



AFSUMB 2021

The 14th Congress of the Asian Federation of Societies for Ultrasound in Medicine and Biology (AFSUMB 2021) in conjunction with the 21st Annual Meeting of Chinese Society of Ultrasound in Medicine (CSUM 2021)

Better Asia Better US

Conference Guidelines

Sept. 16 - 19, 2021

Zhuhai International Conference and Exhibition Center
Zhuhai, China

Hosted by

Chinese Medical Association (CMA)

Chinese Society of Ultrasound in Medicine (CSUM)

Co-hosted by

Asian Federation of Societies for

Ultrasound in Medicine and Biology (AFSUMB)



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Overview

Title

The 14th Congress of the Asian Federation of Societies for Ultrasound in Medicine and Biology (AFSUMB 2021) in conjunction with the 21st Annual Meeting of the Chinese Society of Ultrasound in Medicine (CSUM 2021)

Theme

Better Asia, Better US

Date

Sept. 16 (Thu.) – 19 (Sun.), 2021

Venue

Zhuhai, China

Hosted by

Chinese Medical Association (CMA)
Chinese Society of Ultrasound in Medicine (CSUM)

Co-hosted by

Asian Federation of Societies for Ultrasound in Medicine and Biology (AFSUMB)

Important Dates

Early-bird Registration Deadline	Sept. 10, 2021
Online Registration Deadline	Sept. 19, 2021

Expected Number of Participants

Approx. 2,500 delegates
(domestic on-site 500, international on-line 2,000)

Official Language

English / Chinese

Website

www.afsumb2021.com

Contact

Abstract / Registration: register@afsumb2021.com
Enterprise Service: exhibition@afsumb2021.com

AFSUMB 2021

Invitation

Better Asia Better US

Dear colleagues and friends,

It is our great pleasure and honor to announce that the 14th Congress of the Asian Federation of Societies for Ultrasound in Medicine and Biology (AFSUMB 2021), in conjunction with the 21st Annual Meeting of the Chinese Society of Ultrasound in Medicine (CSUM 2021), organized by Chinese Medical Association (CMA) and Chinese Society of Ultrasound in Medicine (CSUM), and co-organized by Asian Federation of Societies for Ultrasound in Medicine and Biology (AFSUMB) will be held from 16th to 19th September in Zhuhai of Guangdong province in China.

As we cross the threshold into the post-COVID era, the AFSUMB is well-positioned to continue to lead in Asia in the field and practice of ultrasound in medicine and biology, with a commitment to action and long-term positive change. The reach and impact of the AFSUMB are further extended with the opportunities provided through virtual communications and on-demand access to content. We also recognize that this does not replace the immense value of in-person communication, networking, and the exchange of ideas.

As we are about to embark on AFSUMB2021 and continue to battle through the second year of the COVID-19 pandemic, let us remain resilient and focused on the remarkable progress that we can continue to make for our specialty and patients, for a better Asia and better US.

We look forward to welcoming you and your colleagues to the AFSUMB 2021, which promises to be meaningful and fruitful for all the participants.

Sincerely yours,



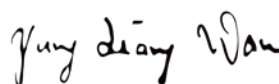
Yuxin Jiang, M.D

Congress President,

The 14th Congress of the Asian Federation of Societies for Ultrasound in Medicine and Biology



Ping Liang, M.D



Yung-Liang Wan, M.D

President,

The Asian Federation of Societies for Ultrasound in Medicine and Biology



Won Jae Lee, M.D



Introduction

Introduction of AFSUMB and AFSUMB 2021

The Asian Federation of Societies for Ultrasound in Medicine and Biology (AFSUMB) launched in 1987, with China, Japan, Korea, and Malaysia. The AFSUMB is currently the largest federation in WFUMB that combines six area federations throughout the world and consists of 54,357 members from 50 countries, including 22,852 members from 16 countries in Asia.

In addition to the AFSUMB Congress, the AFSUMB has been providing its members with diverse educational opportunities such as the WFUMB COE in Asia to share the latest information in ultrasound in medicine and biology.

The 14th Congress of the Asian Federation of Societies for Ultrasound in Medicine and Biology (AFSUMB 2021), in conjunction with the 21st Annual Meeting of the Chinese Society of Ultrasound in Medicine (CSUM 2021) is the biennial congress organized by AFSUMB. The AFSUMB Congress has been serving as an arena for exchanging knowledge and communicating about the essential topics in ultrasound in medicine and biology.

The AFSUMB 2021 is ready to attract more than 3,000 (domestic on-site 1,500, international on-line 1,500) participants, including professors, doctors, and distinguished leaders from about 20 countries in Asia on-site and online.

AFSUMB 2021

AFSUMB Congress History

No.	Congress	Venue	Host society
1 st	AFSUMB 1987	Tokyo	JSUM
2 nd	AFSUMB 1989	Bali	ISUM
3 rd	AFSUMB 1992	Seoul	KSUM
4 th	AFSUMB 1995	Beijing	CMA-CSUM
5 th	AFSUMB 1998	Taipei	CTSUM
6 th	AFSUMB 2001	Kuala Lumpur	MSUM
7 th	AFSUMB 2004	Utsunomiya	JSUM
8 th	AFSUMB 2007	Bangkok	MUST
9 th	AFSUMB 2010	New Delhi	IFUMB
10 th	AFSUMB 2012	Bali	ISUM
11 th	AFSUMB 2014	Kuala Lumpur	MSUM
12 th	AFSUMB 2016	Kyoto	JSUM
13 th	AFSUMB 2018	Seoul	KSUM
14 th	AFSUMB 2021	Zhuhai	CMA-CSUM



Organizing Committee

Presidents

Yuxin Jiang

Ping Liang

Yung-Liang Wan

Won Jae Lee

Executive Chairman

Jianchu Li

Yuanyi Zheng

Mei Zhang

Tian'an Jiang

Mingxing Xie

Qingqing Wu

Organization Committee

Honorary Chairman

Weiqi Wang

Baowei Dong

Xinfang Wang

Zhizhang Xu

Jinxi Zhang

Minhua Chen

Co-Chairman

Yun Zhang

Iwaki Akiyama

Secretary General

Kun Yan

Jeong Yeon Cho

Secretary

Qingli Zhu

Jie Yu

Members of Organizing Committee (Sort by last name)

Jokha Alkabani

Mukhtar Alam Ansari

Kanu Bala

TP Baskaran

Erdenebileg Bavuujav

Sudheer Gokhale

Musarrat Hasan

Yoshiki Hirooka

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Ching-Chang Hsieh	Akihiko Kikuchi	Masayuki Kitano	Jae Young Lee
San-Kan Lee	Kowk Yin Leung	Quan P.B. Nguyen	Chiou Li Ong
Yermek Sarinov	H. Sidharta	Bee Giok Tan-Sales	Jiawei Tian
Wenping Wang	Tuangsit Wataganara	Pei-Ming Yang	Lixue Yin
Xiaodong Zhou			

Members of Local Organization Committee (Sort by last name)

Cai Chang	Wen Cheng	Youbin Deng	Lianfang Du
Jia Guo	Liqun Jia	Xiang Jing	Chunsong Kang
Baoming Luo	Yan Luo	Chunyan Ma	Yuming Mu
Haitao Ran	Weidong Ren	Jie Tang	Di Xu
Jianjun Yuan	Lijun Yuan	Lianzhong Zhang	

Faculty (Sort by last name)

Hong Ai	Lingyun Bao	Rui Bu	Ailu Cai
Sheng Cai	Junying Cao	Li Cao	Ying Che
Li Chen	Man Chen	Min Chen	Ping Chen
Ran Chen	Tao Chen	Wenzhi Chen	Wu Chen
Xinlin Chen	Yaqing Chen	Yue Chen	Zhiyi Chen
Zhigang Cheng	Ligang Cui	Xinwu Cui	Heping Deng
Xuedong Deng	Yan Deng	Zhixin Di	Hong Ding
Yunchuan Ding	Fajin Dong	Fenglin Dong	Gang Dong
Xiaoqiu Dong	Guoqing Du	Yunyou Duan	Ligang Fang
Shibao Fang	Hongwen Fei	Xinru Gao	Yi Gao
Ying Gu	Xin Guan	Jun Guo	Ruijun Guo
Ruiqiang Guo	Shenglan Guo	Wei Guo	Yanli Guo



Si Ha	Wei Han	Zhiyu Han	Shaoyun Hao
Guangbin He	Guangzhi He	Wen He	Yihua He
Hua Hong	Bing Hu	Xing Hua	Beijian Huang
Daozhong Huang	Liping Huang	Pintong Huang	Xuning Huang
Ying Huang	Feng Jiang	Fan Jiang	Lan Jiang
Lixin Jiang	Chunli Jing	Hui Jing	Xiangxiang Jing
Kairong Lei	Xiaoping Leng	Anhua Li	Bailing Li
Chaojun Li	Jie Li	Jing Li	Jun Li
Junlai Li	Kai Li	Qinying Li	Rui Li
Yingjia Li	Zhihong Li	Hezhou Li	Bo Liang
Jintang Liao	Xiaodong Lin	Cun Liu	Fangyi Liu
Guangjian Liu	Guohui Liu	Liwen Liu	Li Liu
Shuang Liu	Yani Liu	Yanna Liu	Yujie Liu
Zheng Liu	Xiangdang Long	Lijuan Lu	Man Lu
Qiang Lu	Guilin Lu	Hong Lu	Jing Lu
Yongping Lu	Hong Luo	Wen Luo	Yukun Luo
Guorong Lv	Ke Lv	Qing Lv	Xiuzhang Lv
Xiaojing Ma	Xiaojuan Ma	Zhe Ma	Feng Mao
Hua Meng	Chengrong Mi	Lisha Na	Ruixia Nan
Yuzhen Nima	Fang Nie	Cuizhen Pan	Chengzhong Peng
Yulan Peng	Zhaoxia Pu	Linxue Qian	Suzhen Ran
Jianli Ren	Min Ren	Xiaolong Ren	Yunyun Ren
Litao Ruan	Ning Shang	E Shen	Li Shen
Wenyuan Shi	Liling Shi	Xianhong Shu	Wenling Song
Congxin Sun	Desheng Sun	Hongguang Sun	Hongjun Sun
Houtan Sun	Kun Sun	Litao Sun	Liping Sun

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Tong Sun	Xiaofeng Sun	Yao Sun	Lingling Qin
Xuyan Tan	Hong Tang	Shaoshan Tang	Ying Tang
Guowei Tao	Xinqiao Tian	Minghui Tong	Qingping Tong
Gang Wang	Guangxia Wang	Hao Wang	Hongqiao Wang
Hongyan Wang	Hui Wang	Huifang Wang	Jian Wang
Jinping Wang	Jing Wang	Junmei Wang	Li Wang
Ling Wang	Qi Wang	Ren Wang	Ruili Wang
Wen Wang	Xiacong Wang	Xinghua Wang	Xudong Wang
Xuemei Wang	Zhili Wang	Zhibin Wang	Qiang Wei
Chaoyang Wen	Gang Wu	Rong Wu	Wei Wu
Weichun Wu	Ying Wu	Jinyu Wu	Hongmei Xia
Qing Xia	Huijuan Xiang	Hongning Xie	Xiaoyan Xie
Yi Xiong	Dong Xu	Huixiong Xu	Jinfeng Xu
Shiliang Xu	Shuzhen Xu	Xiangli Xu	Ensheng Xue
Gaiqin Xue	Hongyuan Xue	Jiping Xue	Li Xue
Ruiling Yan	Bin Yang	Bing'ang Yang	Hong Yang
Jingchun Yang	Jun Yang	Shuihua Yang	Taizhu Yang
Xiuhua Yang	Ya Yang	Guihua Yao	Yuan Yao
Jun Ye	Qin Ye	Xinhua Ye	Yuquan Ye
Tao Ying	Xiangdong You	Ming'an Yu	Ming Yu
Xiaoling Yu	Lei Yu	Songyuan Yu	Hongxia Yuan
Weiwei Zhan	Bei Zhang	Dezhi Zhang	Jing Zhang
Jun Zhang	Lei Zhang(Beijing)	Lei Zhang(Shandong)	Pengfei Zhang
Quanbin Zhang	Qunxia Zhang	Ruifang Zhang	Xiaoshan Zhang
Xiaodong Zhang	Xinling Zhang	Yingchun Zhang	Yu Zhang
Yuying Zhang	Zhikun Zhang	Zhoulong Zhang	Chunquan Zhang



Bowen Zhao
Yuzhen Zhao
Jianhua Zhou
Qichang Zhou
Xin Zhou
Haohui Zhu
Tiangang Zhu
Yongsheng Zhu

Cheng Zhao
Zhijun Zhao
Jianqiao Zhou
Qing Zhou
Yimin Zhou
Jia'an Zhu
Wenhui Zhu
Zheng Zhu

Qiyu Zhao
Chunmei Zheng
Ping Zhou
Xianli Zhou
Yuqing Zhou
Mei Zhu
Xiangming Zhu

Sheng Zhao
Rongqin Zheng
Qi Zhou
Xiao Zhou
Zubang Zhou
Qiang Zhu
Ying Zhu

AFSUMB 2021

General Information

Important date

AFSUMB2021 Sept. 16-19, 2021

Zhuhai International Conference and Exhibition Center

Early-bird Registration Deadline

Sept. 10, 2021

Opening Ceremony

Sept. 17, 2021 08:00-08:30

Congress Lectures

Sept. 17, 2021 08:40-09:30

Plenary Lectures

Sept. 17, 2021 09:40-12:10

AFSUMB Educational Courses

Sept. 17-19, 2021

Closing Ceremony

Sept. 19, 2021 11:20-12:00



Registration Message

	Early Bird (till Sept. 10 th)	Regular Registration (after Sept. 10 th)
AFSUMB Member	USD 150	USD 180
Regular Participant	USD 150	USD 180
Student / Resident	USD 70	USD 90

1. Online Registration Process

Click the "Registration" button below to register online. After the meeting, you will not be able to register for the meeting.

Click the "Registration" button below to register online and fill in the registration information online.

*All participants must upload valid certificates (e.g. doctor/nurse/medical student/resident etc.) .

YIA participants should also upload your ID cards or passport pages to show your dates of birth (≤ 45 years old).

To promote the international participation, all overseas abstract (oral or poster) presenters from the affiliated societies of AFSUMB as well as ≤ 45 years will be bestowed an "International Presenter Award" including 50% discount of registration fee & award certification. The deadline of abstract submission is July 30.

Payment can be only made after certificate is verified.

Registration will be completed after successful payment.

Early-bird registration deadline is Sept. 10, 2021.

Registration procedure: After filling in the registration information for participating in the conference and completing the payment, the organizing committee will send you a "Registration Payment Confirmation Letter" within 7 working days. Please confirm the registration information. If you still do not receive the "Registration Payment Confirmation Letter" 7 days after submitting the registration form, please contact the organizing committee : register@afsumb2021.com.

AFSUMB 2021

2. Payment Method

Bank Transfer

Please make bank transfer to:

- Beneficiary's Banker's Name:
Industrial and Commercial Bank of China, Beijing Municipal Branch, Beijing, PRC,
Dongsi sub-branch
- No.188 Chaonei St. Dongcheng, Beijing China
- Swift Code: ICBKCNBJBJM
- Account Name: Chinese Medical Association
- Account Number: 0200004109014455170
- Payment Method: Wire transfer
102100000415 RMB code

Please indicate: "AFSUMB2021+ Name" when remittance, please send the remittance voucher to register@afsumb2021.com after remittance. Kindly note that the bank service charges should be paid by the delegates themselves.

Note: Because the registration fee needs to be reconciled with the bank, the organizing committee will send the registration payment confirmation letter by email within 7 working days after the representative successfully pays the fee through the online banking. Please pay attention to check the mailbox and properly keep the registration payment. Fee confirmation letter, inquiry email: register@afsumb2021.com.

Payment and security: We will closely monitor the security of the payment platform to prevent anyone from unauthorised disclosure of information and ensure that your personal information and banking information are not leaked.

3. Cancellation of Registration and Refund

If you have paid the registration fee but can't participate in the conference, you can apply for a refund of the paid registration fee, but you need to submit a written application register@afsumb2021.com to the organizing committee in the form of an email. Other forms of refund applications are not accepted. Deadline for refund application: 24:00 (BJT), Sept. 15, 2021, refund method: return on the same route.



Introduction of CMA

The Chinese Medical Association (CMA) is the largest and the most profound non-profit national academic organization in China. It is a vital social force in medical science and technology development and links between the government and medical professionals. Established in 1915, the CMA now has 89 speciality societies and 696,000 members in China.

Primary Functions of the CMA include

- developing domestic and international medical academic exchange activities
- discovering, recommending and cultivating medical talents
- editing and publishing 180 medical and popular science journals including print and electronic, books and over 2,000 audio-visual products
- carrying out continuing medical education projects and training specialists
- implementing medical project evaluation and review and as well as science and technology decision-making demonstration
- selecting and presenting awards for outstanding achievements in medical science and technology
- promoting transformation and practical application of medical research results
- disseminating medical and health knowledge for the general public
- organizing technical appraisal on medical malpractice and Adverse Events Following Immunization (AEFI)
- undertaking the functions and missions entrusted by the government and relaying suggestions and requests from the medical professionals to the government.

Introduction of CSUM

CSUM History – An innovative, developing academic group with a profound heritage and strict discipline.

The Chinese Society of Ultrasound in Medicine (CSUM)'s predecessor was the Ultrasound Diagnostics Group in the Physiotherapy Society. In February of 1986, the Chinese Medicine Association (CMA) has officially approved the initiation of CSUM as one of 89 societies under CMA's administration. Over the last three decades, members of CSUM forged ahead with an enterprising spirit, with this spirit passed from generation to generation, and exert their utmost effort and attracted worldwide attention and achieved excellent reputation.

AFSUMB 2021

CSUM is the top academic and scientific group in China and organizes the national academic conference each year. Our educational agenda covers sophisticated and comprehensive topics and technology in workshops, masterclasses, case supervision, table discussion and invited symposium, representing the current academic mainstream par excellence in China. CSUM features as modernized in educational, scientific in management and internationalized in its development, forging core strength in promoting ultrasound in medicine in China.

CSUM Committee and its Sub - specialty Groups

The 10th CSUM committee, including 62 members, selected by democratic voting in Beijing on Dec. 2020.

1. Executive Committee

Honored President: Yun Zhang

President: Ping Liang

Immediate Past President: Yuxin Jiang

President-elect: Jianchu Li

Vice Presidents: Yuanyi Zheng, Mei Zhang, Tian'an Jiang, Mingxing Xie

Secretary General: Kun Yan

2. Sub-specialty Groups

(1) Youth Committee, Chairman: Ping Liang

(2) Superficial Tissue and Vascular Ultrasound Group, Chairman: Mei Zhang

(3) Interventional Diagnostic Ultrasound Group, Chairman: Tian'an Jiang

(4) Abdominal Organs Ultrasound Group, Chairman: Yuanyi Zheng

(5) Maternal Ultrasound Group, Chairman: Qingqing Wu

(6) Echocardiography Group, Chairman: Mingxing Xie



Five critical tasks initiated by CSUM

Since its initiation, the 10th committee of CSUM set its five critical tasks. Namely, association management, academic exchanges, continuing education, international exchange and guideline compose / popular science promotion, with holy grails of building a solid team of Chinese doctors and physicians with excellent skills and noble academic reputation, which would lead to the development of ultrasound in medicine in Asia.

Journals of CSUM

1. Chinese Journal of Ultrasonography (Chinese)

Editor-in-Chief: Yun Zhang

2. Chinese Journal of Medical Ultrasound (Electronic Edition)

Editor-in-Chief: Yuxin Jiang

Our History in AFSUMB

China is one of the sponsor nations of AFSUMB. In November 1985, Professor Jianfang Ren, as the representative of CMA, attended the AFSUMB inauguration meeting held in Kobe, Japan. He entered the first executive committee and participated in the initiation and formulation of the constitution of AFSUMB. After the establishment, CSUM extended its support and joined this big family. In other words, China is the legitimate member nation of AFSUMB.

As an active and vital role, CSUM organized the 4th AFSUMB in Beijing from 6th- 9th August 1995. According to the record, over 300 specialists and experts from 22 regions and countries attended and presented lectures, with over 600 delegates attending this meeting with more than 1,800 abstracts officially submitted.

CSUM attaches great importance to promote academic exchanges by sending its members joining overseas meetings, organizing large-scale international conferences, and inviting international groups and world-renowned personnel in the hope of bridging the gap between home and overseas.

AFSUMB 202A

Opening Ceremony, Congress Lectures & Plenary Lectures

Sept.17

08:00-08:30 **Opening Ceremony**
Host **Jianchu Li, Lijun Yuan**

08:40-09:30 **Congress Lecture**
Host **Yuxin Jiang, Jinrui Wang, Lixue Yin**

08:40-09:05 Invasive procedures in thyroid nodules: From diagnosis to treatment
Cristina Chammas President of WFUMB

09:05-09:30 Normal echo values for Asians: The WASE study
Yun Zhang Qilu Hospital of Shandong University

09:40-10:40 **Plenary Lecture I**
Host **Jinrui Wang, Wenping Wang, Mei Zhang, Mingxing Xie**

09:40-10:00 Guidelines for Abdominal CEUS
Won Jae Lee Sungkyunkwan University School of Medicine, Seoul, Korea

10:00-10:20 Ultrasonography and elastography of spleen
Yung-Liang Wan Linkou Chang Gung Memorial Hospital, Chang Gung University

10:20-10:40 US safety during pandemic
Iwaki Akiyama Doshisha University, Kyoto, Japan



10:45-11:45 Plenary Lecture II

Host **Zhigang Wang, Jiawei Tian,
Xiaodong Zhou, Tian'an Jiang**

10:45-11:05

Prospects of the future development in
ultrasound medicine

Ping Liang Chinese PLA General Hospital

11:05-11:25

Beyond the status quo: Quality management of
ultrasound in medicine in China

Jianchu Li Peking Union Medical College Hospital

11:25-11:45

Contrast enhanced ultrasound imaging of brain

Yuanyi Zheng Shanghai Sixth People's Hospital

Sept.19

11:20-12:00 Closing Ceremony

Host **Yan Luo, Danni Li**

AFSUMB 202A

Educational Courses

Sept.17

13:30-15:20 Educational Course _ ABD (I) _ Liver

Host Tian'an Jiang, Erdenebileg Bavuujav

13:30-13:50 Educational US-US overlay fusion imaging for the accurate diagnosis of ablative margin after ablation of HCC
Masatoshi Kudo AFSUMB

13:50-14:10 Educational CEUS in liver imaging - why should we implement CEUS in clinical practice
Kun Yan Peking University Cancer Hospital

14:10-14:30 Educational CEUS application in the diagnosis and intervention of liver tumors
Pei-Ming Yang National Taiwan University College of Medicine

14:30-14:50 Educational Update on US-based elastography of liver
Jae Young Lee KSUM

14:50-15:10 Educational Clinic application of pulsed electric field ablation system
Tian'an Jiang The First Affiliated Hospital, Zhejiang University School of Medicine

15:10-15:20 Q & A



15:40-17:30 Educational Course _ OB (1)

Host **Hongning Xie, Kowk Yin Leung**

- 15:40-16:00 Educational Update on obstetric US
Kowk Yin Leung HKSUM
- 16:00-16:20 Educational Application of new US technologies in OBGY outpatient clinic
Akihiko Kikuchi Saitama Medical Center, Saitama Medical University, Japan
- 16:20-16:40 Educational Fetal CNS findings in cytomegalovirus infection
Qingqing Wu Beijing Obstetrics and Gynecology Hospital
- 16:40-17:00 Educational Ultrasound diagnosis of fetal coronary artery fistula
Sheng Zhao Hubei Province Maternal and Child Health Hospital
- 17:00-17:20 Educational Clinical application of uterine artery during 11~14 gestation weeks
Hua Meng Peking Union Medical College Hospital
- 17:20-17:30 Q & A

AFSUMB 2021

Sept.18

08:00-09:50 Educational Course _ ABD (2) _ Pancreatobiliary

Host Yan Luo, Yoshiki Hirooka

08:00-08:20 Educational Liver and spleen stiffness measurements by STE / STQ for liver fibrosis evaluation in CHB patients: A multicenter study in China

Rongqin Zheng The Third Affiliated Hospital of Sun Yat-sen University

08:20-08:40 Educational Elastography of biliary system

San-Kan Lee Tungs'Taichung MetroHabor Hospital, Taichung, Taiwan

08:40-09:00 Educational How to prevent the biliary tract injury during liver tumor ablation

Xiaoyan Xie The First Affiliated Hospital of Sun Yat-sen University

09:00-09:20 Educational CEUS Value in diagnosing acute severe pancreatitis

Yan Luo West China Hospital of Sichuan University

09:20-09:40 Educational Early US diagnosis of pancreatic cancer

Masayuki Kitano Wakayama Medical University

09:40-09:50 Q & A



10:10-12:00 Educational Course _ OB (2)

Host Wenling Song, Tuangsit Wataganara

- 10:10-10:30 Educational Prenatal US assessment in multifetal pregnancies
Tuangsit Wataganara Faculty of Medicine Siriraj Hospital, Bangkok, Thailand
- 10:30-10:50 Educational Maternal fetal blood flow in pathological obstetrics surveillance
Wenling Song The First Bethune Hospital of Jilin University
- 10:50-11:10 Educational Value of ultrasonography in evaluating the risk of macrosomia during the early stage of third trimester
Yuqing Zhou Shanghai Changning Maternity & Infant Health Hospital, East China Normal University
- 11:10-11:30 Educational Clinical impacts to obstetricians in prenatal diagnosis of right aortic arch
Ching-Chang Hsieh Chang Gung Memorial Hospital
- 11:30-11:50 Educational Prenatally diagnosed hyperechogenic kidneys
Junmei Wang Women's Hospital, School of Medicine, Zhejiang University
- 11:50-12:00 Q & A

AFSUMB 202A

13:30-15:20 Educational Course _ GY

Host Qingqing Wu, Sudheer Gokhale

- 13:30-13:50 Educational Screening for CHD in early pregnancy: Clues and traps
Hongning Xie The First Affiliated Hospital of Sun Yat-sen University
- 13:50-14:10 Educational Prenatal diagnosis of posterior fossa diseases
Junya Chen Peking University First Hospital
- 14:10-14:30 Educational Assessment of deep pelvic endometriosis
Sudheer Gokhale IFUMB
- 14:30-14:50 Educational Application of CEUS in differential diagnosis of complex gynecological disease
Xinling Zhang The Third Affiliated Hospital of Sun Yat-sen University
- 14:50-15:10 Educational Is 3D ultrasound necessary after an adequate 2D study?
Ong Chiou Li MUSS
- 15:10-15:20 Q & A



15:40-17:30 15:40-17:30 Educational Course _ Others (1) _ Uro
Host Yaqing Chen, H. Sidharta

- 15:40-16:00 Educational Pitfalls and pseudo-lesions of renal US
Jeong Yeon Cho Seoul National University Hospital &
Seoul National University College
of Medicine
- 16:00-16:20 Educational Practice guidelines of percutaneous microwave ablation
of renal cell carcinoma
Jie Yu Chinese PLA General Hospital
- 16:20-16:40 Educational US diagnosis of nutcracker syndrome
Seung H. Kim Ewha Womens University
Mokdong Hospital
- 16:40-17:00 Educational Multiparametric ultrasound for the diagnosis of
prostate cancer
Yaqing Chen Xinhua Hospital Affiliated to Shanghai
Jiaotong University School
of Medicine
- 17:00-17:20 Educational Review of US-guided aspiration of pelvic masses
Musarrat Hasan Director Institute of Ultrasound
Imaging Karachi Pakistan
- 17:20-17:30 Q & A

AFSUMB 2021

Sept.19

08:00-09:50 Educational Course _ Others (2)

Host Mei Zhang, Kanu Bala

- 08:00-08:20 Educational Ultrasound of Lung and COVID-19
Kanu Bala University of Science and Technology (USTC)
- 08:20-08:40 Educational Advance of valvular heart disease ----- Interventional therapy and echocardiography
Mingxing Xie Union Hospital, Tongji Medical College, Huazhong University of Science and Technology
- 08:40-09:00 Educational The application of elastography in diagnosis of vascular and superficial organ diseases
Mei Zhang Qilu Hospital of Shandong University
- 09:00-09:20 Educational Clinical value of US-guided sclerotherapy in cesarean scar pregnancy
Dong Xu Cancer Hospital of the University of Chinese Academy of Sciences
Zhejiang Cancer Hospital
- 09:20-09:30 Educational Q & A



10:10-11:00 Educational Course _ AI

Host Mingxing Xie

10:10-10:30 Educational Artificial intelligence in ultrasound

Huixiong Xu Tenth People's Hospital of
Tongji University

10:30-10:50 Educational Artificial intelligence in medical ultrasound

Xinwu Cui Tongji Hospital Affiliated to Tongji
Medical College of Huazhong
University of Science Technology

10:50-11:00 Q & A

AFSUMB 2024

AFSUMB Paper Presentation

Sept.16

08:00-09:40 Young Investigator Award (1)

Host Wei Yang, Jie Yu

- | | | |
|-------------|------|---|
| 08:00-08:10 | Oral | Assessment of hepatic steatosis in metabolic dysfunction-associated fatty liver disease by using attenuation imaging
Jingwen Bao Zhongshan Hospital, Fudan University |
| 08:10-08:20 | Oral | Contrast-enhanced US with sonazoid for the diagnosis of focal liver lesions: A multicentre prospective study
Yunlin Li Chinese PLA General Hospital |
| 08:20-08:30 | Oral | Ultrasound guided percutaneous microwave ablation of inoperable breast cancer with the skin and / or nipple areola complex involvement
Jian Jiang Chinese PLA General Hospital |
| 08:30-08:40 | Oral | Diagnosis of hepatic steatosis using an ultrasonic quantitative index based on time-frequency entropy
Yu-Wei Tsai Department of Medical Imaging and Radiological Sciences, Chang Gung University, Taoyuan, Taiwan |
| 08:40-08:50 | Oral | Hepatic steatosis grading by using grad-CAM-based ultrasound weighted entropy estimation
Jheng Ru Chen Department of Medical Imaging and Radiological Sciences, College of Medicine, Chang Gung University, Taoyuan, Taiwan |



- 08:50-09:00 Oral Efficacy of ultrasound attenuation imaging and fibroscan[®] controlled attenuation parameter in non-alcoholic fatty liver disease patients
Pantajaree Hiranrat Sonographer School, HRH Princess Chulabhorn College of Medical Science, Chulabhorn Royal Academy, Bangkok, Thailand
- 09:20-09:30 Oral Anti-tumor effect of cRGD-PEG-PLGA drug and gene loaded nanoparticles combined with UTD on breast cancer in vitro
Hongyuan Shen General Hospital of Ningxia Medical University
- 09:30-09:40 Oral Theranostic nanomedicine carrying l-menthol and near-infrared dye ir-780 for multimodal imaging-guided photothermal therapy of cancer
Chunyang Zhang The First Affiliated Hospital of Sun Yat-sen University

AFSUMB 2024

10:10-11:50 Young Investigator Award (2)

Host Yan Luo, Sheng Zhao

- | | | |
|-------------|------|--|
| 10:10-10:20 | Oral | Abnormal sylvian fissure at 20~30 weeks as an indicator of malformations of cortical development: a role for prenatal whole-genome sequencing
Yimei Liao Shenzhen Maternity and Child Healthcare Hospital Affiliated to Nanfang Medical University |
| 10:20-10:30 | Oral | Comparison of imaging modalities for ovarian neoplasms and their imaging features – a retrospective analysis
Prakhar Nigam M.G.M. Medical College, Indore |
| 10:30-10:40 | Oral | Correlative study of endometrial lesions by transvaginal ultrasound (tvs) and magnetic resonance imaging (mri)
Roshani Rathore MGM Medical College Indore (India) |
| 10:40-10:50 | Oral | Automatic assessment of mitral regurgitation severity using mask R-CNN algorithm on color doppler echocardiography images
Qinglu Zhang Shandong Provincial Third Hospital |
| 10:50-11:00 | Oral | Quantitative assessment of normal middle deltoid muscle elasticity at various arm abduction using ultrasound shear wave elastography
Lei Wang Sichuan Provincial People's Hospital, University of Electronic Science and Technology of China |



11:00-11:10	Oral	Changes of bilateral intracranial arteries after unilateral indirect revascularization surgeries in patients with moyamoya disease Shin-Joe Yeh National Taiwan University Hospital
11:10-11:20	Oral	Evaluation of hemodynamic changes in retrobulbar blood vessels using color doppler imaging in diabetic patients Gulshan Madhpuriya M.G.M. Medical College & M.Y. Hospital Indore
11:20-11:30	Oral	The application of ultrasound shear wave elastography in the prediction of paradoxical upgrading reaction in tuberculous lymphadenitis. a pilot study Yen-Lin Chen National Taiwan University Hospital
11:30-11:40	Oral	Role of b-mode and color doppler ultrasound in evaluation of hand and wrist joints in patients of rhumatoid arthritis Pramita Kheti MGM Medical College Indore
11:40-11:50	Oral	Ultrasound targeted microbubble destruction alleviates immunosuppression induced by CD71+ erythroid progenitor cells and promotes PDL-1 blockade in the advanced Luis Lung Cancer model Xi Tan Xinqiao Hospital of Chongqing

AFSUMB 2021

13:30-15:20 Case Study

Host **Xinwu Cui, Dong Xu**

- | | | |
|-------------|------|---|
| 13:30-13:40 | Oral | Rare and special primary hepatic neuroendocrine carcinoma with CEUS: A case report and review of literature
Dongmei Zhu Shenzhen People's Hospital |
| 13:50-14:00 | Oral | Ultrasonic diagnosis of traumatic vesicovaginal fistula: A case report
Zhaodi Lei Zhuhai People's Hospital (Zhuhai Hospital Affiliated With Jinan University) |
| 14:00-14:10 | Oral | Posterior nutcracker syndrome: Cases report
Yanrong Yang West China School of Medicine West China Hospital of Sichuan University |
| 14:10-14:20 | Oral | Transcatheter closure of atrial septal dissection with recurrent cerebral infarction: A case report
Yaqian Du Shanxi Medical Univerisity |
| 14:20-14:30 | Oral | Successful sotalol therapy of supraventricular tachycardia in a fetus
Xiaoxue Yang Northwest Women's and Children's Hospital |



- | | | |
|-------------|------|--|
| 14:30-14:40 | Oral | Ultrasonography and imaging of a right atrial thrombus in a patient with antiphospholipid syndrome
Chia-Chien Wu Radiology of Linkou Chang Gung Memorial Hospital |
| 14:40-14:50 | Oral | Ruptured scar pregnancy secondary to ingestion of misoprostol: A case report
Fatima Musarrat Hasan Institute Of Ultrasound Imaging |
| 14:50-15:00 | Oral | Sonographic features of borderline phyllodes tumor of the breast: A case report
Yaqin Sun Ordos Central Hospital |
| 15:00-15:10 | Oral | Sonographic features of lymphoepithelial carcinoma of parotid gland: A case report
Xiaoxia Chen The First Affiliated Hospital of Nanchang University |
| 15:10-15:20 | Oral | Ultrasonic diagnosis of a case of catheter rupture in infusion port
Wenjing Zhang The Sixth Affiliated Hospital of Sun Yat-sen University |

AFSUMB 2021

Sept.17

13:30-15:20 Superficial & Vascular (1)

Host Jie Zeng, Junmei Wang

- | | | |
|-------------|------|--|
| 13:30-13:40 | Oral | Development and validation of a nomogram for discriminating benign and malignant breast nodules by ultrasound and shell in two-mode elastography-a multicenter study
Ke'en Yang Shenzhen People's Hospital |
| 13:40-13:50 | Oral | Based on GBM, neural network, and random forest to predict the expression of her2 in breast cancer under ultrasound, dual-mode elastography and mammography
Jing Chen Shenzhen People's Hospital |
| 13:50-14:00 | Oral | Application of ultrasonic dual-mode artificially-intelligent architecture in assisting radiologists with different diagnostic levels on breast masses classification
Chunxiao Li Shanghai General Hospital Shanghai Jiao Tong University |
| 14:00-14:10 | Oral | Application value of contrast-enhanced ultrasound quantitative analysis in differential diagnosis of different molecular types of breast cancer
Kang Guo Henan Tumor Hospital |



14:20-14:30	Oral	The follow-up of post-mastectomy patients: Should the ipsilateral side be assessed with ultrasound? Rui Shu Xijing Hospital
14:30-14:40	Oral	Assessment and differentiation of breast cancer metastatic and reactive sentinel lymph nodes with perfusion contrast-enhanced ultrasound in mouse models: a longitudinal study Fengyang Zheng Zhongshan hospital, Fudan University
14:40-14:50	Oral	Dual mapping technique-microbubbles in combination with blue dye in sentinel lymph node biopsy in early breast cancer Jizhen Zhang Jiahui International Hospital
14:50-15:00	Oral	Clinical study on optimization of the process of sentinel lymph node biopsy in breast cancer by synchronous dual tracing method with sonazoid and methylene blue Yunxia Hao Peking University Third Hospital
15:00-15:10	Oral	A prediction equation to estimate vascular endothelial function in different body mass index populations Xiao Li Shanghai Sixth People's Hospital Affiliated to Shanghai Jiaotong University
15:10-15:20	Oral	Study on carotid artery plaque characteristic model based on ultrasound and contrast-enhanced ultrasound in cerebrovascular events Qin Wang Shanghai Tongren Hospital: Tongren Hospital Shanghai Jiaotong University School

AFSUMB 2024

15:40-17:30 Abdomen

Host **Xinling Zhang, Junya Chen**

- | | | |
|-------------|------|--|
| 15:40-15:50 | Oral | Prediction of liver cirrhosis by ultrasound elastography using F Index
Shuya Maeshima Wakayama Prefecture |
| 15:50-16:00 | Oral | A retrospective comparison of liver steatosis scoring from conventional ultrasound using scalable deep learning vs fibroscan
Bowen Li PAll Inc. |
| 16:00-16:10 | Oral | Detection of pediatric hepatic steatosis by ultrasound Nakagami imaging
Chiao-Shan Hsieh Graduate Institute of Biomedical Engineering, Chang Gung University, Taoyuan, Taiwan |
| 16:10-16:20 | Oral | Risk factors for gallbladder polyps observed through second-look abdominal sonography in patients with fatty liver disease
Shu-Hsien Lin Hepato-Gastroenterology |
| 16:20-16:30 | Oral | Bedside contrast-enhanced ultrasound: In the assessment of acute hepatic arterial thrombosis in early liver transplant
Mei Liao The Third Affiliated Hospital, Sun Yat-sen University |



16:30-16:40	Oral	Ultrasound-based diagnostic nomogram for differentiation of benign and malignant focal solid pancreatic lesions Jiayan Huang West China Hospital
16:50-17:00	Oral	Diagnostic value of ultrasonography in different types of acute colonic diverticulitis Jing Qin Peking Union Medical College Hospital
17:00-17:10	Oral	Role of ultrasonography in evaluation of patients with renal failure Mayuri Agrawal Sri Aurobindo Institute of Medical Sciences

AFSUMB 202A

Sept. 18

08:00-09:50 Superficial & Vascular (2)

Host **Huixiong Xu, Meng Yang**

- | | | |
|-------------|------|---|
| 08:00-08:10 | Oral | Diagnostic value of 2020C-TIRADS and 2020C-TIRADS combined with FNA in follicular papillary thyroid carcinoma
Mengjin Sun Henan Cancer Hospital |
| 08:10-08:20 | Oral | Ultrasonic diagnosis of atypical breast fibroadenoma and analysis of the cause of misdiagnosis
Nina Dai Taihe Hospital |
| 08:20-08:30 | Oral | BRAFV600E gene mutation combined with C-TIRADS classification in judging lymph node metastasis in central group of papillary thyroid carcinoma
Aoxue Zhao Department of Ultrasound, Shengjing Hospital of China Medical University |
| 08:30-08:40 | Oral | Diagnostic performance of artificial intelligence-based computer-aided diagnosis system in longitudinal and transverse ultrasonic views for differentiating thyroid nodules
Shiyan Li Sir Run Run Shaw Hospital, Zhejiang University |
| 08:40-08:50 | Oral | The diagnostic performance of conventional sonography and strain elastography in thyroid nodules with indeterminate cytology
Lilu Wu The Second Affiliated Hospital of Zhejiang University School of Medicine |



08:50-09:00	Oral	Role of high-resolution USG in diagnosis of thyroid lesions Rajesh Kumar Sri Aurobindo Medical College And Pg Insitute
09:00-09:10	Oral	A retrospective study of ultrasonography in the investigation of primary hyperparathyroidism:a new perspective for ultrasound echogenicity features of parathyroid nodules Jinglin Li Peking Union Medical College Hospital
09:10-09:20	Oral	Follicular lymphoma of the thyroid gland: ultrasonographic and clinicopathological features Zhifang Yang Ruijin Hospital
09:20-09:30	Oral	Diagnostic performance of artificial intelligence-based computer-aided diagnosis system combined with ACR TI-RADS and Bethesda category in cytologically indeterminate thyroid nodules Shiyan Li Sir Run Run Shaw Hospital, Zhejiang University
09:30-09:40	Oral	Efficacy of B/M ultrasound on rehabilitation training in patients with refractory swallowing dysfunction after stroke Tong Wu Brain Hospital Affiliated to Nanjing Medical University, Nanjing
09:40-09:50	Oral	Using multiple ultrasonographical examinations of salivary glands as a practical alternative to biopsy in classification of primary sjögren's syndrome Shihao Xu The First Affiliated Hospital of Wenzhou Medical University

AFSUMB 2024

10:10-11:50 Intervention

Host Xiaoyan Xie, Hong Ding

- | | | |
|-------------|------|--|
| 10:10-10:20 | Oral | Paclitaxel-loaded phospholipid microbubbles modified with dual-targeting ligands combined with ultrasound for enhancing chemotherapeutic efficacy of pancreatic cancer
Yuhui Ge Peking University Third Hospital |
| 10:20-10:30 | Oral | US-responsive TRAIL gene delivery system for therapy of orthotopic pancreatic cancer
Cong Zhang The Second Affiliated Hospital of Zhejiang University |
| 10:30-10:40 | Oral | Microwave ablation without subsequent lumpectomy versus breast-conserving surgery for early breast cancer: a propensity score matching study
Yuqing Dai Chinese PLA General hospital |
| 10:40-10:50 | Oral | Erythrocyte-camouflaged mesoporous titanium dioxide nanopatform for an ultrasound-mediated sequential therapies of breast cancer
Qunying Li The Second Affiliated Hospital Zhejiang University School of Medicine |



- | | | |
|-------------|------|--|
| 10:50-11:00 | Oral | The long-term efficacy of ultrasound-guided neural injection with 5% dextrose in carpal tunnel syndrome
Yung-Tsan Wu Tri-Service General Hospital,
School of Medicine, National
Defense Medical Center |
| 11:00-11:10 | Oral | Using shear wave ultrasound elastography for follow up after anti-spastic intervention among stroke patients
En Yang National Taiwan University Hospital |
| 11:20-11:30 | Oral | Correlative study on the evaluation of invasiveness of thyroid cancer by contrast- enhanced ultrasound and MVD
Wanying Jia Peking Union Medical College Hospital |
| 11:30-11:40 | Oral | Ultrasound-guided core needle biopsy for pediatric tumor under non-intubation general anesthesia: experience from a single cancer center
Jingwen Zhou Sun Yat-Sen University Cancer Center |

AFSUMB 2024

13:30-15:20 Others

Host Ligang Cui, Rong Wu

- | | | |
|-------------|------|--|
| 13:30-13:40 | Oral | Ultrasonic manifestation and pathological comparison of chromophobe renal cell carcinoma
Lan Zeng Peking University Third Hospital |
| 13:40-13:50 | Oral | 2D-shear wave elastography, latest aid for diffuse liver pathologies
Vishakha Hem Nair Sri Aurobindo Medical College And Pgi |
| 13:50-14:00 | Oral | Imaging evaluation of peritumoral liver fibrosis after TACE treatment in a modified rabbit VX2 liver tumor model
Zhimei Cheng Guizhou Medical University |
| 14:00-14:10 | Oral | Application value of ultrasonic convex array probe and phased array probe in predicting the dysfunction of TIPS coated stent
Jiajing Zhang Shanghai General Hospital |
| 14:20-14:30 | Oral | The clinical value of high frequency ultrasound in the identification of subclinical psoriatic arthritis
Yiran Gong First Affiliated Hospital of Fujian Medical University, Fuzhou, China |



- 14:30-14:40 Oral Ultrasound rectus femoris muscle parameters for discriminating sarcopenia in community dwelling adults
Yen-Lung Chen National Yang Ming Chiao Tung University
- 14:40-14:50 Oral A comparative study of melanocytic nevi classification with dermoscopy and high-frequency ultrasound
Yuanjing Gao Peking Union Medical College Hospital
- 15:00-15:10 Oral Enhancement of nanozyme permeation by endovascular interventional treatment to prevent vascular restenosis via macrophage polarization modulation
Chaoran Dou Shanghai Sixth People's Hospital Affiliated to Shanghai Jiaotong University
- 15:10-15:20 Oral A retrospective study of polidocanol sclerotherapy for treatment of ovarian endometriosis cyst
Dandan Shan Tenth People's Hospital of Tongji University

AFSUMB 2024

15:40-17:30 Echocardiography & Maternal

Host Yuqing Zhou, Hua Meng

- | | | |
|-------------|------|---|
| 15:40-15:50 | Oral | Early quantitative assessment of left ventricular subclinical dysfunction in systemic lupus erythematosus by a left ventricular pressure-strain loop
Xiaofeng Zhong Shenzhen People's Hospital |
| 15:50-16:00 | Oral | Accuracy of doppler tricuspid regurgitation in assessing pulmonary hypertension and addressing influencing factors of estimated pulmonary systolic artery pressure
Guangjie Lv China-Japan Friendship Hospital |
| 16:00-16:10 | Oral | Evaluation of cardiac functions by speckle tracking echocardiography in type 2 diabetes mellitus with hyperlipidemia
Zhizhi Dong The First College of Clinical Medical Sciences, China Three Gorges University & Yichang Central People's Hospital |
| 16:10-16:20 | Oral | Effect of left ventricle morphology on right ventricle function in fetal hypoplastic left heart syndrome
Ma Jing Department of Ultrasound, Union Hospital, Medical College, Huazhong University of Science and Technology |
| 16:20-16:30 | Oral | Quantification of left ventricular performance in different phenotypes of hypertrophic cardiomyopathy
Hong Ai First Affiliated Hospital of Xi'an Jiaotong University |



16:30-16:40	Oral	Novel TrueVue plus light and / or Glass three-dimensional echocardiography for congenital heart diseases Feifei Sun Shengjing Hospital of China Medical University
16:40-16:50	Oral	Machine learning with long short-term memory networks for predicting response to cardiac resynchronization therapy Chunli Wang Chang Gung Memorial Hospital, Linkou Medical Center
16:50-17:00	Oral	Study on prediction birth weight of term pregnancy by ultrasonic measurement in mid-trimester Tingying Qiu Southern Medical University
17:00-17:10	Oral	The ultrasound diagnosis of ovarian dysgerminoma Yufan He Guangdong Women and Children's Hospital
17:10-17:20	Oral	Low intensity focused ultrasound targeted microbubble destruction recovered paclitaxel sensitivity by decreasing autophagy in paclitaxel-resistant ovarian cancer Xiaofeng Fu Zhejiang University School of Medicine
17:20-17:30	Oral	Assessment of obstetric doppler ultrasound in high risk pregnancy and its perinatal outcome Palak Sharma Sri Aurobindo Institute of Medical Sciences, Indore, MP

AFSUMB 2024

Program at a Glance

Sept. 16 (Thu.)

08:00AM-09:50AM

- **AFSUMB Paper Presentation**

SIMULTANEOUS SESSIONS

YIA Presentation (ENG)

10:10AM-12:00AM

- **AFSUMB Paper Presentation**

SIMULTANEOUS SESSIONS

YIA - Oral Presentation (ENG)

13:30PM-15:20PM

- Echocardiography
- Obstetrics and Gynecology
- Superficial Organs and Vessels
- Interventional US
- Abdominal

SIMULTANEOUS SESSIONS

Emergency and Critical Care Echocardiography

The Standard and Interpretation of Expert Consensus of Ultrasound Examination in Obstetrics and Gynecology (1)

Anatomy and Standard Ultrasound Examination Methods of Upper Limbs

Continuing Education

Basic Education of Ultrasound

- **AFSUMB Paper Presentation**

Case Study (ENG)

15:40PM-17:30PM

- Echocardiography
- Obstetrics and Gynecology
- Superficial Organs and Vessels
- Interventional US
- Abdominal

SIMULTANEOUS SESSIONS

Emergency and Critical Care Echocardiography

The Standard and Interpretation of Expert Consensus of Ultrasound Examination in Obstetrics and Gynecology (2)

Anatomy and Standard Ultrasound Examination Methods of Lower Limbs and Associated Joints

Continuing Education

Basic Education of Ultrasound

- **AFSUMB Educational Courses**

AFSUMB AC Meeting (ENG)

Sept. 17 (Fri.)

08:00AM-12:10AM

OPENING CEREMONY & PRESIDENTIAL PLENARY (ENG)

13:30PM-15:20PM

- Echocardiography
- Obstetrics and Gynecology
- Superficial Organs and Vessels
- Interventional US
- Abdominal

SIMULTANEOUS SESSIONS

Echocardiography in Interventional Cardiology

The Application of New Technology of Obstetrics and Gynecology Ultrasound

Thyroid Ultrasound Project

Abdominal Interventional Ultrasound (ENG)

Clinical Progress of Ultrasound in Children Abdominal Diseases

- **AFSUMB Educational Courses**

Educational Course _ ABD (I) (ENG)

- Young Investigator

Artificial Intelligence Session

- **AFSUMB Paper Presentation**

Superficial (1) (ENG)



Sept. 17 (Fri.)

15:40PM-17:30PM

- Echocardiography
- Obstetrics and Gynecology
- Superficial Organs and Vessels
- Interventional US
- Abdominal
- AFSUMB Educational Courses
- Young Investigator
- AFSUMB Paper Presentation

SIMULTANEOUS SESSIONS

- Echocardiography in Valvular Heart Disease (ENG)**
- Fetal Malformations and Hysterosalpingography (1) (ENG)**
- Breast Ultrasound Project
- Abdominal Interventional Ultrasound (ENG)**
- Clinical Progress of Ultrasound in Diseases of Digestive Tract
- Educational Course _ OB (I) (ENG)**
- Artificial Intelligence Session
- Abdomen (ENG)**

Sept. 18 (Sat.)

08:00AM-09:50AM

- Echocardiography
- Obstetrics and Gynecology
- Superficial Organs and Vessels
- Interventional US
- Abdominal
- AFSUMB Educational Courses
- Young Investigator
- AFSUMB Paper Presentation

SIMULTANEOUS SESSIONS

- Echocardiographic Assessment of Cardiac Structure and Function
- Urinary and Digestive Malformations of Fetus and Children, Case Guessing
- Cervical Vascular Ultrasound Project
- Interventional Ultrasound of Superficial Organ
- Research Progress of Ultrasound in Diseases of Urinary System
- Educational Course _ ABD (2) (ENG)**
- Youth English Forum (ENG)**
- Superficial (2) (ENG)**

10:10AM-12:00AM

- Echocardiography
- Obstetrics and Gynecology
- Superficial Organs and Vessels
- Interventional US
- Abdominal
- AFSUMB Educational Courses
- Young Investigator
- AFSUMB Paper Presentation

SIMULTANEOUS SESSIONS

- Clinical Application of Conventional and Cutting - Edge Echocardiographic Technology
- Fetal Malformation and Hysterosalpingography (2) (ENG)**
- Limbs & Other Vascular Ultrasound Projects (ENG)**
- Interventional Ultrasound of Superficial Organ
- Research Progress of Ultrasound in Lung Diseases
- Educational Course _ OB (2) (ENG)**
- Youth English Forum (ENG)**
- Intervention (ENG)**

13:30PM-15:20PM

- Echocardiography
- Obstetrics and Gynecology
- Superficial Organs and Vessels
- Interventional US

SIMULTANEOUS SESSIONS

- Echocardiography in Cardiomyopathy
- Fetal Anomalies and MDT
- Superficial Mass / Lymph Node / Skin / Prostate Ultrasound Projects
- Thoracic and Abdominal Interventional Ultrasound (ENG)**

AFSUMB 202A

Sept. 18 (Sat.)

13:30PM-15:20PM

● **Abdominal**

● **AFSUMB Educational Courses**

● **Young Investigator**

● **AFSUMB Paper Presentation**

15:40PM-17:30PM

● **Echocardiography**

● **Obstetrics and Gynecology**

● **Superficial Organs and Vessels**

● **Interventional US**

● **Abdominal**

● **AFSUMB Educational Courses**

● **Young Investigator**

● **AFSUMB Paper Presentation**

SIMULTANEOUS SESSIONS

Research Progress of Ultrasound in Biliary / Pancreatic / Splenic Diseases (ENG)

Educational Course _ GY (ENG)

Youth English Forum (ENG)

Others (ENG)

SIMULTANEOUS SESSIONS

Echocardiography in Congenital Heart Disease

Ultrasound in Obstetrics and Gynecology (1)

Musculoskeletal Ultrasound Project (ENG)

Thoracic and Abdominal Interventional Ultrasound (ENG)

Research Progress of Ultrasound in Biliary / Pancreatic / Splenic Diseases

Educational Course _ Others (1) (ENG)

Youth English Forum (ENG)

Echocardiography+ Maternal (ENG)

Sept. 19 (Sun.)

08:00AM-09:50AM

● **Echocardiography**

● **Obstetrics and Gynecology**

● **Superficial Organs and Vessels**

● **Interventional US**

● **Abdominal**

● **AFSUMB Educational Courses**

● **Young Investigator**

10:10AM-11:00AM

● **Echocardiography**

● **Obstetrics and Gynecology**

● **Superficial Organs and Vessels**

● **Interventional US**

● **Abdominal**

● **AFSUMB Educational Courses**

● **Young Investigator**

11:20AM-12:00AM

SIMULTANEOUS SESSIONS

Ultrasound Molecular Imaging

Ultrasound in Obstetrics and Gynecology (2)

Superficial Organs and Vascular Ultrasound (ENG)

Comprehensive Interventional Ultrasound (ENG)

Research Progress of Ultrasound in Biliary / Pancreatic / Splenic Diseases

Educational Course _ Others (2) (ENG)

Youth Innovation Forum

SIMULTANEOUS SESSIONS

Contrast - Enhanced Ultrasound and Case Report

Ultrasound in Obstetrics and Gynecology (3)

Artificial Intelligence & Big Data Projects (ENG)

Comprehensive Interventional Ultrasound (ENG)

Research Progress and New Technique of Ultrasound in Cerebral Diseases

Educational Course _ AI (ENG)

Youth Innovation Forum

CLOSING CEREMONY (ENG)

Part 2

Abstract

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CEUS in liver imaging — why should we implement CEUS in our clinical practice

Kun Yan

Director of Ultrasonography Department, School of Oncology Peking University Cancer Hospital, Professor, Doctoral Tutor

Abstract

The lecture introduced the number of hospitals using CEUS in China and the current situation of CEUS application. The speaker used literature and examples to show the important value of CEUS in focal liver lesion diagnosis (characterization and detection). She also introduced her own research results and the application value of CEUS in puncture biopsy and before, during, after local ablation of liver tumors. CEUS plays an important role in liver lesion diagnosis and treatment, so we should implement CEUS in our liver clinical practice.



CEUS application in the diagnosis and assistance in intervention of liver tumors

Pei-Ming Yang

National Taiwan University College of Medicine

Abstract

Contrast enhanced ultrasound (CEUS) is widely applied in different organs, including liver. With the development of contrast agent, dynamic enhancement of the organs could be demonstrated by ultrasound (US). In addition to the arterial phase, portal venous phase and late phase, the 2nd generation of contrast agent, Sonazoid, provided a specific post-vascular (Kupffer) phase with effective tumor surveillance, diagnosis and differential ability for liver tumors.

CEUS had higher diagnostic ability than conventional US for focal liver lesions (FLLs), including both primary liver malignancies and metastases. As comparison with dynamic computed tomography, CEUS still showed comparable result in tumor detection and diagnosis. By different enhancement patterns of focal liver lesions, both benign and malignant FLLs could be differentiated by CEUS.

Liver tumor interventional procedures, including tumor biopsies, and local ablation therapies for liver malignancies could be assisted by CEUS. Accurate diagnosis, tumor detection / localization and treatment planning could be helped by CEUS before local ablation therapy. During local ablation therapies, CEUS also assisted in ablation device deployment and in residual detection immediately after ablation. After local ablation therapies, CEUS could be used for post ablation monitoring and assessment of indeterminate lesions in other dynamic image studies.

After the introduction of CEUS applications, several interesting cases were presented during the speech as examples of clinical applications regarding to diagnosis, and liver tumor intervention.

Clinical application of pulsed electric field ablation chief of ultrasonography department

Tian'an Jiang

The First Affiliated Hospital Zhejiang University

Abstract

Pulsed electric field ablation is a new, nonthermal and minimally invasive technique, which has been approved for lots of tumors. It could cause tumor cell death by short high-voltage electric pulses. In recent years, several studies have confirmed that pulsed electric field ablation is a promising technology in the treatment of tumor without damaging vessels and nerves. The application of pulsed electric field ablation in hepatic cancer, pancreatic cancer, prostate cancer and renal cancer is remarkable, with good safety and effectiveness, and could prolong the patient's survival time and improve the quality of life compare to the traditional treatments. In this study, let's talk about the clinical application of pulsed electric field ablation.



Update on obstetric ultrasound

LEUNG Kwok-yin

MBBS, M.D., FRCOG, FHKAM (O&G), FHKCOG, Dip Epidemiology & Applied Statistics, Cert HKCOG (MFM)

Specialist in Obstetrics and Gynaecology

Council member, The Obstetrical and Gynaecological Society of Hong Kong

Abstract

Advances in the technology of ultrasound, and the increasing expertise of operators allow detailed examination of various fetal structures in the second as well as in the late first trimester. As such, early diagnosis and management of fetal abnormalities can be achieved in low-risk as well as high-risk pregnancies.

Regardless of whether a woman opts for non-invasive prenatal testing (NIPT) with cell-free DNA or a combined first-trimester screening for Down syndrome, a first-trimester scan should be offered to assess the fetal size and structures. A detailed examination of the fetal brain, face, heart, and other structures can allow early detection of about half of all major structural anomalies, and may change the antenatal management.

Recently, AIUM recommends detailed diagnostic ultrasound examination in the second and third trimester for at-risk pregnancies including age 35 or above, gestational diabetes, assisted reproduction technology, body mass index ≥ 30 , teratogen, and nuchal translucency ≥ 3 mm. Fetal neurosonography and echocardiography should be added as appropriate. ISUOG has recently published two guidelines on fetal targeted neurosonography.

Routine ultrasound examination at around 36 weeks can allow detection of breech presentation, fetal growth restriction, and a previously undiagnosed fetal abnormality. Such diagnosis may affect the timing, mode and place of delivery.

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Selective use of new ultrasound technologies including radiant flow, three-dimensional ultrasound, speckle tracking analysis, artificial intelligence can be used to improve the image resolution, color flow, functional assessment, display mode and workflow.

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Application of new US technologies in OBGY outpatient clinic

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Abstract

I would like to talk about "application of new US technologies in OBGY outpatient clinic". We used Voluson SWIFT for vaginal ultrasound and Voluson E10 for abdominal ultrasound. Voluson SWIFT shows a radically different design to simplify manipulation, as we interact with our own devices every day such as tapping, pinching and swiping. With Voluson E10, we can obtain improved image clarity, excellent doppler sensitivity and sophisticated 3D / 4D structure / movement.

Radiant flow achieves a new standard color Doppler, using the amplitude of the Color Doppler signal to enhance the robustness and create a 3D-like appearance. Slowflow3D enables observation of low velocity vessels in 3D images. HDlive delivers customizable virtual light sources to highlight depth perception and internal structures. Voluson Sono is an automation technology. SonoCNS is an application to help properly align and display recommended views plus measurements of the fetal brain. SonoBiometry performs semi-automated biometry measurements to help reduce keystrokes
Measurements available: BPD, HC, AC, HL, and FL.

I will show you our experiences of normal and pathological OBGY cases using these new technologies. The conclusions of my talk are as follows.

1. Application of new US technologies enables us to make more accurate diagnosis and to perform better OBGY outpatient clinic.
2. Improved image quality including enhanced contrast resolution, increased sensitivity and realistic 3D structure brings a lot of fun to both examiners and patients.
3. Automation US technologies help effective clinical practice.

Fetal CNS findings in cytomegalovirus infection

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Abstract

Cytomegalovirus (CMV) is the most common cause of intrauterine infection occurring in 0.3% to 2% of liveborn infants. Ultrasound examination is key in the diagnosis and management of congenital infection.

Ultrasound is currently offered to pregnant women with CMV infection because it will disclose any structural and / or growth abnormalities indicative of fetal infection such as central nervous system (CNS) -- ventriculomegaly, brain calcifications and FGR, oligohydramnios, hyperechogenic bowel, polyhydramnios, hydrops, pleural effusion, and placental enlargement.



Ultrasound diagnosis of fetal coronary fistula

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Abstract

Coronary arteries may be visible in normal fetus in the third trimester. Two cases of coronary artery RA fistulae and one case of coronary artery RV fistulae were diagnosed prenatally with uneventful clinical course after birth. Prenatal diagnosis of coronary fistula is very important, and the purpose of follow up is to rule out heart failure.

Clinical application of uterine artery during 11-14 gestation weeks

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Abstract

Increased UtA-PI during 11-14 gestational weeks is related to placenta-associated complications. We established the reference range of UtA-PI for singleton based on the crown-lump length(CRL) during 11-14 weeks, for spontaneous and IVF pregnancy, which provides a reliable reference value for 11-14 weeks uterine artery evaluation. We strongly recommend the UtA-PI screening at 11-14 gestational weeks in low risk pregnancy in China.



Liver and spleen stiffness measurements by STE / STQ for liver fibrosis evaluation in CHB patients: A multicenter study in China

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Objectives

To explore the usefulness of liver stiffness measurements (LSMs) by sound touch elastography (STE) and sound touch quantification (STQ) in chronic hepatitis B (CHB) patients for staging fibrosis. To compare the performance of spleen stiffness measurement (SSM) and LSM by STE for the diagnosis of cirrhosis at different alanine aminotransferase (ALT) levels. And to compare applicability and repeatability of SSM with LSM performed by STE, a new two-dimensional shear wave elastography technology.

Methods

This prospective multicenter study recruited CHB patients with liver biopsy between May 2018 and November 2019. Success and reliable rates were calculated and compared. Intra-observer agreement was assessed using intraclass correlation coefficients (ICCs). The areas under the receiver operating characteristic curves (AUCs) for staging fibrosis were calculated. Differences between AUCs of LSMs and SSMs at different ALT levels were compared using Delong test.

Results

The ICCs for the intra-observer stability of STE-LSM and STQ-LSM (0.94; 0.90) were similar to those of SSI and ARFI (0.95; 0.87), respectively. The measurement durations of STE-LSM (69.0 ± 17.1 s) and STQ-LSM (48.6 ± 10.9 s) were significantly shorter than that of SSI (92.9 ± 22.7 s) and ARFI (62.7 ± 14.8 s), respectively (both $P < 0.001$). Success and reliable rates of STE-SSM were 94.53% (570/603) and 85.74% (517/603), which were similar to those of STE-LSM, respectively (both $P > 0.05$). ICC for intra-observer agreements of STE-SSM was 0.964. STE-LSM and STQ-LSM showed better accuracy than the aspartate aminotransferase-to-platelet ratio index (APRI) and fibrosis-4 index (FIB-4) (AUC: 0.87 vs 0.86 vs 0.72 vs 0.75) in staging cirrhosis. However, both STE-LSM and STQ-LSM were not superior to APRI and FIB-4 in staging significant fibrosis (AUC: 0.77 vs 0.74 vs 0.70 vs 0.70, all P values > 0.05). In total cohort and ALT $< 2 \times$ upper limit of normal (ULN) group, the AUCs of STE-SSMs were significantly lower than those of STE-LSMs for the diagnosis of cirrhosis ($P < 0.001$). While in ALT $> 2 \times$ ULN group, the AUC of STE-SSM improved and was not significantly different from that of STE-LSM ($P = 0.342$).

Conclusions

STE and STQ are convenient techniques with a reliable LSM value. They have a similar diagnostic performance and are superior to serum biomarkers in staging cirrhosis in CHB patients. SSM by STE achieved the applicability and repeatability equivalent to LSM. SSM might be a good supplement to LSM in patients with high ALT level.



Elastography of the biliary system

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Gallbladder (GB) and biliary tract are filled with bile fluid. According to the elastic characteristics of fluid, the principal difference in the mechanical behavior of fluids compared to solids is that when a shear stress is applied to a fluid, it will experience a continuing and permanent distortion. Fluids offer no permanent resistance to shearing. If there is no developed speckle in the region of fluid, a signal void or dropout was displayed, and there is no estimate for SW velocities at that region. This is happened in the elastography of blood vessel, bile duct and GB lumen.

We have many chances to see black-outs or various shades of grey in color map 2D SWE, which mean a loss of shear wave signal. They mark clear fluid (cyst) for SWs do not spread there, or rigid tissue (hard mass) for SWs is very weak. SWs attenuated or quickly propagated into the environment. The presence of large isolated macrocalcifications (gall stone) can introduce areas with apparent high stiffness mainly below the calcification when they are evaluated by SWE.

Strain elastography (SE) may be helpful for differentiating benign and malignant liver masses. Point SWE (pSWE) has the ability to differentiate between hepatocellular carcinoma (HCC) and cystic focal lesions, HCC and cholangiocarcinoma (CCC), and HCC and focal nodular hyperplasia (FNH). 2D SWE may be able to differentiate HCC and liver metastasis from normal liver based on the tissue elasticity values. 2D SWE shows malignant focal liver lesions (FLLs) were significantly stiffer than benign FLLs and CCCs were the stiffest malignant FLLs.

Dr. Yashima found the mean liver elasticity was significantly higher in the obstructive jaundice (OJ) group patient than in the non-obstructive jaundice. For patients from the OJ group, TE was performed before and after biliary drainage, and there was a marked reduction in the elasticity after the procedure. Liver elasticity increases in patients with biliary obstruction was due to temporarily increased elasticity.

Elastography might assist in the diagnosis of gallbladder (GB) polyps, benign polyps appeared as having a high-strain (soft) elastographic pattern, and GB carcinoma had a stiff appearance. Elastography is an accurate technique for differentiating between benign and malignant GB wall thickening, and can be combined with sonography as the prime imaging tool for diagnosing GB carcinoma at an early stage.

Elastography can be used as an adjunctive imaging technique with conventional sonography in the study of biliary system. 2D SWE may be useful at least in differentiation of CCCs and HCCs. We should be careful for liver elasticity increases in patients with biliary obstruction due to temporarily increased elasticity which might confound in elastography diagnosis. Routine use elastography during ultrasonography to evaluate GB polyp and increased GB wall thickness can help in early diagnosis and staging of GB carcinoma.



How to prevent the biliary tract injury during liver tumor ablation

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Abstract

Bile duct injury after ablation of malignant liver tumors (MLTs) was not unusual and should be avoided. However, few studies have focused on evaluating the risk factors of intrahepatic bile duct injury.

How to evaluate the risk factors of intrahepatic bile duct injury after ablation, and how to evaluate the minimum safe distance for ablating tumors abutting bile ducts, what are the direct cause, Indirect cause and risk factors are very important.

By analysis Sixty five patients with intrahepatic bile duct injury after ablation of MLTs, and 65 controls were recruited. Risk factors for intrahepatic bile duct injury were analyzed. Tumor location was recorded as ≤ 5 mm (group A), 5-10 mm (group B) and >10 mm (group C) from the right/left main duct or segmental bile duct.

Ascites history, TACE treatment history, intrahepatic bile duct dilatation before ablation ($P < 0.001$), and tumor location ($P = 0.000$) were identified as significant risk factors for intrahepatic bile duct injury.

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Significant differences in the risk of intrahepatic bile duct injury were found between groups B and C ($P=0.000$), but not between groups A and B ($P=0.751$). Ascites history ($P=0.002$), and tumor location ($P<0.001$) were independent predictors with the OR (95% confidence interval) of 39.31(3.95-391.69) and 16.56 (5.87-46.71), respectively.

Bile duct injury after ablation of MLTs was the result of local treatment-related factors combined with the patients' general condition. The minimum safe distance for ablation of tumor abutting a bile duct was 10 mm.

Key words: bile duct injury; thermal ablation; malignant liver tumors; risk factors; percutaneous.



Diagnostic value of contrast-enhanced ultrasonography in severe pancreatitis

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Acute pancreatitis (AP) is a common clinical acute abdomen, which is divided into mild acute pancreatitis (MAP) and severe acute pancreatitis (SAP). Although SAP only accounts for 10% - 20% of AP, the mortality can reach 20% - 40%. Therefore, early diagnosis and evaluation of the severity of pancreatitis is an important problem in the diagnosis of AP.

Contrast enhanced ultrasound (CEUS) is a new imaging technology developed in recent years. Previous studies have shown that CEUS can better judge the necrosis of pancreatic tissue and accurately find the effusion and / or local complications in the peripancreatic space, So as to significantly improve the diagnostic accuracy of severe acute pancreatitis and accurately evaluate the severity of pancreatitis.

Early US diagnosis of pancreatic cancer

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Patients with pancreatic cancer have the poorest prognosis among those with various malignant tumors. In order to improve its patient survival, early diagnosis is desirable. Transabdominal ultrasound (US) plays an important role for screening of pancreatic cancer, because it is non-invasive imaging method. A low-echoic mass, dilated pancreatic duct, cystic lesions with a mural nodule and swelling of the pancreas are clue findings to detect a pancreatic cancer. Among these findings, the dilated pancreatic duct is the most important clue finding. US depicts the dilated pancreatic duct in 75% of patients in whom pancreatic cancers at stages 0 and 1.

Among several imaging methods, endoscopic ultrasound (EUS) is the most accurate for diagnosis of pancreatic cancer due to its high resolution. When US depicts one of clue findings, subsequent EUS is recommended for the final diagnosis of pancreatic cancer. In particular, when US depicts dilated pancreatic duct, EUS may identify a small mass with obstruction of its downstream. In patients with intraductal papillary mucinous neoplasms (IPMN), an IPMN-concomitant pancreatic cancer frequently occurs. Therefore, when US detects IPMNs, scanning the whole pancreas with the subsequent EUS is recommended to identify a small concomitant cancer distinct from IPMNs. EUS is also useful for tissue acquisition. EUS-guided fine needle aspiration has a good yield to obtain the pathological diagnosis of pancreatic cancer with a sensitivity of 91% and specificity of 94%.

In conclusion, sonographers should pay attention to obscure indirect findings in the pancreas for early detection of pancreatic cancer. Cooperation between sonographers and endosonographers is essential for early diagnosis of pancreatic cancer.



Prenatal US assessment in multifetal pregnancies

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In comparison with dichorionic (DC) twins, monochorionic (MC) twins are at a higher risk of complications related to sharing of a single placenta and unbalanced vascular anastomoses. Prognosis and management of selective intrauterine growth restriction (sIUGR) can be differentiated with the characteristics of umbilical artery end-diastolic flow. Integrated assessment of sonographic, Doppler, and myocardial performance is utilized for accurate grading of the severity of twin-twin transfusion syndrome (TTTS). Prognostication of twin anemia polycythemia sequence (TAPS) mainly relies on the multiples of the median (MoM) peak systolic velocity of the middle cerebral artery (MCA-PSV). In twin reversed arterial perfusion (TRAP) sequence, pump twin passively perfuse its acardiac counterpart by arterial blood. The environment of low oxygenation and low arterial pressure gradient is thought to be responsible for bizarre malformation of the acardiac twin. Up to 30% of complicated MC twins are amendable for prenatal therapy. Prenatal assessments of discordant anomalies, monoamniotic twins, conjoined twins, and higher-order multiple pregnancies require higher skill of the sonographer. Although there is probably no single optimal strategy, since decisions will ultimately be influenced by the severity of the condition, gestational age, parents' wishes and technical issues.

Maternal fetal blood flow in pathological obstetrics surveillance

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Abstract

The topic is about the ultrasound Fusion Technology, called Maternal Fetal Blood Flow Surveillance in China, it's the appropriate technique for assessment and evaluation maternal-fetal circulation on obstetrical complications.

As a matter of fact, up to date, we have many Obstetric Doppler ultrasound guidelines and related clinical guidelines. But, "there are no two identical leaves in the world". and There is no two identical Doppler guidelines in the world, either. Most of the time, we would get more advantages therefrom, but sometimes they limited our medical decisions and interventions, also barred our Research innovation in a way. When we need to balance our medical managements and patient's benefits, our judgment is more important than Medical economics considerations. The latest updated guideline issued by ISUOG, Use of Doppler velocimetry in obstetrics. They state that the document is a Practice Guideline on how to perform Doppler ultrasonography of the fetoplacental circulation, to minimize measurement error and improve reproducibility.

Under the coronavirus epidemic situation, the most frequently mentioned is extracorporeal membrane pulmonary oxygenation (ECMO). The A-V pattern of ECMO is very familiar with umbilical artery and vein connect to placenta. By tracing its development history, it initially provided cardiopulmonary support to newborns through V-A pattern. This mechanism is particularly similar to the pattern in which placenta provides life support to fetus. The main cardiopulmonary and renal function support of artificial uterus is also based on the same rationale.



Therefore, each of us came to this world and had our own exclusive ECMO. This biological ECMO is the initial life support provided by our mother. Now we could use A fusion monitoring technology of Doppler and two-D complication exam, coupled with the artificial intelligence assisted diagnosis system, which can detect the working mode of placental ECMO in pathological obstetrics, so as to further provide clinical management information for high-risk pregnancy, The progress of fusion monitoring technology in maternal fetal assessment enables us to undertake more work on the road of improving quality of maternal and fetal life.

In China, We do Maternal Fetal Blood Flow Surveillance to monitor the fetoplacental circulation in obstetrical complications. Maternal Fetal Blood Flow Surveillance, simply as BFS. BFS is A approach of placenta and fetal assessment. Evaluation of placental function Monitoring maternal fetal hemodynamics, Confirming whether the fetus can get enough oxygen and nutrition, monitoring fetal intrauterine safety, the chronic hypoxia and the chronic circulatory failure. At same time to monitor maternal, fetal and placental complications in pathological obstetrics. It's helpful to provide noninvasive, early, complete, continuous, dynamic and systematic monitoring of fetoplacental circulation and early detection of related obstetrical complications. With BFS, we could reduce the incidence of unpredictable stillbirth of in patients, we could change in-patients into out-patients by BFS monitoring mode, And also we could improve doctor-patient understanding and reduce relevant medical disputes in China.

Value of ultrasonography in evaluating the risk of macrosomia during the early stage of 3rd trimester

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Abstract

Macrosomia is a status of excessive fetal growth, refers to infant birth weight not lower than 4000g. According to statistics, prevalence of macrosomia in China is as high as 7% to 13.9%, it also became a key factor of cesarean sections, so it is very importance to predict the risk of macrosomia in advance.

Ultrasound examination during 28-32 gestational weeks is a routine examination in our hospital, we tried to explore whether it is an earlier and effective method in predicting macrosomia.

In conclusion, AC, HC and FL measured by ultrasound in the early stage of 3rd trimester are closely related to the occurrence of macrosomia; Z-score of $AC \geq 1.241$, $AC \geq 269.42\text{mm}$, $FL > 57.04\text{mm}$, are optimal predictive value for the occurrence of macrosomia at 28 to 32 weeks of gestation, and can be used as references for clinical interventions in order to reduce the occurrence of macrosomia.



Clinical impacts to obstetricians in fetuses with prenatal diagnosis of prenatal diagnosis of right-sided aortic arch

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The obstetricians were not well aware of the fetal cardiac anomalies, especially over the aortic arch lesions. Actually, the incidence of right-sided aortic arch (RAA) could be higher than we expected in the general population. Nowadays, we could have prenatal diagnosis of RAA using the sophisticated ultrasound machine. However, some important clinical impacts were implemented to the pregnant women/their family as well as clinicians handling this situation.

Introduction

The normal left aortic arch crosses over the left mainstem bronchus, and typically descends along the left side of the spine. The aortic arch gives rise to three vessels: 1) Innominate (or brachiocephalic) artery, which bifurcates into the right common carotid artery and the right subclavian artery, 2) Left common carotid artery, and 3) Left subclavian artery. The RAA crosses the right mainstem bronchus and descends along the right side of the spine. Vascular ring may happen when RAA with aberrant left subclavian artery and left-sided ductus arteriosus, which accounts about 1/3 to 2/3 percent of cases.

Ultrasound Findings

Isolated right-side aortic arch were diagnosed using "3-vessel and trachea" and "supra-aortic branch" views. Since the majority of RAA could associated with cardiac defects such as ventricular septal defect, tetralogy of Fallot,

coarctations of the aorta, or a patent ductus arteriosus. We should perform detailed prenatal ultrasound examinations to exclude cardiovascular malformations as well as noncardiac anomalies including tracheoesophageal fistula, cleft lip-palate, and genetic or malformation syndromes (e.g., DiGeorge syndrome, Down syndrome, or CHARGE syndrome). Genetic evaluation as well as consultative ultrasound examination should be performed to rule out any associated abnormalities after prenatal diagnosis.

Prognosis

Most of the cases with prenatal diagnosis did not undergo surgery with close follow-up. Clinical outcome in patients who undergo surgical correction for vascular rings was generally excellent. According to the study of O'Mahony et. al., chromosomal anomalies were identified in eight fetuses (32%) of 25 who had chromosomal testing. The rate in isolated cases was 11% and 56% in non-isolated cases. The 22q11.2 deletion was identified in three fetuses (12%). Microarray identified copy number variants of potential clinical significance in four additional fetuses (16%). Surgery for vascular ring was performed on seven infants (25%).

Conclusion

For cases with RAA, microarray detected clinically significant chromosomal anomalies in fetuses with right aortic arch that would not be detected with conventional karyotyping. Prenatal counseling should include the chance of postnatal surgery for associated structural abnormalities and the importance of long-term follow-up.



Prenatally diagnosed hyperechogenic kidneys

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Abstract

Hyperechogenic kidneys are defined as kidney parenchyma with greater echogenicity than that of the liver. Its etiology include common variant of the kidney, kidney dysplasia, neuploidy, polycystic kidney, Pearlman syndrome, Beckwith-Wiedemann syndrome, cytomegalovirus infection, and genetic abnormality etc. It always combines with other anomalies including heart, urinary system, skeletal system, nervous system, digestive system etc. It's prognosis relates with oligohydramnios, other anomalies, unilateral or bilateral, increase size.

Screening of CHD in early pregnancy: Clues and traps

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Abstract

The progress of ultrasound technology has made great improvement in fetal structural anomalies detection during NT screening in early pregnancy. Many published studies have demonstrated that most major congenital heart defects (CHDs) can be detected in early pregnancy. However, scanning of the fetal heart is different in early pregnancy from that in the second and third trimester, and the efficacy of detection is highly experience dependent. Detection rate varies with factors including presets of the ultrasound equipment, the cardia examination technique, anatomical views and sonographer training.

For the examination technique, key points for scanning the fetal heart in the first trimester include: with high resolution probe, gray-scale complemented by color Doppler evaluation of both for 4 chambers view(4CV) and the great vessels, using transvaginal approach when cardiac malformation is suspected, optimal scanning conditions (image magnified, narrow sector width, high contrast image settings, low color Doppler gain, low power output). Essential planes for basic screening of fetal heart in the first trimester include: the axial view of the upper abdomen, the 4CV in gray scale, the 4CV in color Doppler, and the 3 vessels view (3VV) in color Doppler. If the four planes are obtained satisfactorily, many major cardiac malformations are excluded.

The ability to detect individual cardiac anomalies differs on the categorize cardiac abnormalities in the first trimester. Detection rates of some major CHDs are reported as high as 60%, such as HLHS, tricuspid atresia, pulmonary



atresia, AVSD, DORV, heterotaxy syndrome, ectopia cordis. The detection rates are lower in some kind of CHD like TGA, tetralogy of Fallot, COA. But for that size may be below the resolution of ultrasound, such as VSD, pulmonary valve or artery stenosis, it is unlikely that first trimester ultrasound will ever be able to detect. For some anomalies that gradually changes, like stenotic valvular pathologies or narrowing of the pulmonary artery and aortic arch, may only be detected at later gestations or even postnatally.

Clues for detection of major CHDs include: increased NT thickness, tricuspid regurgitation, reversed flow in A-wave of ductus venosus, abnormal cardiac axis, disproportion of the ventricle fillings in 4CV, absence of V shape 3VV with single large great vessel or U shape vessels, discrepant great vessel size with reversed flow in 3VV. There are many pitfalls in the screening of fetal heart in early pregnancy, which may lead to false positive and false negative detection, including the Inappropriate color Doppler preset, the fetal position, image quality, and the unique changes over time of some late developed CHDs.

It is important to follow a standardized screening protocol for CHD in early pregnancy. It should be recognized that it is impossible to detect all the abnormalities that can be detected in the second or third trimester in the early trimester. Appropriate training and the referral approaches will have a positive impact on the early detection of fetal cardiac abnormalities.

Prenatal diagnosis of posterior fossa diseases

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The posterior fossa is the most inferior part of the fossae. It houses the cerebellum / medulla and pons. So when we talk about the diseases of posterior fossa, in fact we talk about the diseases of cerebellum, medulla and pons. How to evaluate the structures in posterior fossa:

1. The major posterior fossa structures should be assessed with emphasis on size and morphology.
2. Division of the vermis into three parts by the primary and prepyramidal fissures. The primary fissure should divide the vermis into an anterior third and posterior two-thirds.
3. The rostrocaudal length of the ventral pons should be approximately twice that of the midbrain from the isthmus (ventral midbrain-pons junction) to the third ventricle, whereas the rostrocaudal length of the midbrain should be about the same as that of the medulla (from the level of the obex to the level of the ventral pontomedullary junction).
4. The posterior margin of the should be a straight line.
5. The fastigium should lie just below the midpoint of the ventral pons on sagittal images and have the shape of an equilateral triangle.
6. The cerebellar folia should run parallel to each other (onion-like configuration).
7. Individual cerebellar folia should be grouped together as lobules arising from a common ray of medullary white matter.
8. The anteroposterior diameter of the cisterna magna should be less than 10 mm.
9. Two retrocerebellar septa can be observed, parallel to the



anteroposterior diameter of the cisterna magna. They arise at the cerebellovermian junction and course posteriorly to the occipital bone, through the cisterna magna (remnants of the walls of Blake's pouch).

10. The tegmentovermian angle (the angle between a line drawn along the dorsal surface of the brainstem and another line drawn along the ventral surface of the vermis) should be close to 0° and should be considered significantly elevated when > 40 .

11. The tentorium insertion should be at the insertion of the nuchal muscles.

There are 11 types of diseases in posterior fossa that can be diagnosed before birth. Which were explicitly stated in the literature of Professor Gustavo Malinger team in 2009. The essence of each disease and key points of diagnosis are listed in this table . We should notice that the essence of diagnosis of various diseases are the structures, such as of vermis, hemispheres of cerebellum and brain stem. So we should set a protocol to diagnose diseases in posterior fossa. I take a case as an example to illustrate the protocol. The protocol listed below is what we are suggested to obeyed:

- Is the posterior fossa normal, enlarged or narrowed ?
- Is the tentorium inserted normally or raised ?
- Is the measured value of cerebellum normal ?
- Is the morphology of cerebellum and brainstem normal ?
- Is the morphology of the fourth ventricle normal ?
- Is cerebellar echogenicity or signal normal
- Are the other intracranial structures normal ?
- Whether the other structures of the whole body are normal or not ?
- Past history and Family history

Assessment of deep pelvic endometriosis

Sudheer Gokhale, India

MD, FICR, FICMU, FAIUM (US)

Endometriosis is one of the most common, most misunderstood and devastating diseases in the world. Over 70 million women and girls suffer from endometriosis worldwide. It is more common than breast cancer and AIDS.

Endometriosis is described as the presence of functional endometrial tissue in locations outside the endometrial (uterine) cavity. It is a common condition, affecting somewhere between 5% and 60% of women of reproductive age.

The endometrial tissue outside the uterus responds to the menstrual cycle hormones the same way the tissue inside the uterus responds - it swells and thickens, then sheds to mark the beginning of the next cycle. The blood that is shed from the endometrial tissue in the abdominal cavity has no place to go, resulting in pools of blood causing an inflammation that forms scar tissue. The resultant fibrosis, nodular lesions and the adhesions distort the anatomy.

Aim of Sonography examination is to try to explain underlying symptoms, map the disease location and assess the severity of disease prior to medical therapy or surgical intervention.

TVUS is the first line investigation in women suspected to have pelvic endometriosis. In experienced hands TVUS is very good at detecting ovarian and deep pelvic endometriosis.

The International Deep Endometriosis Analysis group published a consensus statement in 2016 on terms, definitions and measurements that may be used to describe the sonographic features of the different phenotypes of endometriosis.

A step by step explanation of the protocol to use for assessment of deep pelvic endometriosis and the ultrasound appearances of different findings will be described in the lecture.



Application of CEUS in differential diagnosis of complex gynecological disease

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Abstract

This topic is "Application of contrast enhanced ultrasonography in differential diagnosis of complex gynecological disease". Ultrasonography has become the diagnosis of gynecological diseases because of its advantages of noninvasive and simple. Color Doppler ultrasound can provide hemodynamics of lesions information, but, it can not accurately display small blood flow. In recent years, with the development and application of contrast-enhanced ultrasound technology, it has been recognized in various fields, which is called the third ultrasonic medical revolution.

Why we need CEUS? As we've just said, we want to know more perfusion information in the solid part. And we expect that CEUS can achieve a similar effect to CT enhanced image. For gynecological tumors, the reference is the normal myometrium. We must focus on some points, like arrival time, signal intensity, the phase of enhancement and washout, and the distribution of agent in the mass.

Some examples to explain why CEUS can provide more information to diagnose gynecological mass. Question 1: when the patient has the symptom of vaginal bleeding, ultrasonography showed thickened endometrium. How to make the differential diagnosis of benign and malignant mass? For case A, it showed a synchronized enhancement with that of myometrium. In the case B, It showed that the enhancement mode is similar to the normal uterus. The conclusion is that the malignant lesion's arrival time is synchronized with that of myometrium, and it is vastly earlier than the rest endometrium. In most cases, the signal intensity was also the iso-enhancement.

Question 2: In clinical practice, there will always be non-occupying lesion was found in patient with vaginal bleeding on touch or after sexual intercourse. In case D, we can find that the agent arrived time of cervix is earlier than that of the myometrium. But the whole cervix showed the same enhance mode without any occupying lesion. What's more, the peak signal intensity of cervix was the same as myometrium. But in case C, the agent arrived time of tumor area is still earlier than that of myometrium and the rest cervical area. Compared with case D, we found the difference is that there is a hyper-enhanced tumor in cervix. Pathology confirmed again the CEUS findings.

The last question, when we find a solid adnexal mass, the performance of two-dimensional ultrasound is very similar. Through CEUS, case E showed a peripheral hyperenhancement, no internal-enhancement and clear boundary. Another case showed that the arrived time of enhancement and the time of reaching the peak were obviously earlier than surrounding tissue.

Overall, contrast enhanced ultrasonography (CEUS) can provide more information to diagnose uterine and adnexal mass in complex clinical practice. The EFSUMB Guidelines and Recommendations for the clinical Practice of Contrast-enhanced Ultrasound (CEUS) in Non-hepatic Applications has illustrated: Both endometrial and cervical tumors have been assessed with CEUS; Perfusion differences between endometrial polyps and cancer have been documented; There are some benefits to diagnosis endometrial carcinoma by CEUS.

The guideline had partially admitted its value in diagnosis of gynecological mass, but more study is needed.



Is 3D ultrasound necessary after an adequate 2D study?

Ong Chiou Li

Acquisition of images

In 3D ultrasound, volumetric data of the pelvic structures is acquired. This may be done in a number of ways: manually by scanning the area of interest in a smooth sweep, by using specialised ultrasound transducers (most commonly with an in-built transducer driven by a mechanical motor that moves the transducer through the planes of field of view), or a matrix array transducer that uses beam-steering.

Benefits of 3D imaging

1. Volumetric data can be stored and reviewed at a later time or by a different individual.
2. Multi-planar reconstruction of data allows assessment of findings in infinite number of planes.
3. Uterine anatomy is more optimally displayed. Reconstruction of data to display in its coronal plane allows more ways to evaluate the uterus and various pathologies. Congenital uterine malformations such as the arcuate, septate and bicornuate uteri are better differentiated from each other using the coronal plane.
4. More accurate assessment of intrauterine devices (IUD) and their locations.
5. Improved localisation of lesions such as fibroids, etc.
6. Post-processing applications can improve visualisation of uterine zonal anatomy, e.g., with use of volume contrast imaging (VCI), the junctional zone is better seen.

7. Depending on the model of machine, specialised assessment such as automated volume calculations may be available and used in assessing ovarian reserve.

Advantages of 2D imaging

1. Real-time evaluation
2. Feedback from patient
3. Rapid assessment in emergent conditions

Limitations of 3D ultrasound

The same limitations in an ultrasound examination applies to 3-dimensional studies. Optimal display of the pelvic structures require good 2-dimensional images to begin with. Axial uterine orientation due to previous surgery as lower segment caesarean section can result in poor visualisation of the uterine body, its fundus and endometrium. Excessive movements e.g., breathing movements can affect the integrity of the data volume. Active bowel movements at the uterine fundus may affect visualisation of its contour clearly. But some artefacts can be useful in 3D, e.g., shadowing from the IUD are helpful in identifying its type.



Pitfalls & Pseudo-lesions of renal US

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Variety of pitfalls and pseudo-lesions may mimic true lesions on renal US and may cause unnecessary further evaluation including CT and anxiety of the patients.

There are many renal pseudo-tumors including prominent column of Bertin, dromedary hump, fetal lobulation, localized compensatory hypertrophy. Column of Bertin is the most common cause of pseudo-tumor. CDUS shows renal vessels passing through the lesion unlikely with the vessel sweeping sign in case of true renal tumor. Junctional parenchymal defect, post-operative parenchymal defect, and inflammation scar may mimic renal angiomyolipoma on US.

We need to know many lesions may mimicking renal cysts on US including normal renal medulla, focal calyctasia, calyceal diverticulum, and renal artery aneurysm.

The common causes of pseudo-hydronephrosis on US exam are mild dilatation of extrarenal pelvis and parapelvic cyst, prominent renal veins, and prominent renal pelvis by full filling of bladder. Careful US exam using Doppler may be helpful to distinguish these lesions from true hydronephrosis, but CT exams are performed in many cases. Normal renal medulla, focal calyctasia, calyceal diverticulum, and renal artery pseudo-aneurysm may mimic renal cysts.

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Many kinds of unidentified bright objects including vessel calcification, tiny cyst, calyceal diverticulum, and tiny angiomyolipoma can be misdiagnosed as calyceal stone or papillary calcification.

There are many pseudo-lesions mimicking bladder tumors. The most common mimicker is the cystitis and especially cystitis cystica / glandularis may appear as focal mass in the bladder. Focal contraction of the bladder wall and echogenic mass forming debris may mimic bladder tumors.

For the differentiation of pseudo-lesions from true lesions, we need careful US with suspicion of possible pitfalls and pseudo-lesions. Doppler US and contrast enhanced US are helpful in distinguishing variable pseudo-lesions from true lesions, but we need to recommend CT or MRI in case of impossible US differentiation.



Practice guidelines of percutaneous microwave ablation of renal cell carcinoma

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Abstract

Imaging-guided percutaneous microwave ablation (MWA) with high thermal efficiency comprises rapid, successful management of small renal cell carcinomas (RCCs) in selected patients. Ultrasound Committee of Chinese Medical Association, Interventional Oncology Committee of Chinese Research Hospital Association developed evidence-based guidelines for MWA of RCCs after systematically reviewing the 1969–2019 literature. Systematic reviews, meta-analyses, randomized controlled trials, cohort, and case-control studies reporting MWA of RCCs were included and levels of evidence assessed. Altogether, 146 articles were identified, of which 35 reported percutaneous MWA for T1a RCCs and 5 articles for T1b RCCs. Guidelines were established based on indications, techniques, safety, and effectiveness of MWA for RCCs, with the goal of standardizing imaging-guided percutaneous MWA treatment of RCCs.

Ultrasound diagnosis of nutcracker syndrome

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Nutcracker phenomenon (NCP) and nutcracker syndrome (NCS) occur when the left renal vein (LRV) is compressed between the abdominal aorta (AA) and superior mesenteric artery (SMA). NCS is typically accompanied by gross hematuria caused by rupture of thin-walled veins close to the calyceal fornices due to LRV hypertension. However, microscopic hematuria or proteinuria is more common than gross hematuria in NCS patients. Uncommonly left flank pain or other symptoms may be accompanied by NCS. The prevalence of NCP and NCS is unknown but has been thought rare. Considering a high incidence of unexplained hematuria and proteinuria and a high incidence of asymptomatic compression of the LRV, we may assume that NCP and NCS may not be as rare as it has been thought.

The diagnosis of NCP and NCS is done primarily by imaging. Imaging techniques that may be used to detect NCP are venography, arteriography, US, CT, and MRI. The definitive diagnostic criterion of NCP is the pressure gradient between the hilar portion of LRV (h-LRV) and the inferior vena cava (IVC) more than 3mmHg but invasive catheterization into the LRV is needed to measure the pressure gradient across the aortomesentric portion of the LRV (am-LRV). Doppler US is the best noninvasive imaging modality to measure flow velocity. Normal peak flow velocity (PFV) of the am-LRV is 40~50 cm/sec, which is slightly higher than the normal PFV of h-LRV of 15~25 cm/sec due to normal subtle compression of am-LRV between the AA and SMA. PVF of 80~100 cm/sec, which is twice the normal PFV of am-LRV, is regarded as the Doppler US criterion of NCP. A practical and simple criterion to use is PFV higher than 100 cm/sec at am-LRV.



The degree of compression of LRV in NCP and NCS cases may vary according to the postures of the patients. Usually, LRV compression is most severe in supine posture because of the weight of the bowels transmitted through the root of the mesentery. The compression effect is less severe in lateral decubitus, and it is least severe in prone posture. These variations of the severity of LRV compression according to the posture of the patients may be demonstrated with the US by the difference in morphology of the LRV at the greyscale US, color flow signals at color Doppler US, and PFV measured with spectral Doppler US. From these Doppler US findings, we may recommend better sleeping posture to the patients.

Multiparametric ultrasound for the Diagnosis of Prostate Cancer

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Prostate cancer is the most common malignancy in old male. The diagnostic pathway of prostate cancer is initiated by screening test followed by prostate biopsy. Based on the biopsy results, prostate cancer can be further categorized into clinically significant prostate cancer and clinically insignificant prostate cancer. Clinically significant cancers have higher grade and greater extensions, progress and metastases more easily, subsequently require active treatment including radical prostatectomy, radiotherapy and hormonal therapy. In the converse scenario, clinically insignificant prostate cancer is not life-threatening, thus active surveillance is recommended. However, standard systematic biopsy is a non-targeted biopsy strategy that would lead to under-detection of clinically significant prostate cancer and over-detection of clinically insignificant prostate cancer. Therefore, prostate imaging might be the possible solution to the problem of clinically significant prostate cancer detection, transferring non-targeted biopsy to imaging targeted biopsy. Among the imaging modalities, transrectal ultrasound is widely used in prostate imaging and biopsy guidance. With recent advances in ultrasound technology, multiparametric ultrasound consisting of grayscale imaging, color/power Doppler imaging, contrast enhanced ultrasound and elastography can combine relevant information for prostate cancer detection. The combined use of multiparametric ultrasound targeted biopsy and systematic biopsy could bring to higher clinically significant prostate cancer detection rate without remarkably adding to the diagnosis of clinically insignificant prostate cancer, subsequently reduce both the undertreatment and overtreatment of prostate cancer.



Review of pelvic masses aspirated under ultrasound guidance

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Objectives

The purpose of the study was to assess the utility and importance of ultrasound-guided aspiration of pelvic masses and to review our experience.

Methods

186 cases of pelvic masses were referred to our Ultrasound Clinic in Karachi from February 2008 to December 2019. Based on Ultrasound criteria, diagnosis of cysts, abscesses, endometriomas and pelvic collections were made. Diagnostic / therapeutic aspirations were carried out. Masses were aspirated per-abdominally by free-hand technique whereas endovaginal aspirations were done via puncture adapter technique. 14-18 gauge needles were used based on the viscosity of the fluid as determined by the zone of enhancement. All patients were reassessed after 15 days to evaluate any pain, discomfort, spill or recurrence.

Results

After meeting the selection criteria, 186 cases of pelvic masses were aspirated. Out of them, 18 turned out to be ovarian abscesses whilst 120 were chocolate cysts (endometriomas). 7 peritoneal abscesses and 4 psoas abscesses were also drained. 28 were found to be ovarian cysts with clear transparent fluid and 9 were found to be ovarian cysts with a tinge of red or dark yellow fluid. On follow-up, recurrence was observed in 28 patients (18.8%), 8 patients (5.4%) complained of mild pain and slight discomfort right after the procedure which was relieved by Paracetamol. No fluid collection was seen in the cul de sac.

Conclusions

Ultrasound-guided aspiration of pelvic masses is a relatively safe, simple and cost-effective alternative to more invasive methods such as laparoscopy and laparotomy. The paper will highlight the sonographic features of different cystic masses with special reference to ovarian abscesses versus endometriomas.



Ultrasound of lung and COVID-19

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In the recent years, lung ultrasonography has emerged in the clinical arena as a useful and developing imaging modality of evaluating lung. The physics of lung ultrasound is unique among other ultrasound examinations, because it is predominantly artifact based, in contrast to other ultrasound examinations in which anatomy is directly visualized. Most ultrasound waves are reflected at the pleura in an air-filled lung owing to the acoustic impedance mismatch at the air and soft-tissue interface that results in a hyperechoic pleural line.

From its traditional assessment of pleural effusions and masses, Lung ultrasonography has moved towards the revolutionary approach of imaging the pulmonary parenchyma. Although limited by the presence of air, Lung ultrasonography has proved to be useful in the evaluation of cardiogenic pulmonary edema, to acute lung injury, pneumothorax, pneumonia, interstitial lung disease, pulmonary infarctions and contusions. It is especially valuable since it is easily available at bedside, free of radiation hazard and real time. Lung ultrasonography has been proven to be superior to the bedside chest X-ray and equal to chest CT in diagnosing many pleural and lung pathologies. A relatively easy-to-learn application of ultrasound, less technically demanding than other sonographic examinations, it is quick to perform, portable, repeatable, independent from specific acoustic windows, and therefore suitable for a meaningful evaluation in many different settings, both inpatient and outpatient.

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Viral infections, including COVID-19 and bronchiolitis, can also be assessed and monitored using lung ultrasound. There is subjective enthusiasm for the ability of lung ultrasound to diagnose, stratify risk, and monitor COVID-19 infection. B-line artifact of varying severity, consolidations, and pleural irregularities have all been visualized in COVID-19 infection. In areas of focal ground-glass opacity, diffuse confluent B-lines are present with loss of A-lines. Pleural effusion is rare in these patients. During the recovery phase, the B-lines decrease and the A-lines typically return. It is important to note that lung ultrasound performed on patients with COVID-19 presents a risk to the operator; this risk can be minimized with the proper use of protective equipment.



Advance of valvular heart disease-----interventional therapy and echo

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Transcatheter intervention for valvular heart disease is a rapidly evolving field. The advent of transcatheter valve implantation and repair techniques set up one of the main revolutions of the last decades. Such development is also thoroughly related to a continuous progress in cardiac imaging. The introduction of devices for transcatheter aortic valve implantation (TAVI), mitral valve repair and implantation, tricuspid valve implantation and pulmonary valve implantation has led to a greatly expanded equipment of catheter-based approaches to patients with regurgitant as well as stenotic valvular disease. Certainly, multimodality cardiac imaging, such as X-ray, echocardiography, and computed tomography, has become indispensable in providing precise patient selection and in monitoring the interventional procedures in order to elevate the success rate and minimize the incidence of complications. Echocardiography plays an essential role in identifying patients suitable for these interventions and in providing intra-procedural monitoring and echo is the primary modality for post-procedure follow-up. Additionally, the role of transesophageal echocardiography, including 3D-TEE has evolved to support the procedures from the initial planning and intraoperative monitoring to the assessment of the acute result.

All four types of interventional surgery are being performed in Wuhan Union Hospital. In this presentation, we have endeavored to provide an instruction of transcatheter intervention for valvular heart disease and the vital role of echocardiography during the whole procedure. We also listed several patients who had undergone transcatheter implantation with domestic and imported valve system with delicate illustrations of transesophageal echocardiography demonstrating lesions diagnoses, interventional processes, and clinical outcomes.

The application of elastography in diagnosis of superficial organ diseases

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Elastography, first described in the 1990s, replaces the palpation performed by clinicians, which takes advantage of the changed elasticity of soft tissues resulting from specific pathological or physiological process, and provides an additional and clinically relevant information. The principle of Elastography is: by monitoring the responses of soft tissue using a medical imaging method triggered by external / internal stimuli, mechanical properties of the soft tissue could be identified for tissue characterization. Currently available USE techniques can be categorized by the measured physical quantity: strain imaging and shear wave imaging.

1. Elastography in breast

Strain imaging have been used to characterize benign and malignant breast masses. The most common parameters are the Tsukuba score, the EI/B mode ratio (width ratio or length ratio), and the strain ratio (fat-to-lesion ratio, FLR). scores 4-5 requiring a biopsy. In shear wave imaging, Young's modulus (kPa) could also be used to differentiate benign and malignant mass. By using benign SWV signs can selectively downgrade B-mode US classified BI-RADS 4a (low suspicion for malignancy) and BI-RADS 4b (intermediate suspicion for malignancy) lesions of US. In the BE1 multicenter study, the addition of SWE resulted in some BIRADS 3 lesions appearing stiffer and potentially allowed for an upgrade to a 4a mass. The overall sensitivity and specificity would have increased than B-mode ultrasound alone.



2. Elastography in thyroid

The latest cancer statistics released by the National Cancer Center showed that the incidence rate of thyroid cancer accounted for a fifth. There are many ways to diagnose thyroid nodules, including traditional ultrasound (TI-RADS), color Doppler ultrasound, contrast-enhanced ultrasound, elastography and so on. In order to obtain reliable results, it is necessary to pay attention to the image quality evaluation in the shear wave elastography of thyroid nodule. Diagnosis of thyroid disease must be made by combining conventional ultrasound with SWE, and the cut-off values should be selected according to different needs instead of using only one standard.

3. Elastography in vessels

With the development and progression of atherosclerosis, arterial elasticity will reduce. In recent years, shear wave-based elastography techniques, such as shear wave elastography (SWE) has been received as a noninvasive assessment of elasticity and viscosity properties. SWE technique could also be used for plaque stability assessment to identify Stable and vulnerable plaques. Several studies on the feasibility and diagnostic value of vascular SWE showed a positive relationship between atherosclerotic diseases or diseases related to atherosclerosis and SWE parameters. One study's results showed a high concordance between SWE and CTA. There are other studies involving IVUS elastography, first invariant of strain, shear strain and area strain were investigated and found their incremental value to traditional GRACE score for prediction of adverse cardiovascular event. The main limitations for elastography were confounders, yet the standardized cutoff values were missing.

4. Conclusions

Elastography should be used by integration with traditional ultrasound system as well as other imaging techniques. 3D elastography imaging should be a promising future technique for disease detection, therapy planning and routine clinical practice.

Clinical value of US-guided sclerotherapy in cesarean scar pregnancy

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The more popular definition of it is that the gestation lays in the cesarean scar of the uterus and is called cesarean scar pregnancy, i.e. hysterotomy pregnancy. It is a rare form of ectopic pregnancy and a special type of myometrial pregnancy. (usually refers to early pregnancies ≤ 12 weeks).

- It is reported first in Zhejiang Xiaoshan Hospital by our team, with low cost, remarkable results, and has largely replaced tubal uterine artery embolization and other treatment options.
- About 300 cases of sclerotherapy have been completed since 2012, including type 1 (10%), type 2 (30%), type 3 (55%) and type 4 (5%).
- Almost all Type 1, 2 and 3 were well treated with sclerotherapy, only two type 3 patients were referred to transabdominal surgery because the blood flow could not be effectively closed after Lauromacrogol injection due to the large local blood pool.
- Type 4 patients were all took transabdominal local lesion resection, but preoperative myocardial injection of Lauromacrogol around the incision was performed to close the blood vessels, and none of the intraoperative bleeding exceeded 100 ml.



The general principle of treatment of uterine incisional pregnancy is to remove the lesion, reduce bleeding and preserve the patient's reproductive function as much as possible. On the basis of this principle, US-guided sclerotherapy can effectively reduce the blood supplying around the gestational sac implanted in the incision, which is dynamic, real-time, easy and safe, greatly reducing the risk of bleeding during uterine removal. It is a safe, economical, simple, effective and easy to promote treatment modality, and has great clinical application value for the treatment of various types of CSP.

Artificial intelligence in ultrasound

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Abstract

Ultrasound (US), a flexible green imaging modality, is expanding globally as a first-line imaging technique in various clinical fields following with the continual emergence of advanced ultrasonic technologies and the well-established US-based digital health system. Actually, in US practice, qualified physicians should manually collect and visually evaluate images for the detection, identification and monitoring of diseases. The diagnostic performance is inevitably reduced due to the intrinsic property of high operator-dependence from US. In contrast, artificial intelligence (AI) excels at automatically recognizing complex patterns and providing quantitative assessment for imaging data, showing high potential to assist physicians in acquiring more accurate and reproducible results. In this article, we will provide a general understanding of AI, machine learning (ML) and deep learning (DL) technologies; We then review the rapidly growing applications of AI-especially DL technology in the field of US-based on the following anatomical regions: thyroid, breast, abdomen and pelvis, obstetrics heart and blood vessels, musculoskeletal system and other organs by covering image quality control, anatomy localization, object detection, lesion segmentation, and computer-aided diagnosis and prognosis evaluation; Finally, we offer our perspective on the challenges and opportunities for the clinical practice of biomedical AI systems in US.



Artificial intelligence in medical ultrasound

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Abstract

Artificial intelligence (AI), particularly deep learning, is gaining extensive attention for its excellent performance in image-recognition tasks. It can conduct a quantitative assessment of complex ultrasound image characteristics and achieve an increased accuracy for diagnosis with higher efficiency. AI is used and getting increasingly popular in medical ultrasound since utilization of AI can not only save time for radiologists, but also make up for experience and skill deficiency on some beginners. This presentation illustrates the basic technical knowledge regarding AI in ultrasound, including early machine learning algorithms and deep learning algorithms, and the applications of AI in the medical ultrasound of diseases in thyroid, breast, liver, kidney, lymph nodes, et al. We will also introduce the new techniques for improving the accuracy in diagnosing disease, predicting the prognosis, assessment of treatment. Lastly, the challenges and future perspectives will be discussed in clinical application of AI.

Keywords: Artificial intelligence; Deep learning; Radiomics; Ultrasound; Machine learning.

*We are waves of the same sea,
leaves of the same tree,
flowers of the same garden.*

Better Asia Better US