OP33.11
A new scoring system for the diagnosis of placenta accreta by ultrasound

Y. Gilboa, M. Spira, E. Sivan, E. Schiff, R. Achiron

OBGYN, Sheba Medical Center, Hod Hasharon, Israel

Objectives: Our aim was to determine the accuracy of a novel simple scoring system based on sonographic markers in differentiating between low and high risk forplacenta accreta (PA).
Methods: All women who were referred to the Sheba Medical Center due to suspected PA were included, underwent a detailed ultrasound examination. A score was given based on the common sonographic findings of PA: loss of the hypoechoic retroplacental zone and placental lacunae. A score of 0–2 was defined as low risk and 3 was defined as high risk. Patients assigned to the high risk category underwent prophylactic pelvic artery catheterization before cesarean section and embolization if needed, whereas patients in the low risk category underwent simple cesarean section.
Results: 71 women were included. PA was diagnosed clinically during surgery in 28 women, of whom 31 had a score of 3, and ruled out in 43 women, of whom only one had a score of 3. The sensitivity, specificity, positive predictive value and negative predictive value of our ultrasound-based scoring system in predicting PA were 90%, 97.5%93 and 95% respectively.
Conclusions: A simple scoring system based on ultrasound alone can identify accurately a high risk population for PA who can benefit from prophylactic pelvic artery catheterization and embolization.

OP34: SCREENING FOR ANEUPLOIDY AND CONSULTING IN THE SECOND TRIMESTER

OP34.01
Extracellular chromosome 21: derived microRNAs in maternal circulation: evaluation of their diagnostic potential for screening of Down syndrome

I. Hromadnikova[1], K. Kotlabova[1], J. Doucha[2], D. Chudoba[3], P. Calda[4], K. Dlouha[5]

[1]Department of Molecular Biology and Cell Pathology, Charles University, Third Faculty of Medicine, Prague 10, Czech Republic; [2]Clinic of Obstetrics and Gynecology, Charles University, Second Faculty of Medicine, Prague 5, Czech Republic; [3]Department of Biology and Medical Genetics, Charles University, Second Faculty of Medicine, Prague 5, Czech Republic; [4]Clinic of Obstetrics and Gynecology, Charles University, First Faculty of Medicine, Prague 2, Czech Republic; [5]Institute for the Care of the Mother and Child, Prague 4, Czech Republic

Objectives: In this pilot study we focused on the detection of extracellular microRNAs in maternal circulation, whose genes are located on human chromosome 21 (miR-99a, let-7c, miR-125b-2, miR-155 and miR-802). Subsequently, we studied if plasmatic concentrations and/or expression profile of extracellular chromosome 21-derived microRNAs would distinguish between pregnancies bearing euploid foetuses and those affected with Down syndrome.
Methods: 12 women with normal course of gestation (mean 16.4 weeks, median 16.0 weeks), 12 pregnancies bearing Down syndrome foetus (mean 18.2 weeks, median 18.5 weeks) and 6 non-pregnant individuals were involved in the retrospective study. RNA enriched for small RNAs (including microRNAs) was isolated from 1 ml of plasma sample. Consequently relevant microRNA was transcribed into cDNA using specific stem-loop primer and detected by specific real-time PCR assay.
Results: Commercial systems enabled reliable detection of 4 out of 5 extracellular chromosome 21-derived microRNAs (miR-99a, let-7c, miR-125b-2 and miR-155). Expression profile of extracellular miR-99a, miR-125b-2 and miR-155 was significantly higher in the cohort of pregnant women than in non-pregnant individuals. Also plasmatic levels of miR-99a and miR-125b-2 were significantly increased in pregnant women. Unfortunately, the concentrations and gene expression of extracellular chromosome 21-derived microRNAs (miR-99a, let-7c, miR-125b-2 and miR-155) did not differ between the cohorts of pregnancies bearing euploid foetuses and those affected with Down syndrome.
Conclusions: Analysis of extracellular chromosome 21-derived microRNAs does not distinguish between pregnancies with euploid and aneuploid foetuses and has no benefit for screening programmes.
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OP34.02
Ultrasound screening of Down-syndrome in the second trimester: the prenasal thickness alone

J. Szabó[1], A. Szabó[1], K. Szili[1], J. Szabó[2], D. Isaszegi[1], E. Horváth[1], J. Sikovanyecz[2]

[1]Department of Medical Genetics, University of Szeged, Szeged, Hungary; [2]Department of Obstetrics and Gynecology, University of Szeged, Szeged, Hungary

Objectives: Down-syndrome screening in first trimester based on increased nuchal translucency (NT) and biochemical markers is very effective. However, in second trimester it is a great challenge in the absence of efficient ultrasound marker. During the last years several reports suggested that prenasal soft tissue thickness and nasal bone hypoplasia could be sonographic markers for Down-syndrome screening. We measured and compared the prenasal thickness (PT) in euploid and in fetuses with Down-syndrome prospectively.
Methods: Transabdominal 2D ultrasound (Voluson E8) measurement of the prenasal thickness was performed in mid-sagittal plane of the fetal head identifying diencephalon, tip of the nose, lips, maxilla, nasal bone. The insonation angle was 90° to the nasal bone or maximum 30 degree of lifting to the frontal bone was allowed. The prenasal thickness was defined as the shortest distance from the lower edge of the os frontale to the outer surface of the overlying skin. The nasal bone can also be determined from this view. The magnification of the view (zoom) was zoomed such that the fetal profile occupied the whole screen.
Results: We analyzed the results of 810 euploid and 19 fetuses with trisomy 21 measured between the 16–23 gestational weeks. In euploid fetuses the mean PT (and NBL) increased steadily between 16 and 33 weeks' gestation. The difference in the median PT values between the two groups was greater than it would be expected by chance. There was a statistically significant difference ($P < 0.001$) according to Mann-Whitney Rank Sum Test. All of the 19 fetuses with trisomy 21 the PT values were lower than 5th percentile curve of the euploid group.
Conclusions: The ultrasound measurement of prenasal soft tissue thickness was found to be highly efficient marker alone for trisomy 21. The Down-syndrome screening with this marker can become more effective.

OP34.03
Prenasal thickness, nasal bone length and their ratio: good second trimester sonographic markers for Down syndrome

A. Szabó[1], K. Szili[1], J. Szabó[2], D. Isaszegi[1], E. Horváth[1], J. Sikovanyecz[2], J. Szabó[1]

[1]Department of Medical Genetics, University of Szeged, Szeged, Hungary; [2]Department of Obstetrics and Gynecology, University of Szeged, Szeged, Hungary

Objectives: Down syndrome screening in first trimester based on nuchal translucency (NT) and biochemical markers is very efficient, while in second trimester it is a great challenge. Measurement of nasal bone length and prenasal soft tissue thickness was found to be promising facial landmarks in second trimester screening

for Down-syndrome. We prospectively measured and compared prenasal soft tissue thickness (PT) and nasal bone length (NBL) in second trimester euploid and trisomy-21 fetuses.
Methods: Using 2D abdominal ultrasound the measurement of PT and NBL was taken in mid-sagittal plane of the fetal head identifying diencephalon, tip of the nose, lips, maxilla, mandible, nasal bone in weeks 16–23 in the second trimester. The PT is the shortest distance from the bottom edge of the os frontale to the outer surface of the overlying skin. The nasal bone was measured from this view. The insonation angle was 90° (perpendicular) to the nasal bone. NBL/PT ratios of euploid fetuses between 16–23 weeks were analyzed and validated by Shapiro-Wilke test. We used software (SigmaStat 12 & SigmaPlot 12) to create graphs, the regression line and the percentiles curves (5^{th}–25^{th}–75^{th}–95^{th}) have been calculated from the normal values. We used the normal graphs to visualize and compare trisomy 21 cases to euploids ($P < 0.0001$).
Results: Analyzes of 810 euploid and 19 fetuses with trisomy 21 measured between the 16–23 gestational weeks were done. In euploid fetuses the mean PT and NBL increased steadily between 16 and 33 weeks' gestation. The difference in the median PT values between the two groups was greater than would be expected by chance. There was a statistically significant difference ($P = <0.001$) Mann-Whitney Rank Sum Test. All of the 19 fetuses with trisomy 21 the NBL/PT values were lower than 5^{th} percentile curve of the euploid group.
Conclusions: CIn fetuses with trisomy 21 the NBL/PT ratio was significantly lower compared to euploid ones. The NBL/PT ratio was found to be very sensitive and specific marker for trisomy 2.

OP34.04
Fetuses with single umbilical artery: a seven year study

T. Marjanovic Milosevic[1], G. Kozarov[2,1]

[1]*Specijalna Bolnica za Ginekologiju "Perinatal", Novi Sad, Serbia;* [2]*"Perinatal" Clinic, Novi Sad, Serbia*

Objectives: Study of incidence, fetal development, anatomy and birth of single umbilical artery (SUA) fetuses during seven years.
Methods: A retrospective study of 6 148 low risk singleton pregnancies. Number of umbilical arteries was determined using color flow imaging of the fetal pelvis between 11+0 and 13+6 gestation weeks. Medical, obstetric ultrasound records and postnatal maternal questionnaires were reviewed.
Results: SUA was antenataly diagnosed in 15 pregnancies (incidence 0.24%), and isolated SUA in 73% of the cases ($n = 11$). 93.3% of the pregnancies resolved in live birth. In one case pregnancy was terminated due to multiple anomalies (omphalocela, anasarca, bilateral choroid plexus cyst, regurgitation of atrioventricular valves). Amniocentesis was performed in 5 cases of the US verified isolated SUA. In all the results were normal. Screening for neural abnormalities showed choroid plexus cyst in 13% of the cases, dilated posterior ventricle in 6.7%, same as absent corpus callosum. Fetal echocardiography revealed no increase in incidence of heart defects while hyperechogenic focus of the left ventricle prompted genetic exploration and yielding normal results in one case. Antenatal pyelon abnormalities were detected in 6.7%. Estimated fetal weight was distributed as follows: below 10^{th} percentile 15.4%, 10–49^{th} percentile 49.1%, 50–90^{th} percentile 30.8% and above 90^{th} percentile 7.7%. At birth 4 fetuses had pelvic presentation, and Cesarean section performed in all (26.7%). Postnatal questionnaires revealed presence of birth defects in two babies (absence of an ear lobe in the first, atresia of the biliary duct in the second) which were not diagnosed prenatally.
Conclusions: Vigilant and frequent antenatal monitoring of SUA fetuses focusing on fetal anatomy is warranted, knowing chromosopathies are linked to anatomical abnormalities. Incidence may be statistically small, but the consequences of prenatally undiagnosed abnormalities on the quality of life are great.

OP34.05
Single umbilical artery: is it innocent?

J. Szabó[1], A. Szabó[2], K. Szili[2], J. Sikovanyecz[1], E. Horváth[2], H. Orvos[1], J. Szabó[2], A. Pal[1]

[1]*Department of Obstetrics and Gynecology, University of Szeged, Szeged, Hungary;* [2]*Department of Medical Genetics, University of Szeged, Szeged, Hungary*

Objectives: Single umbilical artery (SUA) is found in 1% of pregnancies. It can be diagnosed in the first and second trimester. The two vessel cord is associated with chromosomal trisomies and a number of structural abnormalities such as spina bifida, renal and heart defects, intrauterine growth retardation, intrauterine demise and impaired school achievements. Some severe defects can only be diagnosed after birth.
Methods: Referrals of couples with single umbilical artery were made from the Department of Obstetrics and Gynecology of University and from the regional obstetric hospitals and private clinics. A database was established and analyzed with statistical methods. Associated anomalies were classified according to severity and organ system occurrence.
Results: Eighty eight couples with diagnosis of SUA attended our Prenatal Clinic between 2005 and November, 2011. Sixteen of them were first trimester diagnosis, and 4 out of them proved to be three vessels (3-VC) at the control examination. In 59 cases the SUA was recognized in weeks 19–23, two of them proved to be false diagnosis. Mean age was 29,86 years, mean body weight was 69 kg. Male/female ratio was 46/36. Genetic advice was accepted by most of the pregnant, except three, and one of them gave birth to a newborn with trisomy 21. Chromosomal aberration was revealed in two cases: a trisomy 18 and a trisomy 21. Kidney and heart defects were found in four cases. A lethal tracheal stenosis was revealed month after birth.
Conclusions: Majority of SUAs are recognized in weeks 18–23. Genetic counseling is suggested and chromosomal study is indicated except in very low risk cases for chromosomal defects calculated according to ultrasound and biochemical tests. Our data shows that the risk of trisomies is high in cases of SUA and the clinician should consider for sevear adverse fetal outcome, too.

OP34.06
Etiology and perinatal outcome of pregnancies with polyhydramnios

E. Schest[1], J. Schellnegger[1], C. Koidl[2], M. Haeusler[1], B. Csapo[1], U. Lang[1], P. Klaritsch[1]

[1]*Department of Obstetrics and Gynecology, Medical University of Graz, Graz, Austria;* [2]*Institute of Hygiene, Microbiology and Environmental Medicine, Medical University of Graz, Graz, Austria*

Objectives: Polyhydramnios occur in 1–2% of pregnancies. While the majority is idiopathic, conditions like gestational diabetes (GDM), congenital malformations and viral infections may be associated. This work presents etiology of polyhydramnios and the respective perinatal outcome.
Methods: Etiology and perinatal outcome of pregnancies diagnosed with polyhydramnios at the Department of Obstetrics and Gynecology, Medical University Graz, Austria, between 2003 and 2011 were retrospectively analyzed.
Results: 976 affected pregnancies were identified, from which 166 (17.0%) were excluded due to incomplete data. 152 (18.8%) of the remaining 810 cases were associated with GDM, 73 (9.0%) with congenital malformations and 24 (3.0%) with viral infections, while 560 (69.1%) were idiopathic. The latter had the best outcome, while those with malformations had higher rates of preterm delivery, lower Apgar scores and low birth weight. The group with viral infections had nearly the same outcome as the idiopathic group. Elective Caesarean sections were equally