OBGYN-S01

Prediction of Small-for-gestational-age Neonates at 19-24 weeks' Gestation: Role of Uterine Artery Doppler Screening

Yi-Yun Dai

Department of Medical Genetics, National Taiwan University Hospital

Objective: Small-for-gestational-age (SGA) neonates are at increased risk for perinatal mortality and morbidity. However, the performance of uterine artery pulsatility index values (UtA-PI)at 19-24gestational weeks to predict delivery of SGA neonates is controversial in the literature, and there is no such study in Chinese population. We aimed to investigate the performance of UtA-PI in the prediction of SGA neonates in Chinese population.

Method: A retrospective cohort study was conducted between January 2010 and June 2018. Doppler ultrasonography was performed at 19-24gestational weeks. SGA was defined as birthweight below the 10thcentiles according to the INTERGROWTH-21st fetal growth standards. The performance of UtA-PI to predict SGA neonates was assessed using receiver operating characteristic curve (ROC) analysis.

Results: We included 6964 singleton pregnancies, and there were 748 (9.9%) women who delivered SGA neonates including115 (9%) women with preterm delivery. UtA-PI was associated with the risk of SGA in both SGA delivered at <37 gestational week (preterm SGA) and SGA≥37th gestational week (term SGA). The areas under the ROC (AUCs) for UtA-PI were 75.8% [95% confidence interval (CI) 69.3%-82.3%] and 64.4% (95% CI 61.5%-67.3%) for preterm SGA and term SGA. The performance of combined screening by maternal demographic characteristics and estimated fetal weight in detection of preterm SGA and term SGA was improved by the addition of UtA-PI. However, the increase in AUC by adding UtA-PI to maternal demographic characteristics and estimated fetal weight was only modest (4.9% for preterm SGA and 2.4% for term SGA).

Conclusions- This study is the first Chinese study which has evaluated the role of UtA-PI at

19-24 weeks' gestation in the prediction of SGA. Our findings suggest that UtA-PI can improve the screening performance of SGA on top of traditional risk factors, and the improvement was greater in predicting preterm SGA than term SGA.

OBGYN-S02 Prenatal Ultrasound Screening for Developmental Displacement of the Hip

Yi-Chiao Liao

Department of Obstetrics and Gynecology, Chang Gung Memorial Hospital, Chang Gung University College of Medicine, Taoyuan, Taiwan

Developmental dysplasia of the hip (DDH) is a spectrum of conditions that includes a mechanical instability of the hip joint due to an anomalous development of the acetabulum and proximal femur. The incidence of DDH is reported as 3 to 5 per 1000 children. The etiology of developmental dysplasia of the hip is multifactorial, but established risk factors are breech presentation, female gender, positive family history, being first born, twin pregnancy, oligohydramnios, and large for gestational age fetus. Breech presentation has been recognized as the most important antenatal non-genetic risk factor for DDH and the increased risk is 24 times higher when comparing to cephalic presentation. DDH is diagnosed in 2-27% of newborns delivered in breech presentation, especially those in frank breech presentation (with extended knees and feet close to the baby face) because prolonged hip extension and adduction can affect the normal development of the coxofemoral articulation.

Early diagnosis of developmental dysplasia of the hip has been demonstrated to improve the outcome of affected babies. If left untreated, developmental dysplasia of the hip can lead to secondary damage of the head of the femur, articular cartilage disruption, and different degrees of movement compromise. However, the dedicate evaluations of DDH (Graf technique on ultrasound) are mostly done after birth, among babies who have risk factors or abnormal finding on physical examination (Ortolani maneuvers).

The role of antenatal screening is to identify those fetuses at risk of DDH and to arrange a detailed postnatal scan, rather than to diagnose it before birth. The modified Graf technique was reported as effective and reproducible screening during prenatal period. If the evaluation of the fetal hips became part of routine ultrasound assessment in the third trimester, this could improve the possibility of diagnosis of DDH, either directly or through a targeted postnatal screening for suspected cases.

OBGYN-S03 Fetal Cardiac Screening in the Second Trimester

Yu-Ju Lai

Department of Obstetrics and Gynecology, Tri-Service General Hospital

Congenital heart disease has an incidence about 8:1000 in live births. Many congenital diseases may combined with heart disease. Guidelines provide sequential segmental analysis in screening of congenital heart disease. We are going to discuss how guidelines help us to approach congenital heart disease.

OBGYN -S04 Artificial Intelligence and Fetal Ultrasound

Yen-Tin Chen Department of Gynecology and Obstetrics, Chang Gung Memorial Hospital

Artificial intelligence (AI) has become increasingly popular in recent years. Deep learning (DL) and convolutional neural network (CNN) are considered the leading AI tools in image analysis. Both DL and CNN models have been shown to match or exceed human capability in performing image task (classification, detection and segmentation). You only look once (YOLO) is a powerful object detection algorithm that can be applied in the daily fetal ultrasound practice.

AI is expected to overcome the inherent human problems (ex: subjectivity and inter-observer variability), and also reduce examination time. A well trained AI algorithm offers many advantages, such as objectivity, reproducibility, speed and accuracy, with considerable potential as a support tool for antenatal ultrasound.

This section is to introduce the AI algorithm in fetal ultrasound (the basic knowledge and its application).

OBGYN-S05 Comprehensive Fetal Ultrasound Care Throughout Pregnancy

Li-Ling Lin

Department of Obstetrics, Gynecology & Women's Health, Taichung Veterans General Hospital

The main goal of a pregnancy ultrasound scan is to provide accurate information that will facilitate the delivery of optimized antenatal care, ensuring the best possible outcomes for the mother and fetus. Comprehensive fetal ultrasound care extends beyond the widely acknowledged 20-week milestone. Emphasizing the importance of thorough fetal ultrasound examinations during the first and third trimester is paramount. To enhance awareness, a compilation of essential considerations for first and third-trimester ultrasound is underway. This endeavor strives to ensure comprehensive prenatal care throughout pregnancy, nurturing maternal and fetal well-being.

OBGYN-S06

Ultrasound Diagnosis of Orofacial Clefts - A Novel Approach to Distinguish Submucous Cleft Palate from Isolated Cleft Palate Tze-Yi Yang Department of Fetal Medicine, Taiji Clinic, Taipei, Taiwan

Orofacial clefts (OFCs) compose the most common group of congenital abnormalities; they can be associated with physical and emotional burdens and require multidisciplinary care. Despite similar ultrasound appearances on fetal ultrasound between isolated cleft palate (CP) and submucous cleft palate (SMCP), there is a noticeable contrast in surgical approach depending on the integrity of the mucous membrane. Generally, CP is a direct indication for an early cleft repair with potentially multiple surgeries at later ages. In contrast, SMCP requires surgery only when it is associated with severe velopharyngeal insufficiency. Early detection of OFCs might aid in timely referral to a specialized healthcare facility for multidisciplinary management and parental counseling. As a result, a method distinguishing between the two types is necessary. In this Letter, we focus on ultrasound differences between SMCP and CP.