we report the case a 52-year-old woman who received repetitive transcranial magnetic stimulation (rTMS) combined with transcranial direct current stimulation (tDCS) after agreeing to publish her case. In order to evaluate the quality of sleep and the stability of emotional symptoms, clinical evaluations were conducted at baseline, after 10 treatment sessions, after 20 treatment sessions, and 1 month after the end of treatment. After completing rTMS combined with tDCS, the patient showed an overall clinical improvement, with clinical changes mainly observed in the Pittsburgh Sleep Quality Index, Hamilton Depression Scale, Hamilton Anxiety Scale scores and polysomnography, and this improvement was maintained 1 month after the intervention. This case provides the first evidence for the feasibility, tolerability, and safety of combined rTMS and tDCS in a patient with chronic insomnia.

Keyword: transcranial magnetic stimulation; transcranial direct current stimulation; chronic insomnia; polysomnography

哌甲酯对周期性肢体运动障碍合并日间思睡的作用

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目的：周期性肢体运动障碍（Periodic limb movement disorder, PLMD）是一种睡眠相关的运动障碍，常伴日间思睡症状。多巴胺类药物为首选治疗，但长期可能导致 EDS 副作用，给治疗带来挑战。本研究对一例 PLMD 引起 EDS 患者进行了一系列药物治疗，在长达 2.5 年随访中观察效果，为该类疾病寻找新的治疗策略。

方法：收集 2021 年 6 月就诊于华西医院睡眠中心门诊的 1 例 PLMD 患者资料。

结果：患者 27 岁女性，日间思睡 10 余年。夜间睡眠 7-8 小时后仍感困倦，小睡后无法缓解疲劳，影响生活与工作。患者无打鼾、猝倒、入睡前幻觉、睡眠瘫痪、不宁腿等症状，睡眠节律、情绪、精神正常，无其他引起 EDS 的疾病。2018 年 11 月就诊于四川大学华西医院睡眠医学中心，ESS 总分 16 分。睡眠监测示 PLMI60.1/h，MSL7.4 分钟。患者诊断为 PLMD。先后给予美多芭、吡贝地尔和普拉克索后日间思睡改善不明显。后选用哌甲酯，经过 6 周治疗后，ESS 下降至 8 分，MSL10.8 分钟，且 PLMI 降至 11.0/h。持续治疗 2.5 年后，患者日间思睡症状明显改善（ESS8 分，MSL11.2 分钟），PLMI 为 17.1/h。

结论：本研究首次提出哌甲酯对伴有 EDS 的 PLMD 患者具有积极疗效，可能与该药增加多巴胺能和去甲肾上腺素的突触浓度有关。通过该病例的治疗随访，提示哌甲酯可能为 PLMD 合并 EDS 治疗的可选方案。

关键词：周期性肢体运动障碍，日间思睡，哌甲酯

儿童神经纤维瘤病 I 型合并重度阻塞性睡眠呼吸暂停一例

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目的 探讨儿童神经纤维瘤病 I 型 (NF1) 伴重度阻塞性睡眠呼吸暂停 (OSA) 的临床表现特点, 强调全面评估病史重要性和儿童无创正压通气 (CPAP) 治疗的特点。方法 回顾性分析 1 例 3 岁儿童因“睡眠打鼾行腺样体切除术, 术后仍张口呼吸, 打鼾, 憋气”诊疗经过。结果完善相关检查及查体: 全身散在牛奶咖啡斑, 张口于咽部上方可见一不规则隆起, 部分阻塞咽腔。电子鼻咽镜: 左侧咽侧壁隆起。多导睡眠监测 (PSG): OAH1 122.7、CAI 0.2、平均血氧 88%、最低血氧 51%。符合重度 OSA。颈部软组织 CT 平扫: 左侧颞枕部、外耳道、颞下颌窝周围软组织影不均匀增厚, 左侧腮腺较对侧明显增大; 左侧咽旁占位, 左侧咽腔变窄。结合病史符合 NF1。由于肿瘤累及面神经, 手术难度大, 风险高, 不宜手术。给予司美替尼口服治疗, 每次 20mg, 每日 2 次。夜间 CPAP 治疗。CPAP9cmH₂O, OAH1 9.8、CAI 5.8、平均血氧 99%。CPAP 半年复查, CPAP7cmH₂O, OAH1 1.6、CAI 0.3、平均血氧 99%, 建议继续治疗。结论 NF1 是一种常染色体显性遗传的神经皮肤综合征。全球患病率约为 1/3000, 已纳入我国罕见病。关于 NF1 多为病例报道, 尚未见合并重度 OSA 的病例报道。本病例报道阐述了 NF1 患儿的相关 OSA 的临床特征和诊疗思路, 以及 CPAP 随访的重要性。提高临床医生对此类患儿的认识和关注。

关键词: 神经纤维瘤病 I 型; 多导睡眠监测; 阻塞性睡眠呼吸暂停; 无创正压通气

Recurrent Nocturnal Tongue Biting: Epilepsy or Obstructive Sleep Apnea?

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Tongue biting (TB) is well recognized as a valuable clinical feature for distinguishing between epileptic seizure and nonepileptic events. And a lateral TB has been reported to be highly specific for an epileptic seizure. In addition, TB at the tip of the tongue is typically associated with syncopal episodes, and TB during sleep also found in several disease including hereditary chin trembling, sleep-related facial-mandibular myoclonus (SRFMM), sleep bruxism, and hypnic myoclonia.

Obstructive sleep apnea (OSA) is a prevalent sleep breathing disorder characterized by recurrent episodes of partial or complete collapse of the upper airway during sleep. In clinical practice, OSA is a complex disease manifests with nocturnal symptoms including snoring, apnea and frequent nocturia, as well as daytime symptoms such as excessive daytime sleepiness (EDS), fatigue, cognitive deficit. Moreover, abnormal nocturnal behaviors (e.g. sitting up or limb movements) were often observed in patients with severe OSA due to respiratory pauses or hypoxia. Notably, the arousals induced by OSA during REM sleep can result in dream enactment behaviors, termed “mimic REM sleep behavior disorder (RBD)” because the symptoms resemble those of RBD. In addition, about one-third of seizures are observed to occur during sleep and there is increasing evidence that OSA coexists in epilepsy, with rates of up to 30% in patients with drug-resistant epilepsy. It is important and challenging to differentiate between epilepsy and obstructive sleep apnea (OSA) when nocturnal tongue biting is the primary symptom. Here, we report on a case of nocturnal TB that eventually diagnosed as severe OSA solely but not epilepsy.

We present a case of a 43-year-old man with severe obstructive sleep apnea (OSA) who was initially misdiagnosed with epilepsy due to the recurrent nocturnal tongue biting (TB). TB is usually known as a useful clinical feature in the diagnosis of seizures, but has not been described in OSA until now. With this case report, we found the nocturnal TB could be an abnormal behavior in patients with severe OSA. Thus, this case suggests that OSA might be a potential diagnosis except for epilepsy when a patient presents with TB.

The current case appears to be the first observation of nocturnal TB resulting from severe OSA. The case suggested that severe OSA could be a sole diagnosis of nocturnal TB, and emphasize the significance of accurately distinguishing between OSA and epilepsy. Clinicians should enhance their knowledge of the comorbidities between epilepsy and OSA to prevent misdiagnosis and mistreatment. In future, further studies are needed to identify mechanisms of nocturnal TB in patients with OSA.

Keyword: Tongue biting, Obstructive sleep apnea, Epilepsy

睡眠呼吸暂停合并胃食管反流病例 1 例

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目的

探讨睡眠呼吸暂停合并胃食管反流治疗策略

方法

长程随访我科明确睡眠呼吸暂停患者 1 例，该患者行胃减容术。间断使用质子泵抑制剂及促胃动力药物。辅助检查：心电图、胸部 CT、血液分析、血气分析、肺功能、睡眠呼吸监测、血脂测定等

结果

患者 张 X，男，66 岁，汉族，病程 10 余年，基础疾病高血压病 3 级极高危，2 型糖尿病，支气管哮喘，吸烟史 40 包年，戒烟 9 年，2015 年明确诊断睡眠呼吸暂停，动态呼吸监测：夜间中度低氧血症，给予无创呼吸机辅助通气，2019 年行胃减容手术，当时体重 99kg，但患者胃食管反流症状较重，不能平卧，呈端坐位，给予抑酸护胃症状可缓解，2024 年 6 月入院体重 81kg，完善相关检查提示：颈部超声提示：右侧颈总动脉膨大部内膜-中膜增厚，左侧颈总动脉膨大部粥样硬化斑块形成，无名动脉及右锁骨下动脉粥样硬化斑块形成，心脏超声提示：左房增大 主动脉硬化、主动脉窦部及升主动脉增宽、主动脉瓣少量返流 EF63%，腹部超声提示：胆囊壁间结石。动态血压提示：动态血压提示全天血压负荷增加；动态心电图提示 1、窦性心律。2、房性早搏伴短阵房性心动过速。3、室性早搏。肺功能提示：轻度阻塞性通气功能障碍，睡眠监测提示：轻度阻塞性呼吸睡眠暂停低通气综合征，夜间重度低氧。出院后患者单纯氧疗，未在使用无创呼吸机。

结论

减重术后的睡眠呼吸暂停患者是否仍需无创呼吸机辅助通气有待进一步研究。

关键词：睡眠呼吸暂停综合征, 胃食管反流, 胃减容手术, 高血压

1 例卒中后睡眠行为异常病例分享

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摘要：患者老年男性，主诉：言语不清、右侧肢体无力伴睡眠中肢体抖动10天。现病史：10天前患者无明显诱因出现言语不清，伴右侧肢体无力，夜间睡眠中肢体抖动，无头晕、头痛，无舌咬伤，无尿失禁等。当地医院完善头颅MR：左侧基底节区急性脑梗死。诊断：急性脑梗死、癫痫。给予抗血小板聚集、强化降脂、抗癫痫等治疗后言语不清及右侧肢体无力好转，但患者仍夜间反复出现肢体抖动。我院门诊完善长程脑电图：未见明显异常。肢体抖动主要出现于刚入睡时、睡醒转换时，单侧/双侧、上/下肢体抖动、敲击床面，频率0.5-2.0Hz，每次持续4s-1.5min，每晚发作数十次，发作时不能唤醒，醒后不能回忆发病过程。查体：体温：36.5℃，脉搏：80次/分，呼吸：20次/分，血压140/80mmHg，内科查体未见明显异常。神经系统：神志清楚，言语不流利，颅神经检查未见明显异常，右侧肢体肌力4级，右侧巴氏征阳性。头颅MR：双侧额顶叶、侧脑室旁、基底节区异常信号影，T1低/稍低信号，T2高/稍高信号。PSG：单侧/双侧肢体抖动、敲击床面，持续4s-1.5min；发作时脑电为N1、N2期睡眠脑电，多数在N1期睡眠脑电。数十次发作。发作后为清醒期脑电或睡眠期脑电。

诊断：脑梗死；睡眠节律性运动障碍；睡眠呼吸暂停低通气综合征；高血压病。本文提供一例睡眠节律性运动障碍的诊治过程，为临床医生提供参考。

关键词：脑梗死；睡眠节律性运动障碍；

一例合并克鲁宗综合征的阻塞型睡眠呼吸暂停综合征患儿的诊疗

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目的：提高临床对合并克鲁宗综合征的阻塞型睡眠呼吸暂停综合征患儿的认识，改善患儿预后。方法：患儿，男，5岁3月，睡眠打鼾、张口呼吸半年，加重伴憋气2月，侧卧位稍缓解，曾外院给予药物治疗，效果欠佳，鼻咽喉镜显示双侧鼻腔大量脓涕，鼻咽部腺样体肥大，堵塞3/4后鼻孔，双侧扁桃体肥大，多导睡眠监测结果显示OAH177.8，最低血氧61%，给予患儿全麻下扁桃体伴腺样体切除术，术后患儿症状较前改善，但仍有睡眠呼吸暂停表现，多导睡眠监测OAH13.8，最低血氧88%，予以呼吸机辅助呼吸并人工压力滴定，症状改善明显。结论：合并克鲁宗综合征的阻塞型睡眠呼吸暂停综合征患儿，由于解剖结构异常，单纯手术治疗对症状的改善有限，需合并无创呼吸机辅助通气治疗，以达到最佳治疗效果。

关键词：克鲁宗综合征,阻塞型睡眠呼吸暂停综合征

十、其他

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Adverse childhood experiences and depression among medical college students: the role of sleep quality and parental emotional warmth

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Background and Objectives: Adverse childhood experiences refer to a collective term for a variety of actual or potential adversities suffered by individuals before the age of 18, including abuse (physical, emotional, sexual), neglect (physical, emotional), and family dysfunction (i.e. parental death or severe illness). According to the stress-diathesis model of depression, adverse childhood experiences are a risk factor for depression. Sleep is considered an early manifestation of psychological problems. Therefore, adverse childhood experiences may affect sleep quality, which further affects individuals' depression. In addition, according to the social ecological model, the family environment plays a protective role in the healthy development of individuals who have experienced adversities. Thus, parental emotional warmth may serve as a moderator in the relationship between adverse childhood experiences and depression. Therefore, the study aimed to explore the mediating role of sleep quality, as well as the moderating role of parental emotional warmth in the relationship between adverse childhood experiences and depression. **Methods:** A survey using a longitudinal study and convenience sampling were conducted among medical college students in Shandong Province. The baseline survey was conducted in September 2023, collecting demographic information, sleep quality, depression, and parental emotional warmth. The follow-up survey was conducted in April 2024, collecting adverse childhood experiences and depression. A total of 1,826 participants completed both baseline and follow-up questionnaires and 1,706 of them were included in data analysis. The mediation and moderation analyses were performed using PROCESS programs, adjusting for grade, sex, only child or not, parents' education level, parents' marital status, baseline depression, and chronotype. **Results:** After control for baseline depression and other confounders, adverse childhood experiences were positively associated with depression ($\beta=0.30$, $P<0.001$). Baseline sleep quality mediated the relationship between adverse childhood experiences and follow-up depression, with a mediating effect of 0.009 (95%CI: 0.001~0.020), accounting for 2.6% of the total effect. Both paternal and maternal emotional warmth moderated the relationship between adverse childhood experiences and follow-up depression. Specifically, high parental emotional warmth decreased medical college students' depression, and these effects were stronger in students high in adverse children experiences than in those with low levels of adverse children experiences (Paternal emotional warmth: $\beta=0.387$, $P<0.001$; $\beta=0.156$, $P=0.001$; Maternal emotional warmth: $\beta=0.390$, $P<0.001$; $\beta=0.153$, $P=0.001$). **Conclusion:** There is a mediating effect between adverse childhood experiences and depression of medical college students, and sleep quality is the mediating role of the relationship between them. Therefore, improving sleep quality and fostering parental emotional warmth in medical college students with adverse childhood experiences may play a crucial role in preventing and mitigating the occurrence of depression.

Keyword: adverse childhood experiences, depression, sleep quality, parental emotional warmth

Analysis of sleep for the American population : Result from NHANES database

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Objectives: To assess the contemporary prevalence and decade-long trends of sleep duration, sleep disorders and trouble sleeping among adults in the United States, as well as their risk factors, from 2005 to 2018.

Materials and methods: We used National Health and Nutrition Examination Survey data to calculate the sleep duration and weighted prevalence of sleep disorders and trouble sleeping in adults aged 20 years or older. Sleep duration, sleep disorders and trouble sleeping were assessed by questionnaire.

Results: A total of 27399 people were included in the survey on sleep duration, with a weighted percentage of normal sleep (7–8 hours/night) of 56.33% (95% CI, 53.06–59.60%) and a weighted percentage of short sleep (5–6 hours/night) of 31.73%. In stratified descriptions, participants aged 40–49 years were more likely to sleep less than five hours, while women aged 80 years and older were more likely to sleep longer and blacks were more likely to sleep shorter. A total of 27406 participants were included in the survey for sleep disorders. The weighted proportion of the population with sleep disorders was 8.44% (95% CI, 7.79–9.8%). Independent risk factors for sleep disorders were being 40–69 years old, being white, having a high education level, smoking, having hypertension, diabetes, heart disease, and $BMI \geq 25$. From 2005 to 2014, the prevalence of sleep disorders increased year by year, from 7.44% in 2005–2006 to 10.40% in 2013–2014 (P for Trend <0.001). A total of 38165 participants were included in the survey on trouble sleeping. The weighted proportion of the population with troubled sleeping was 27.30% (25.70–28.90%). Independent risk factors for troubled sleeping were being 30–79 years old, being white, having a high education level, smoking, drinking, having hypertension, diabetes, heart disease and $BMI \geq 25$. From 2005 to 2018, the prevalence of trouble sleeping increased annually, from 24.44% in 2005–2006 to 30.58% in 2017–2018 (P for trend <0.001).
Conclusion: Adults in the United States are likely to have abnormal sleep durations, and the prevalence of sleep disorders and troubled sleeping is on the rise.

Keyword: sleep; Sleep duration; sleep disorders; trouble sleeping; NHANES database;

Exploring the Bidirectional Causal Associations between Sleep Traits and Metabolomic Profile in Humans

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Background: Unhealthy sleep patterns are common phenomena which may lead to a spectrum of adverse cardiometabolic outcomes. Metabolites play pivotal roles in the relevant underlying mechanisms, yet the causal associations between sleep and metabolome in humans remain unclear.

Methods: This study applied Mendelian randomization (MR) to explore the relationship between sleep traits (sleep duration per day, short sleep duration (≤ 6 h), long sleep duration (≥ 9 h), and insomnia) and 249 metabolites among 166,436 participants from UK Biobank. Single-nucleotide polymorphisms (SNPs) that achieved genome-wide significance threshold (P -value $< 5E-8$) and no linkage disequilibrium (10000 kb and $r^2 = 0.001$) identified in genome-wide association studies of sleep traits and metabolites were applied as instrumental variable. GRS was calculated by summing the number of valid alleles carried by each individual. Initially, the two-stage least squares approach was performed to explore causality. Subsequently, inverse-variance weighted and complemented methods were used as sensitivity analysis to further test the robustness of the results. Reverse MRs from each metabolites to sleep variables were also conducted.

Results: Genetically predicted insomnia was causally associated with level of most lipids and led to increased levels of acetoacetate, glycoprotein acetyls, and decreased levels of citrate. Genetically predicted sleep duration was causally associated with increased average diameter for low density lipoprotein particles. Short sleep duration caused an increased the level of triglycerides in very low density lipoprotein subclass, apolipoprotein B to apolipoprotein A1 ratio and a decreased level of high density lipoprotein. We found no causal evidence for the effects of metabolites on any sleep variable.

Conclusions: Our study found that insomnia may lead to a wide range of metabolic disturbances, particularly in lipid metabolism, with short sleep similarly impacting lipid metabolic processes. This suggests that sleep traits may cause adverse outcomes through certain metabolic pathways.

Keyword: Sleep, Metabolomic, Mendelian randomization

基于混合增强智能多模态睡眠分析与诊疗

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多模态睡眠分析领域：涉及生理信号、行为分析等多个方面。能够更全面地反映睡眠状况，为睡眠障碍的诊疗提供更准确的信息。

混合增强智能：随着 AI 的发展，多模态数据分析中的应用逐渐成为研究热点。多模态数据融合，人机交互与反馈机制，实时分析与监测，个性化诊疗建议。

未来发展趋势：个性化、精准化的睡眠分析与诊疗方法。通过智能搜索、智能互联、智能驱动，大大专家远程解决远程客户需求。

关键词：多模态睡眠分析技术，混合增强智能技术应用诊疗系统设计与开发，

脉搏血氧饱和度监测在诊断儿童阻塞性睡眠呼吸暂停低通气综合征严重程度的价值

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目的：探讨 SpO₂ 监测在预测儿童中重度 OSA 中的价值。方法：2017 年 6 月至 2020 年 11 月以夜间睡眠打鼾至苏大附儿院就诊的 341 例儿童接受 PSG 监测和 SpO₂ 监测。根据 OAHl 将患儿分为打鼾及轻度 OSA 组 (OAHl ≤ 5 次/h) 与中重度 OSA 组 (OAHl > 5 次/h)，比较其 SpO₂ 参数差异性并对 SpO₂ 参数与 OAHl 相关性进行分析。将 SpO₂ 参数纳入 Logistic 回归。采用 ROC 曲线分析 SpO₂ 参数对中重度 OSA 的预测价值。结果：打鼾及轻度 OSA 组 SpO₂ 参数：ODI₃、ODI₄、T₉₅、T₉₂、T₉₀ 均低于中重度 OSA 组，LSpO₂、MSpO₂ 均高于中重度 OSA 组。各项 SpO₂ 参数均与 OAHl 相关 (均 P < 0.001)，其中 ODI₃ 与 OAHl 相关系数为 0.660。ODI₃ 是中重度 OSA 的独立预测因子 [OR = 3.117, 95%CI: 1.635~5.945, P = 0.001]，其预测中重度 OSA 的 ROC 曲线下面积 0.957，临界值为 3.45 次/h，且诊断中重度 OSA 的特异性为 95.4%，MSpO₂ 是中重度 OSA 的独立预测因子 (OR = 2.917, 95%CI: 1.589~5.354, P = 0.001)。结论：ODI₃ 可以用来预测中重度儿童 OSA。

关键词：脉搏血氧饱和度；儿童；阻塞性睡眠呼吸暂停；中重度。

食管癌患者术后认知功能改变的评估及影响因素分析

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目的 探究食管癌患者在食管癌根治术后的认知功能改变及其影响因素，以为临床诊疗提供参考。方法 选取2021年2月至2023年7月择期全麻下行食管癌切除术患者213例，收集患者基线资料、术中及术后指标。术后认知功能下降定义为术后1周MMSE总分与术前MMSE总分差值（ $MMSE_{POW1-BS}$ ）小于0分，分为认知下降组和认知非下降组。采用二元Logistic回归分析影响食管癌患者术后认知功能改变的影响因素。结果 最终纳入分析有90例食管癌患者，其中49例（54.44%）患者出现术后认知功能下降。单因素二元Logistic回归分析显示，影响食管癌患者术后认知功能下降的术前因素包括：年龄、合并消化系统疾病、碱性磷酸酶、中性粒细胞绝对值、中性粒细胞百分数、淋巴细胞百分数、单核细胞百分数。术中的包括：SBP-切皮后60min、DBP-切皮后60min、MAP-切皮后60min、术中HR变异系数（切皮-术毕）。术后的包括：DBP-监护病房3h、MAP-监护病房3h、 $MoCA_{POW1-BS}$ 。多因素二元Logistic回归分析显示，术前淋巴细胞百分数、单核细胞百分数及SBP-切皮后60min为食管癌患者术后认知功能下降的独立影响因素。结论 54.44%食管癌患者在食管癌根治术后出现认知功能下降，术前淋巴细胞百分数、单核细胞百分数及SBP-切皮后60min为食管癌患者术后认知功能下降的独立影响因素。

关键词：食管肿瘤，认知功能，简易智力状态检查量表，蒙特利尔认知评估量表

老年住院患者午睡与认知功能的相关性研究

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目的：本研究旨在老年住院患者中探究午睡与认知功能之间的关系，以期为延缓认知障碍的健康宣教提供一定的理论依据。

方法：使用蒙特利尔认知评估基础量表(Montreal Cognitive Assessment Basic Scale, MoCA-B)评估认知功能。通过调查评估午睡状况（有无午睡、午睡意图、午睡频率、午睡时长）。

结果：共纳入 300 例，平均年龄为 75.43 岁。男性 176 例，女性 124 例。有午睡者 206 例，每天午睡者 138 例，有计划午睡者 171 例，午睡时长超过 90 分钟者 78 例。认知功能正常者 185 例，认知功能障碍者 115 例。与无午睡者相比，有午睡者、30 分钟内午睡者、30-59 分钟午睡者、60-89 分钟午睡者与认知功能障碍的发生风险呈负相关。与无计划午睡相比，有计划午睡与认知功能障碍的发生风险呈负相关。与无午睡者相比，30 分钟内午睡者的计算力、抽象思维更好，60-89 分钟 MoCA-B 总分、计算力、抽象思维、视知觉更好。与无午睡者相比，偶尔午睡、每天午睡的 MoCA-B 总分、计算力、抽象思维更好。与无午睡者相比，有计划午睡者 MoCA-B 总分、计算力、抽象思维更好。与有计划午睡者相比，无计划午睡 MoCA-B 总分、执行功能、计算力、延迟回忆、注意力更差。

结论：90 分钟内午睡、有计划午睡是认知功能障碍发生风险的保护因素，与更好的计算力、抽象思维相关。

关键词：认知功能障碍，认知功能，午睡，睡眠，老年患者

社区人群中快速眼动期睡眠行为障碍患者临床特征和睡眠特征的性别差异

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目的：文献报道快动眼睡眠行为障碍（RBD）患者中男性占80%以上。且与女性相比，男性患者的梦境内容更为激烈。然而既往关于RBD性别差异的研究大多来自睡眠中心，可能存在选择偏倚。因此我们基于社区老年人群调查不同性别RBD患者的临床特征及睡眠特征差异。

方法：本研究所有受试者均来自北京市老龄化纵向研究队列（Beijing Longitudinal Study on Aging, BLSA-II），共纳入7255名55岁以上的正常社区老年人，并通过RBD筛查问卷（RBDQ-HK）来判断受试者是否存在可能的RBD（pRBD）。本研究采集所有受试者人口学信息，既往史及用药史，并对受试者的运动症状、非运动症状均进行了问卷筛查。

结果：7255名社区老年人中，存在219名可疑RBD患者，其中87名（39.73%）为男性。女性pRBD患者的受教育程度显著低于男性，且女性患者患有高血压和心血管疾病的比例高于男性。在运动症状筛查中，我们发现男性患者手臂摆动减少的比例显著高于女性。在睡眠特征方面，女性患者更容易出现悲伤的梦，而男性患者更容易在梦中伤害或试图伤害自己或同床的人。

结论：男性pRBD患者可能更早地出现运动症状，更容易在梦中做出伤害性行为。女性患者更容易出现悲伤的梦境。今后有必要进一步优化睡眠问卷应用在未来的社区筛查中，以纳入更多未在门诊寻求诊治，但可能为潜在早期神经干预对象的RBD患者。

关键词：快动眼睡眠行为障碍；性别差异；临床特征；社区人群

1990 年至 2021 年全球头颈部癌症的负担和趋势： 基于 2021 年全球疾病负担研究的系统分析

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背景：本研究旨在调查 1990 年至 2021 年间头颈部癌症的负担和趋势，利用社会人口指数 (SDI)、性别和年龄进行区域间比较。

方法：本研究采用 2021 年全球疾病负担研究的数据，以评估年龄标准化率的趋势。采用 Pearson 相关分析计算 SDI 与年龄标准化率之间的相关性。

结果：与 1990 年相比，头颈部癌症的发病率增至 1,160,696 (95%不确定性区间 (UI): 1,064,793 - 1,256,106)，死亡率增至 544,223 (499,649 - 587,847)，伤残调整生命年 (DALYs) 增至 15,597,835 (14,180,450 - 16,948,531)。年龄标准化发病率 (ASIR) 表现出增加趋势，EAPC 为 0.12。年龄标准化死亡率 (ASDR) 和年龄标准化 DALYs 率分别以 EAPC 为 -0.82 和 -0.94 的下降趋势。女性的 ASIR 与 SDI 呈正相关。ASIR 和 ASDR 随年龄增长呈上升趋势，50 岁及以上年龄组 DALYs 的疾病负担较重。在 1990 年、2000 年、2010 年和 2021 年，40-70 岁年龄组男女头颈部癌症发病率比例有显著差异，女性每十年的相关比例呈上升趋势 ($P < 0.05$)。

结论：本研究揭示了全球头颈部癌症发病率增加，伴随死亡率和年龄标准化 DALYs 率的下降。然而，低中 SDI 地区特别是在女性和老年人群中，头颈部癌症的死亡率上升令人担忧。

关键词：全球疾病负担研究；头颈部癌症；发病率；死亡率；伤残调整生命年；趋势

中国华南地区社区人群睡眠模式及其影响因素

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背景：越来越多研究表明，不良睡眠特征与各系统慢性病患者风险有关。睡眠特征通常是相互关联的，一种睡眠特征的改变通常会导致其他睡眠特征的代偿性变化。目前我国鲜有对多种睡眠特征综合评估的研究。

目的：旨在研究中国华南地区社区人群综合睡眠模式现状及其影响因素。

方法：该横断面研究纳入来自中国华南地区共 5505 名社区居民。睡眠模式通过睡眠持续时间、睡眠类型、打鼾、失眠、日间嗜睡综合评估，分为健康（4-5 分）、中等及不良（0-3 分）睡眠模式。不同睡眠模式组间比较采用 t 检验和卡方检验分析，多元 Logistic 回归分析探索其影响因素。

结果：本研究 5505 名参与者平均年龄 53 岁，29.2% 为男性。年龄（OR=0.983，95%CI 0.987-0.989， $p<0.001$ ）、腰围（OR=0.985，95%CI 0.978, 0.991， $p<0.001$ ）、从不饮酒（OR=0.804，95%CI 0.685, 0.943）、从不饮茶（OR=1.378，95%CI 1.207, 1.573， $p<0.001$ ）、身体锻炼（频率低于 1-2 次/周）（OR=0.827，95%CI 0.689, 0.992， $p=0.001$ ）对睡眠模式的影响具有统计学意义。

结论：年龄及腰围的增加、低频率身体锻炼习惯、从不饮酒不利于健康睡眠模式，从不饮茶则与健康睡眠模式相关。未来将进一步随访，研究中国社区居民睡眠模式的变化与多种健康结局的关联。

关键词：睡眠模式, 社区健康, 公共卫生, 横断面研究

Association between cytokines and fatigue in patients with type 1 narcolepsy

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Background: Fatigue is a frequent complaint among patients with narcolepsy. Studies have shown that inflammatory cytokines are associated with fatigue in neurological disorders; however, this association has not been identified in patients with type 1 narcolepsy. The purpose of this study was to investigate the potential relationship between cytokines and fatigue in patients with type 1 narcolepsy.

Methods: We investigated the association between 12 inflammatory cytokines and fatigue in 49 patients with type 1 narcolepsy. The Multidimensional Fatigue Inventory-20 was used to assess the fatigue severity. The associations of fatigue were identified using Spearman and Pearson correlation analyses. A linear regression analysis model was used to adjust the confounding factors and evaluate the associations of fatigue.

Results: Correlation analysis showed that the plasma interleukin (IL)-2 level ($r = 0.409$, $p = 0.004$) was positively correlated with fatigue in patients with narcolepsy type 1. After adjusting for confounding factors, the linear regression model revealed a positive association between the IL-2 level ($\beta = 1.148$, $p = 0.04$) and fatigue in individuals diagnosed with type 1 narcolepsy.

Conclusion: IL-2 levels show a positive correlation with fatigue in type 1 narcolepsy, suggesting its potential role in the pathophysiology of fatigue.

Keyword: Narcolepsy, fatigue, cytokine, interleukin-2

发作性睡病患者疲劳与血清乳酸/乳酸脱氢酶、夜间睡眠质量以及抑郁评分的相关性研究

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目的:本研究旨在评估发作性睡病患者躯体和精神疲劳的严重程度,探讨疲劳与乳酸/乳酸脱氢酶、夜间睡眠质量和抑郁评分之间的相关性。

方法:研究共纳入59例1型发作性睡病(NT1)患者、32例2型发作性睡病(NT2)患者和37例健康对照者进行研究。采用Chalder疲劳量表(CFS-14)评定躯体和精神疲劳的严重程度。对患者和对照者进行了夜间多导睡眠图和多次睡眠潜伏期试验(MSLT)。测定所有受试者的Epworth发作性睡病量表(ESS)、汉密尔顿抑郁量表(HAMD)、血清乳酸、乳酸脱氢酶(LDH)及其同工酶。

结果:75.8%患者出现明显疲劳症状,包括躯体疲劳和精神疲劳。在总疲劳得分、躯体疲劳得分和精神疲劳得分3方面患者组均明显升高。发作性睡病患者血清乳酸、总LDH、LDH3、LDH4和LDH5水平高于健康对照组。20%的患者出现抑郁症状(HAMD >7),而对照组没有出现抑郁症状。躯体疲劳得分与BMI、血乳酸LDH、LDH3、LDH4、LDH5呈明显正相关,而其他疲劳得分与ESS、总睡眠时间、HAMD评分无相关性。

结论:发作性睡病患者存在明显的疲劳,特别是躯体疲劳。躯体疲劳程度与乳酸及LDH呈正相关。这些代谢紊乱可能是发作性睡病患者疲劳的重要指标。

关键词:发作性睡病、疲劳、乳酸、睡眠质量、抑郁评分

Causal effect of life-course adiposity and body composition on the risk of respiratory diseases: a Mendelian randomization study

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Objective: There is limited evidence on the causal associations of life-course adiposity and body composition with the risk of respiratory diseases. This study aimed to elucidate these associations.

Methods: Two-sample Mendelian randomization was conducted using genetic instruments of life-course adiposity and body composition to estimate their causal effect on respiratory diseases in participants of European ancestry from the UK Biobank, the FinnGen consortium, and other large consortia.

Results: Genetically predicted birth weight was positively associated with the risk of pulmonary embolism and lung cancer. Genetically predicted high childhood BMI was associated with increased risk of asthma, COPD, pulmonary embolism, and sleep apnea. However, most of these observed associations were no longer significant after adjusting for adult BMI. Genetically predicted higher adult BMI and WHR were associated with 14 and 8 respiratory diseases, respectively. High body fat percentage and visceral adiposity were genetically associated with increased risk of 14 and 16 respiratory diseases, respectively. Consistently, genetically predicted higher whole-body fat mass was associated with increased risk of 14 respiratory diseases.

Conclusions: This study provides genetic evidence that greater adiposity in adulthood, as indicated by BMI, WHR, body fat percentage, visceral adiposity, or whole-body fat mass, has a causal effect in increasing the risk of a wide range of respiratory diseases.

Keyword: Obesity, Body composition, Respiratory diseases, Mendelian randomization

1990年至2021年全球咽癌（除鼻咽癌）的负担和趋势：基于2021年全球疾病负担研究的系统分析

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目的

通过评估1990年至2021年全球其他咽癌（OPC）的疾病负担，以为公共卫生政策提供依据。

方法

基于全球疾病负担（GBD）2021数据库，数据按地区、国家、年龄、性别和社会发展指数（SDI）分组分析疾病负担指数及趋势。

结果

2021年，全球OPC发病数为169,820例，死亡数为98,435例，DALYs为2,843,781。全球ASIR为1.933，ASDR为1.127，年龄标准化DALYs率为32.302。1990年至2021年，OPC的发病率EAPC为0.677，死亡率EAPC为0.061，DALYs率EAPC为-0.087。高SDI地区ASIR最高，中SDI地区最低。2021年，高SDI地区ASIR EAPC最高，低中SDI地区最低。60-64岁年龄段发病数最多，70-74岁年龄段发病率最高。1990年至2021年，70-74岁年龄段发病率逐年上升。2021年男性发病数和ASIR高于女性，60-64岁年龄段发病数最多。1990年至2021年，男性ASIR EAPC低于女性，70-74岁男性发病率逐年上升。2021年日本老龄化相关发病率显著高于1990年。

结论

全球其他咽癌负担在过去几十年间显著变化。研究结果为全球及各地区公共卫生政策制定提供了依据，尤其是高风险人群和低SDI地区的预防和治疗策略。

关键词：全球疾病负担研究；咽癌；发病率；死亡率；伤残调整生命年；趋势

认知行为治疗康复期酒依赖失眠患者的随机单盲对照研究

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目的：CBT 对康复期酒依赖患者主观睡眠和日间症状及降低复发作用

方法：17 名康复期酒依赖伴失眠患者，分认知行为失眠治疗组（CBTI-AD, n=9）和行为安慰剂治疗组（BPT, n=8），盲法行 8 次治疗，每次治疗检测呼吸及尿液药物。治疗前两周及治疗第八周每天记录睡眠日志，“主要因变量”：睡眠效率（SE）和总睡眠时间（TST），

“次要因变量”：睡眠潜伏期（SL）、入睡后醒转（WASO）、睡眠质量（SQ）和失眠严重度指数（ISI）。第一次和第八次治疗时评估日间症状，包括贝克抑郁问卷-II (BDI-II)、状态特质焦虑问卷 (STAI-T)、疲劳问卷 (MFI-20) 和简易健康问卷 (2 版) (SF-36v2)。首次治疗运用酒依赖自评量表 (ADS) 评估严重程度，范围 0-47 分；基线期之前和第八周治疗的三个月期间，运用时间追溯访谈 (TLFB) 评估饮酒频率和量，包括：戒酒天数% (PDA)、重度饮酒天数% (PHDD) 及每天饮酒标准杯数 (DDD)。治疗前后用睡眠知识问卷和 TEQ) 评估忠诚度和可靠性。

结果：CBTI-AD 组较 BPT 组在 SE、WASO 及 MFI-20 显著改善 ($P < 0.05$)；多数患者 CBTI-AD 有效 ($P < 0.05$)。组间饮酒模式或重度饮酒引起复发患者数无统计学意义 ($P > 0.05$)。

结论：CBTI-AD 组对康复期酒依赖伴失眠患者主观睡眠和日间症状疗效优于 BPT 组，失眠治疗获益对饮酒结局无效。

关键词：酒依赖；失眠；复发；认知行为治疗

基于可穿戴技术的运动员长期睡眠-觉醒行为的监测与分析

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目的：良好的睡眠可以提高运动员的运动表现，促进疲劳恢复，甚至降低运动损伤的风险。但据目前的研究调查表明，超过一半的现役运动员会在各种场合出现睡眠问题，包括睡眠不足、睡眠节律紊乱。这不仅会影响他们的运动表现，更可能对其长期健康产生不良影响。本研究旨在通过长期睡眠监测分析击剑队运动员的睡眠-觉醒行为，为制定运动员个性化训练和生活计划提供参考。

方法：使用华为手环6在2023年4月至9月期间收集了23名击剑运动员的睡眠数据。监测的获得的睡眠参数包括入睡时间、出睡时间、深睡时长、浅睡时长、快速眼动时长、清醒时长和白天睡眠时长。在此期间，除比赛时期外，要求运动员每天24小时连续佩戴手环（洗澡及充电时间除外）。

结果：击剑运动员的平均夜间睡眠时长为7.97h，不同性别运动员的睡眠参数无显著差异，水平高的运动员与水平低的运动员相比，除出睡时间（ $p=0.015$ ）和睡眠中点（ $p=0.048$ ）外，其他睡眠参数无显著差异；白天小睡时长与晚上睡眠时长呈负相关（ $r=-0.270$ ， $p<0.001$ ）；观察星期一至星期日运动员睡眠-觉醒行为的变化，在没有早晨训练的星期一、星期三和星期五，运动员的出睡时间和睡眠中点显著后移，且训练日与休息日的睡眠参数存在显著差异。

结论：不同水平运动员的睡眠模式不同。运动员的睡眠-觉醒行为受训练计划安排的影响，存在睡眠节律紊乱的现象。

关键词：击剑运动员, 可穿戴技术, 睡眠-觉醒行为, 睡眠补偿

基于可穿戴设备初中三年的睡眠跟踪研究

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研究目的：本研究通过可穿戴设备监测初中生三年睡眠情况，了解初中生三年睡眠的基本情况，并对初中生三年睡眠的基本特征与变化进行分析。研究方法：本研究于 2021 年 12 月招募 120 名初一学生，利用可穿戴设备进行每学年 2 周为期 3 年的睡眠监测，并收集每阶段的睡眠参数（浅睡时长、深睡时长、快速眼动时长、夜间睡眠时长、白天睡眠时长等），对其睡眠情况进行统计分析。研究结果：随着年级的增加初中生每年平均浅睡时长、深睡时长、快速眼动时长和夜间睡眠时长都呈现出明显减少的趋势，白天睡眠时长则呈现先减少后增加的趋势，深睡时长与时间和性别有交互作用 ($P=0.0156$)，男生深睡时长在三年间逐年减少，女生深睡时长初二与初一相比显著减少，初二与初三深睡时长基本相同；学生休息日中各项睡眠参数显著多于学习日，白天睡眠时长与日期类型有交互作用 ($P=0.0010$)，初中三年学习日中的白天睡眠时长呈先减少后上升的趋势，休息日中的白天睡眠时长呈持续增加的趋势；初中生起床时间受学校作息影响有逐渐提前的趋势，初三与初一相比显著提前，入睡时间逐年向后推迟，每年平均夜间睡眠时长均不足 8 小时，睡眠不足发生率逐渐升高。结论：初中生的睡眠质量呈逐年下降趋势，睡眠不足情况加剧。

关键词：初中生；睡眠

儿童发作性睡病1型患者能量代谢的研究

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目的：肥胖是儿童1型发作性睡病（NT1）的常见病，但其发病机制尚不清楚。本研究旨在确定NT1代谢功能障碍的特征，并揭示其潜在机制。

方法：研究共纳入82例NT1患者（ 11.2 ± 2.8 岁）与62例年龄、性别和体质指数（BMI）匹配的健康对照者（ 11.6 ± 2.4 岁）。测定有氧运动前后血清乳酸、乳酸脱氢酶（LDH）及其同工酶。我们通过透射电子显微镜（TEM）对6名NT1患者和5名对照组进行了肌肉活检，以研究骨骼肌细胞中的线粒体损伤。

结果：NT1显示患者明显高于乳酸水平基线（ 2.4 ± 0.59 vs 1.7 ± 0.36 mmol/L, $P < 0.001$ ），运动后（ 7.7 ± 3.06 vs 2.66 ± 0.79 mmol/L, $P < 0.001$ ），伴随着较高的基线LDH（ 236.5 ± 35.6 vs 190.9 ± 34.7 IU / L, $P = 0.026$ ）。透射电镜检查发现NT1患者骨骼肌细胞中存在线粒体结构损伤、糖原颗粒积累和脂质增多。相关分析发现运动前乳酸水平与线粒体损伤程度呈正相关。

结论：运动前/运动后血清乳酸水平增高提示NT1患者存在糖代谢和氧代谢功能障碍。骨骼肌细胞线粒体损伤可导致血清乳酸水平增高，可能是NT1患者代谢功能障碍的机制。这些发现为发作性睡病共病如肥胖和活动能力下降的机制提供了重要信息。

关键词：发作性睡病1型，能量代谢，线粒体，肥胖

MA 为主 OSA 不同分型的临床特征与初始 PAP 治疗的效果分析

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目的：评估不同的混合性呼吸暂停为主的 OSA（MA-OSA）分型的临床特征，以及对初始上气道持续正压通气治疗的效果。

材料与方法：定义 MA-OSA：标准多导睡眠监测结果中 MA 占总暂停事件的 30%及以上的患者为 MA-OSA。采用回顾性分析方法，诊断为 MA-OSA 且初次进行治疗的患者，行上气道持续正压通气治疗。以 MA 事件分布特征进行分型：（1）整夜型 MA-OSA，即入睡后即出现 MA，整夜均有分布；（2）后夜型 MA-OSA，即 MA 仅出现在后夜。方法：（1）比较 2 种分型的人口学特征、合并疾病、疾病严重程度等差异；（2）比较不同 MA-OSA 分型对初始上气道持续正压通气治疗的反应：比较治疗后残余 AHI 差异，比较不同分型的患者出现治疗后中枢性呼吸暂停的比率；（3）分析治疗效果影响因素。

结果：不同分型组间人口学、临床特征、严重程度等指标差异不具有统计学意义；不同分型组间的滴定模式、滴定方式、残余 AHI、适合治疗压力差异不具有统计学意义；不同治疗效果组间比较，年龄、性别、颈围、BMI、滴定模式差异未见统计学意义；整夜型 MA-OSA 患者具有更高的残余 AHI 及治疗后中枢性呼吸暂停比例，差异不具有统计学意义。治疗后中枢性呼吸暂停与非治疗后中枢性呼吸暂停患者间临床特征差异不具有统计学意义。

结论：MA-OSA 病情严重，整夜型 MA-OSA 患者初始气道正压通气治疗时可能出现更高的残余 AHI 及治疗后中枢性呼吸暂停，可考虑进行人工压力滴定。

特别鸣谢

- 钻石赞助** 扬子江药业集团有限公司
- 白金赞助** 翼思生物医药（上海）有限公司
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石家庄以岭药业股份有限公司于1992年6月16日创建（股票代码002603），公司以“继承创新、造福人类”为企业宗旨，“科技健康明天”为发展目标，“为员工谋发展，对社会做贡献，为股东创价值”为经营理念，始终坚持科技先导、市场龙头的创新发展战略，首次系统构建了络病理论体系，创立了“理论-临床-科研-产业-教学”五位一体的运营模式，形成了“从医到药到健康”的产业发展集群，“中医络病诊疗方法”列入了国家级非物质文化遗产，《络病学》成为大学教材，在全国40余所高校开课。先后承担国家973、国家863、国家自然科学基金、国家重点研发计划等国家级、省部级课题60余项。公司研发治疗冠心病、脑梗塞的通心络胶囊，快慢兼治心律失常的参松养心胶囊，标本兼治慢性心衰的芪苈强心胶囊，治感冒、抗流感的连花清瘟胶囊，补肾精、抗衰老的八子补肾胶囊等专利新药10余个，获得专利800余项，荣获国家科技进步一等奖、国家科技进步二等奖等六项国家大奖。

益肾养心安神片和解郁除烦胶囊是以岭药业自主研发的第十二、三个创新专利中药。益肾养心安神片以络病理论为指导，传承仲景经方酸枣仁汤、百合知母汤化裁拟定，具有镇静、催眠、增进记忆、抗疲劳作用优势，不仅改善多种失眠症状（如入睡困难，易醒、早醒、多梦等），同时改善乏力、健忘、头晕、心悸、腰膝酸软等躯体症状；解郁除烦胶囊由仲景经方半夏厚朴汤、栀子厚朴汤化裁拟定，全国名中医黄煌教授应用于临床近三十年，加减治疗门诊病例1.2万人次，三臂研究证实有效改善患者抑郁焦虑状态，缓解患者睡眠障碍、头晕、咽堵、口干、便秘等躯体症状，作为《抑郁症中西医结合诊疗指南》（2023版）推荐用药。

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题目：神经系统疾病共病抑郁、睡眠障碍的
优化管理

时间：9/7 13:00-13:25

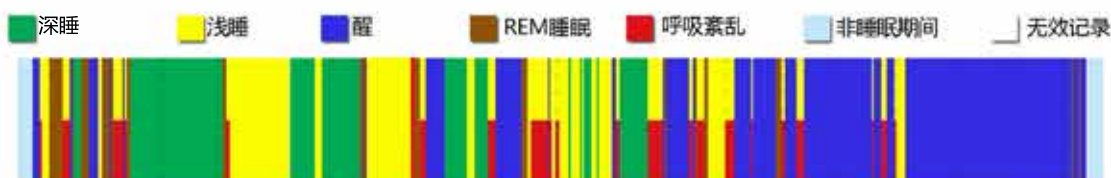
主持：杨渊，华中科技大学同济医学院附属
同济医院

讲者：徐顺生，武汉大学人民医院

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易判读的睡眠结构分析



◆ 区分主客观失眠

客观检测与主观感受对比

◆ 识别失眠类型

识别失眠类型（入睡困难、睡眠维持困难等）

◆ 指导用药

从睡眠结构变化了解失眠改善情况，为用药种类选择及剂量调整提供参考

◆ 疗效评估

基于治疗前后睡眠结构改善情况进行疗效评估

◆ 监测用药安全

CPC睡眠呼吸监测，可了解药物对睡眠呼吸事件的影响，提供用药安全参考

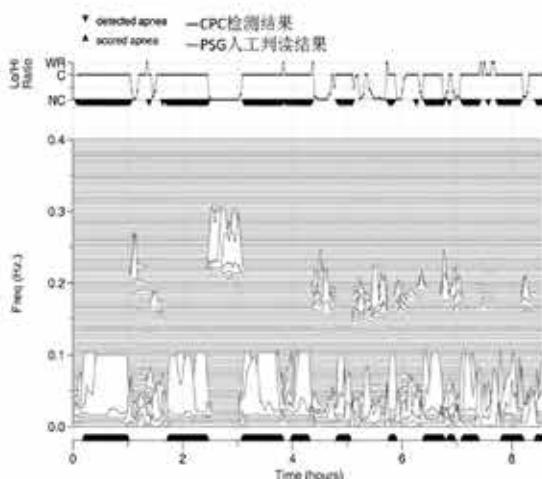
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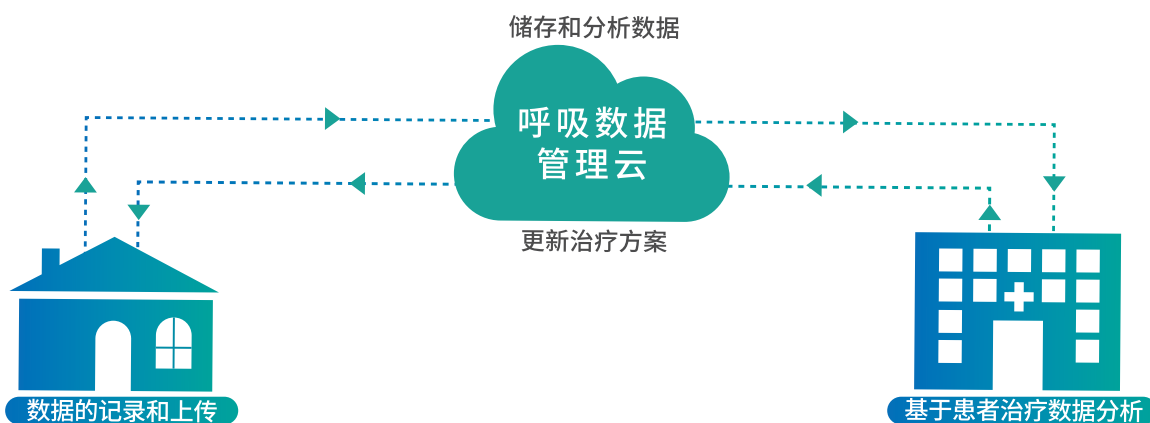
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* 中国睡眠研究会全国睡眠障碍筛查项目指定产品

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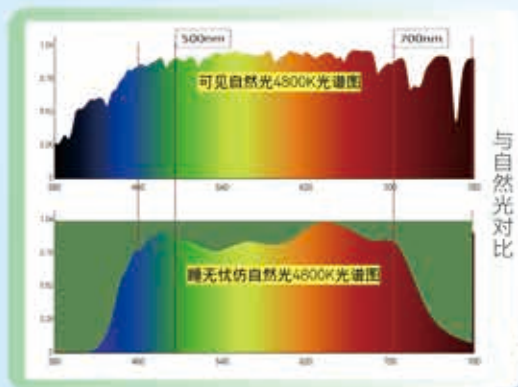
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参考文献：国际非电离辐射防护委员会测量标准 / 视网膜色素等效剂量计算公式 / 《Science》选择性光热解效应 / 《神经生物学杂志》2013，郭金诺普洛斯，王建民等



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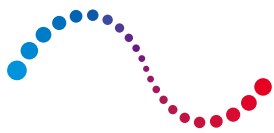
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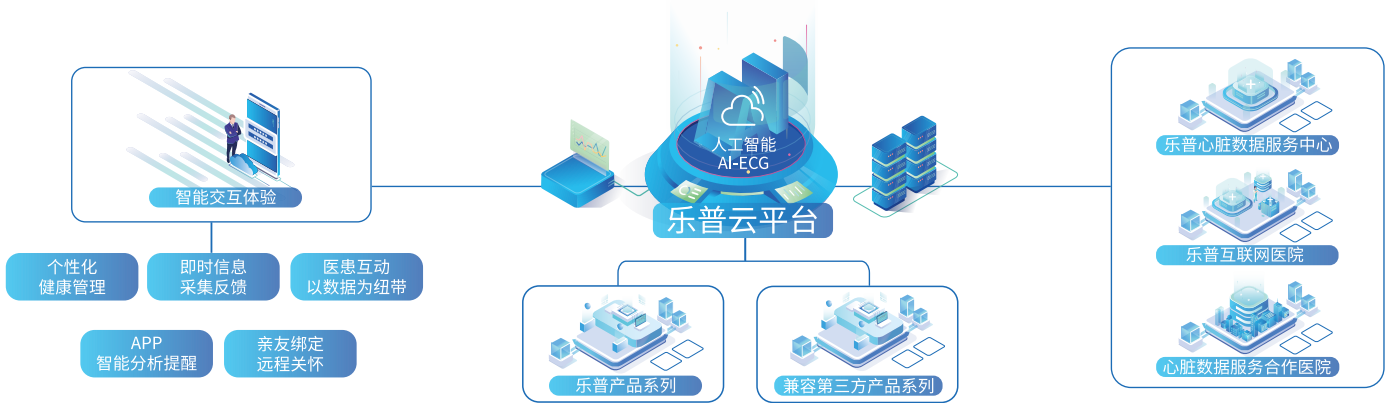
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接口类型	Keyhole
目前适配设备	飞利浦 Alice 6 Lde /LDxS/LDxN 安波澜 S4500



胸腹呼吸努力度传感器

货号	A20-2
接口类型	Double 1.5mmDIN
目前适配设备	Nihon Kohden PSG 1100 Natus



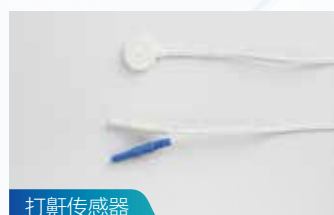
压力传感器

货号	A17-1
接口类型	Double 1.5mmDIN
目前适配设备	Nihon Kohden PSG 1100 Natus



热敏气流传感器

货号	A17
接口类型	Double 1.5mmDIN
目前适配设备	康迪 grael Nihon Kohden PSG 1100



打鼾传感器

货号	A19
接口类型	Double 1.5mmDIN
目前适配设备	安波澜 S4500 Nihon Kohden PSG 1100



体位传感器

货号	A16-4
接口类型	Keyhole
目前适配设备	飞利浦 Alice 6 Lde /LDxS/LDxN



RIP感应胸腹带

货号	A20-3
接口类型	Keyhole
目前适配设备	康迪 grael 安波澜 S4500



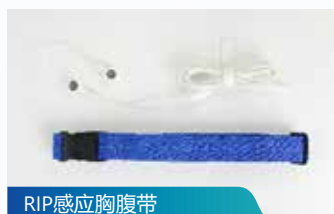
打鼾传感器

货号	A19-1
接口类型	Keyhole
目前适配设备	康迪 grael



体位传感器

货号	A16-6
接口类型	Keyhole
目前适配设备	康迪 grael



RIP感应胸腹带

货号	A20-5
接口类型	Keyhole
目前适配设备	飞利浦 Alice PDX 飞利浦 Alice 6 Lde /LDxS/LDxN



打鼾传感器

货号	A19-1
接口类型	Keyhole
目前适配设备	飞利浦 Alice 6 Lde /LDxS/LDxN



体位传感器

货号	A16-6
接口类型	Double 1.5mmDIN
目前适配设备	Nihon Kohden PSG 1100

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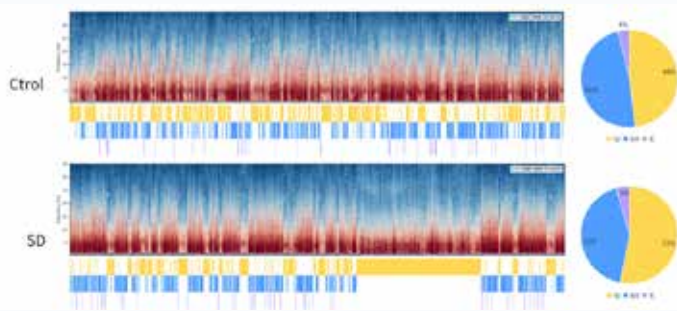
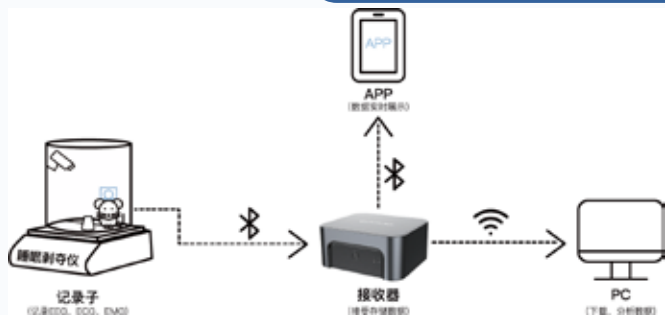
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 <p>somté PSG</p> <p>多导睡眠监测系统 全导联PSG 完全符合AASM 3.0标准</p>	 <p>profusion SLEEP</p> <p>Profusion PSG睡眠软件 世界级的睡眠诊断软件 符合最新的AASM标准</p>	 <p>neuvo LTM</p> <p>长程脑电监护系统 EEG/ERP事件相关电位临床 脑电系统, 长程脑电图</p>	 <p>profusion eeg</p> <p>Profusion EEG脑电软件 世界级的脑电诊断软件 为神经诊断领域提供创新的解决方案</p>

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[1] 田景平,等.中国中医药信息杂志.2016,23(4):36-40.

[2] 黄长灿.世界医学杂志.2021,8(12):2104-2108.

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数字睡眠健康能量站

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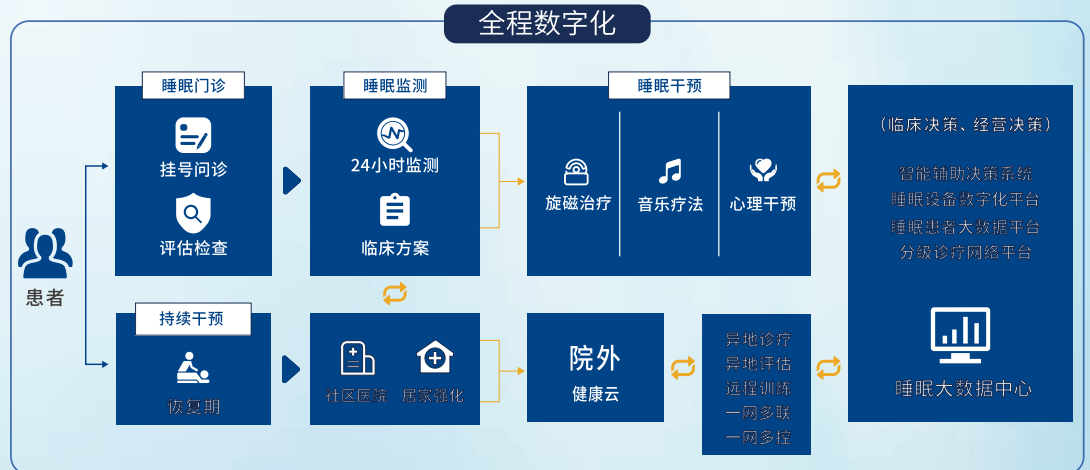
希迪克(中国)

ABOUT XDK (CHINA)

希迪克康养产业发展有限公司是一家国际化科技创新型跨国企业。希迪克聚焦睡眠健康产业，瞄准数字化未来，引进比利时前沿技术落地中国创新转化，创新研发数字睡眠疗法体系，以国际化视野、数字化手段、人性化设计为依托，以患者为中心，以智慧睡眠大数据为积累，深度融合云计算、人工智能等技术，整合数字化睡眠软硬件产品，包含先进诊疗设备和自主研发的数字化睡眠系统，围绕医院、社区、居家等场景构建集睡眠评估、诊断、干预与治疗为一体的全方位睡眠健康生态。



全程数字化



旋磁治疗系统



睡眠综合治疗系统



经颅磁刺激仪



失眠认知行为疗法管理系统 (CBT-I)



睡眠呼吸监测仪



微高压氧舱



脉冲磁治疗系统

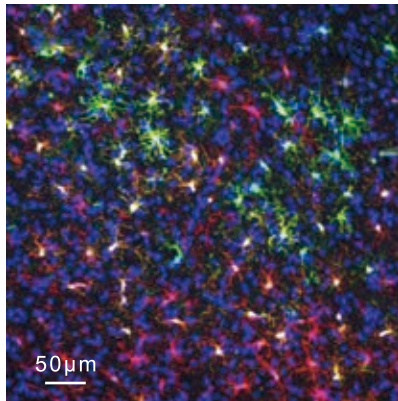


微电流刺激仪

• 部分产品展示

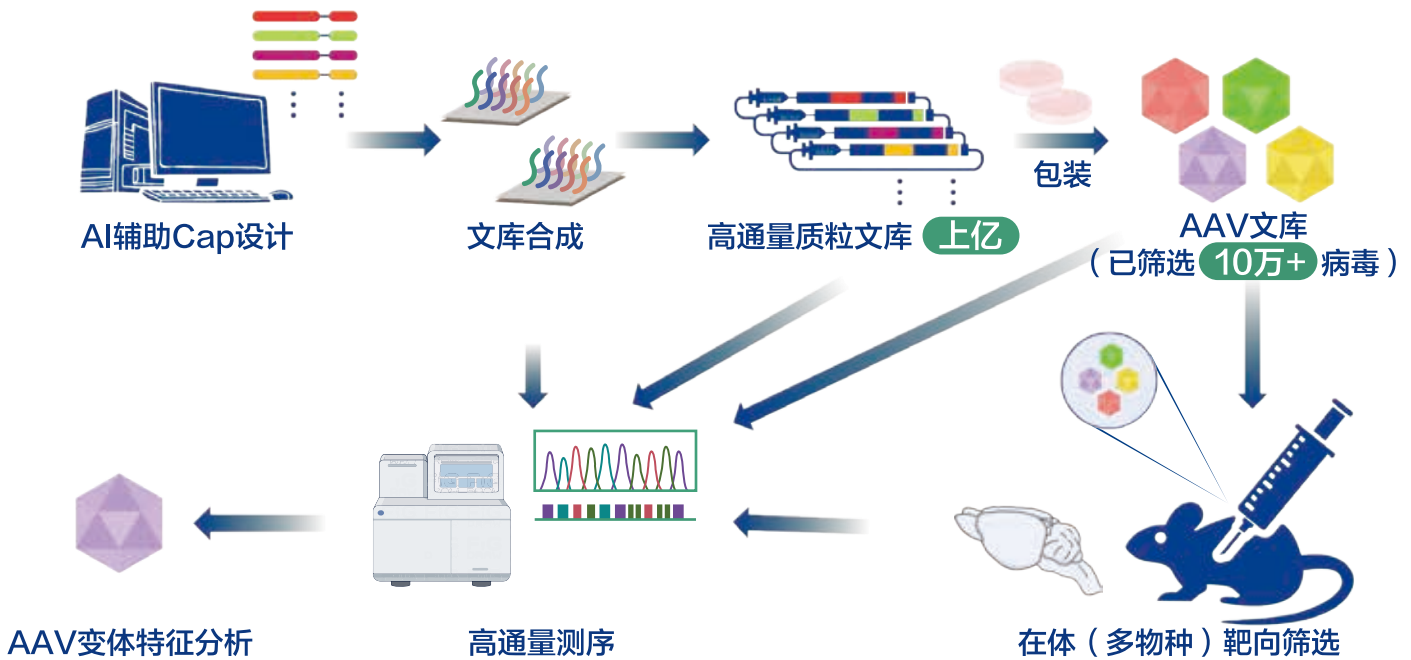
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由公司技术专家，复旦大学教授携团队共同研发下，推出新一代脑电仿生电刺激仪A620，核心技术采用目前公认的新技术经颅强交流电（tACS）技术及脑电刺激技术。广泛应用于神经内科、精神科、睡眠中心等与睡眠及情绪症状相关的临床科室。并符合相关医保收费治疗项目。

上海乾康医疗成立于2003年，并开始将脑部无创神经调控电刺激技术应用临床。下属上海乾康医疗科技有限公司和合肥乾康医疗科技有限公司，在仿真生物电刺激针对脑部治疗研究领域耕耘了二十余年。获多项国家发明专利及实用新型专利。



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