

OBGYN-S01

Bioeffects of Antenatal Low Intensity Pulsed Ultrasound Treatment on Dexamethasone-induced Intrauterine Growth Restriction Model

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Intrauterine growth restriction (IUGR) is an important clinical issue to obstetrics because which is a leading cause of perinatal mortality and morbidity. According to the severity of disease, IUGR survivors are at increased risk of neurodevelopmental deficits and may need lifelong rehabilitation and medical assistance. No effective interventions are currently available to improve the structure and function of the IUGR brain before birth. Thus, intervention applied before birth to improve placental function and protect the fetal brain is important to reduce subsequent neurodevelopmental impairment in IUGR infants.

The appropriate growth of the fetal brain is highly dependent on the availability of growth factors. Brain-derived neurotrophic factor (BDNF) is widely expressed in the developing fetal brain and plays a vital role in neuronal survival, neuronal differentiation, and synaptic plasticity. In IUGR neonates, BDNF is downregulated in cord blood. Lower levels of BDNF receptors have been demonstrated in cortical neurons of IUGR rats also. Many other growth factors are also present in the early neuronal development, and have also been found to exhibit protective effects against various types of neuronal damage and are involved in neuronal plasticity and neuronal repair by augmenting neurogenesis and angiogenesis

Several studies showed low intensity pulsed ultrasound (LIPUS) exerts neuroprotective effects in the central nervous system and promotes peripheral nerve regeneration by reducing the level of proinflammatory cytokine, inhibiting apoptosis, and stimulating the secretion of growth factors. Because of its ease of application and non-invasiveness, we choose LIPUS as a management of women with pregnancies complicated by IUGR. Our animal

study suggests that antenatal LIPUS treatment may reduce IUGR-induced brain injury via enhancing cerebral BDNF/CaMKII/Akt signaling. These data provide new evidence that LIPUS stimulation could be considered for antenatal neuroprotective therapy in IUGR.

OBGYN-S02

Prediction of Spontaneous Preterm Birth by Cervical Length in the First Trimester of Pregnancy: Comparison of Three Measurement Methods

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In this pilot clinical study, we collected the ultrasound images in pregnant women who have received the exam of transvaginal ultrasound to measure the length of cervix. Combining medical imaging data with Artificial Intelligence (AI) algorithm and according to different length of cervix, we developed medical image automatic analysis and interpretation technology. These automatic interpretation core modules can be used as an aid in estimating the length of cervix, predicting the possibility of preterm birth. We also compared the single-line, two-line methods, and AI model methods of cervical length measurement in the first trimester of pregnancy and to evaluate the potential value of the first trimester cervical length measured by the three methods in predicting spontaneous preterm birth.

OBGYN-S03

The HIFU Treatment of Leiomyoma and Adenomyosis

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This talk will introduce the therapeutic ultrasound in the field of treatment of gynecologic benign tumor including uterine myoma and adenomyosis. We will start from the background knowledge of the basic mechanism of therapeutic ultrasound like high-intensity focused ultrasound (HIFU) and furtherly mention the real-world data of the size reduction rates of myoma and adenomyosis after HIFU treatment.

Two classic videos including one as myoma and another as adenomyosis will be also presented to show the basic skills while performing the HIFU treatment. From this talk, the audients will have a clear concept of HIFU treatment, and will also realize the procedure of HIFU ablation for the myoma and adenomyosis.

If any question about the lecture, the audients can e-mail me via lionsmanic@gmail.com. That is my pleasure to give the talk about HIFU treatment in the today's speech.

Obgyn-S04

OBGYN-S05

Ultrasound in Preeclampsia

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Hypertensive disease of pregnancy affects up to 10% of pregnant women and the pooled global incidence of pre-eclampsia (PE) is approximately 3%. PE and its complications are a major contributor to maternal and perinatal morbidity and mortality worldwide. Given that timely and effective care can improve the outcome of PE, the development of effective prediction and prevention strategies has been a major objective of prenatal care and of research. PE is a multisystemic disease of multifactorial origin: it involves defective placentation, oxidative stress, autoimmunity, platelet and thrombin activation,

intravascular inflammation, endothelial dysfunction, an imbalance in angiogenesis and maternal cardiac maladaptation. Defective placental invasion is associated strongly with most cases of early and severe PE. In contrast, defective placentation seems to be less important for the development of PE that manifests later in pregnancy. Increasing insight into the pathophysiology of PE is reflected in current screening strategies, which are based on history, demographics, biomarkers (including blood pressure) and uterine artery Doppler. The aim of current is to review and try to provide suggestions regarding the role of ultrasound in screening and follow-up of PE.

OBGYN-S06

Fetal Neurosonography

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Central nervous system (CNS) malformations are some of the most common congenital abnormalities. The incidence of CNS malformations is about 14 in 10,000 at birth. Neural tube defects are the most common CNS malformation (prevalence 52/100,000). The incidence of intracranial abnormalities with intact neural tube is uncertain. These abnormalities probably go undetected at birth and manifest later in life. The long-term follow-up studies suggest the incidence may be as high as one in 100 births.

The basic neurosonographic guideline was published by ISUOG in 2007, which three basic axial plane (transventricular, transthalamic, and trnascerebellar) were suggested for the routine examination. However, when cases with increased risk of CNS malformation or complex malformations, additional section plane should be used. Targeted neurosonography will be introduced in the section.

OBGYN-S07

Prenatal Images in Cystic Dysplastic Kidney

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Congenital cystic renal diseases may become clinically apparent in the fetus and have wide spectrum of outcomes. Ultrasound is the most common imaging method for diagnosis of fetal renal cystic diseases. Ultrasound evaluation of the kidney including amniotic fluid volume, kidney size, corticomedullary differentiation, level of renal echogenicity and location and size of renal cysts. Congenital cystic renal diseases can be classify in the following way: hereditary disorders and nonhereditary disorders. Most of the hereditary cystic renal diseases are due to primary ciliopathies and autosomal dominant polycystic kidney disease (ADPKD) is the most common ciliopathy in this group. There are several types of nonhereditary disorders including renal dysplasia, multicystic dysplastic kidney (MCKD), obstructive cystic renal dysplasia (ORD), renal cystic tumors, and simple renal cysts. MCKD is a severe form of renal dysplasia. Most cases of MCKD is unilateral but bilateral MCKD are more likely to be associated with syndromes. ORD occurs secondary to fetal urinary tract obstruction or vesicoureteral reflux. Renal tumors of infancy are usually solid. The initial approach of fetal cystic kidney disease includes anatomical examination, family history, and genetic counseling and testing. Prenatal ultrasound alone cannot predict etiology or long-term outcome of the fetus with congenital cystic disease. Family history and genetic testing result should take into consideration. In general, in fetus without family history or genetic disorder, normal or slightly increased kidney size and normal amniotic fluid volume indicate a good outcome.

OBGYN-S08

Intrapartum Ultrasound in Clinical Practice

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Traditionally, the assessment and management of a woman in labor is based on digital evaluation of cervical dilatation and fetal head station and position, which diagnosed arrest of labor.

Correct determination of head position is important before instrumental delivery. An error in evaluation of head position may result in inappropriate vacuum usage, increasing the potential for fetal injury and the failure rate of the procedure. Failed instrumental delivery followed by Cesarean section is associated with an increased delivery time and an increased risk of maternal and fetal trauma.

So far, by using the intrapartum transperineal ultrasound, we can access the fetal head position and station. We can have several parameters included head-perineum distance and head symphysis distance, fetal head flexion degree, and angle of progression and midline angle. With these parameters, we can predict the likelihood of spontaneous vaginal delivery, make our decision more precisely and decreased the risk of maternal and fetal trauma.

OBGYN-P01

Prenatal Diagnosis of 45,X/46,X,+mar and Literature Review

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Prenatal Diagnosis of 45,X/46,X,+mar and Literature Review Chao-Po Lin, Ying-Hsin Chang¹

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Background:45,X/46,X,+mar is a rare chromosomal anomaly and is one of small supernumerary marker chromosomes (sSMCs), in which the frequency of prenatal case with ultrasound abnormalities is 0.204%. We report a case of 45,X/46,X,+mar diagnosed from abnormal prenatal

ultrasound findings.

Materials and Methods: A 29-year-old G2P1 woman was found with an abnormal prenatal ultrasound of right dilated renal pelvis at her GA 18+1 weeks. The fetal chromosomal study was advised. The result showed 45,X[11]/46,X,+mar dn[4]. The level II ultrasound revealed right hydronephrosis with cortex atrophy and right congenital pulmonary airway malformation (CPAM), and otherwise normal male fetus.

Results: Meticulous counselling with further cytogenomic study was provided. However, the couple chose to terminate the pregnancy. A balloon Foley and intravenous oxytocin were used for termination because of previous cesarean section. A dead fetus was delivered vaginally with normal appearance.

Conclusion: In the literature, there are two prenatal case reports versus ten reports in the children and adolescences. Thorough counselling is mandatory. However, for eugenics concern, the couple tend to terminate the pregnancy at present. (Key words: 45,X/46,X,+mar, prenatal diagnosis, ultrasound)

OBGYN-P02

Serial Ultrasound Exams and Beta Human Chorionic Gonadotropin Tests for Abnormal Pregnancy

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Background: Currently, the ultrasound exam is used for follow-up of early pregnancy. And Beta human chorionic gonadotropin (b-HCG) is used to assist in abnormal ultrasound findings, e.g. ectopic pregnancy. No single test is definitely to jump to the diagnosis. Therefore, they are followed serially.

Materials and Methods:

Case 1 was initially as ectopic pregnancy due to mismatched bHCG and ultrasound findings. During the serial bHCG and ultrasound exams, a cervical sac with positive fetal heart beat was noted.

Case 2 was initially as ectopic pregnancy at the emergent room, too. Two bHCG 12 hours apart (from 27672 to 13070) made the treatment conservatively.

Case 3 was retained placenta post abortion. The vaginal bleeding persisted. The serial bHCG and ultrasound exams showed unsatisfactory improvement. Methotrexate was used.

Results:

Case 1 was turned to be a cervical pregnancy and treated via hysteroscopic approach smoothly.

Case 2 was eventually as complete abortion, even cesarean section scar pregnancy suspected.

Case 3 was finally managed via successful hysteroscopic resection.

Conclusion: For abnormal pregnancy, serial ultrasound exams are needed, and are facilitated with serial bHCG tests.

(Key words: Ultrasound, Beta human chorionic gonadotropin, pregnancy)

OBGYN-P03

Prenatal and Postnatal Images of Female Fetal Pelvic Cysts: Two Cases Reports

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We report two cases of female fetal pelvic cysts prenatal and postnatal images correlation.

Case 1: A 27 year-old female, G7P2 regularly visited our antenatal outpatient department. During routine exam, a pelvic cyst 3 cm was found in the female fetus at 30 weeks of gestation and then it grew up to 5.6 cm before delivery. There was a sign of “cyst in cyst”. An ovarian cyst was impressed. Postpartum MRI highly impressed the ovarian cyst. The serial sonography reported the cyst became smaller 45.2mm x 25.2mm.

Case 2: A 28 year-old female, G3P1 also regularly visited our antenatal outpatient department. At 20 weeks of gestation, the routine exam reported multiple small abdominal cysts without obvious right kidney, pelvic middle cyst within irregular septum inside the umbilical artery 27.1mm x 15.1

mm. MRI at 25 weeks reported right multicystic dysplastic kidney and suspicious urinary bladder diverticulum. The following sonography reported the size of cyst: 62.8mm x 53.1mm still with irregular shape and right abdominal multiple cysts at right renal fossa. The postpartum exam reported multicystic dysplastic right kidney and the urachal diverticulum noted. However, the cysturethrography

reported no evidence of urachal diverticulum. The infant was still in the follow-up.

Conclusion: The pelvic cysts in female fetus have different diagnosis. The cysts may be from urogenital or gastrointestinal system. The shape, size, position, and content all should be evaluated; antenatal MRI is also good tool for surveying fetal pelvic cysts..