Two major problems are commonly encountered during fetal heart examination: firstly, the examiner may not be able to obtain an adequate four-chamber view with different fetal positions and, secondly, the image is not optimized for the analysis of the heart. It is of utmost importance to optimize imaging prior to fetal cardiac scanning.

Selection of the appropriate probe is the most important step in evaluating fetal heart. A transabdominal probe with a frequency range of 4-8 MHz is optimal for the first and second trimesters till 24 weeks of pregnancy. Due to the ossification of ribs after 24 weeks, the frequency range of the transabdominal probe should be lowered to 2-5 MHz to achieve better penetration. On the other hand, for patients with high body mass index,one must also use lower frequency probes. For transvaginal fetal heart examination, a 5-9 MHz probe would be the most appropriate one. However, in recent years high frequency linear transabdominal probes providing 6-12 MHz frquency ranges have become availbale.

After selection of the appropriate probe, time has come to achieve proper 2D image optimization. It is important to start by setting optimal 2D and color paramaters. For heart scanning, we need high contrast images. Therefore, tissue harmonic imaging, higher levels of speckle reduction and lower levels of compunding yield better cardiac images.

The next step is one of the most important steps of fetal heart evaluation which is selection of a suitable acoustic window. In order to avoid shadowing from the fetal spine and ribs, it would be ideal to examine the fetus in a position where the ultrasound beam will insonate the fetus from the thorax anteriorly. An optimal insonation angle should also be assured in order to visualize the chambers, outflow tracts and interventricular septum of the fetal heart. This is best done by assuring an angle between the beam and interventricular septum of approximately 45 degrees.

Since the fetal heart is unique when compared to other fetal organs in terms of motion, one should select a narrow window of examination to achive higher frame rates. Higher frame rates yield better images on the beating heart. The image should be zoomed to an appropriate level in order to visualize the structures. Optimal analysis of the heart may be achieved by magnification of the image, using the zoom function, so that the heart fills a third to half of the screen, and by the use of the cine-loop to assess different phases of the cardiac cycle.

The next step is the application of color Doppler. If color Doppler is available, it should be used routinely during the screening examination. For the first trimester, scale for color should be kept at levels of 30-40 cm/s, for the second trimester between 50-60 cm/s, and for the third trimester between 70-80 cm/s. Wall motion filtering should be kept at intermediate frequencies.When color mapping covers the walls of cardiac chambers and outflow tracts, color Doppler gain has to be reduced.

KÖ-27 [15:00]

CCCAM, sequestration, hydrothorax: fetal intervention

Ebru Çelik

İnönü Üniversitesi Tıp Fakültesi Kadın Hastalıkları ve Doğum Anabilim Dalı, Turgut Özal Tıp Merkezi, Malatya

Congenital cystic adenomatoid malformation (CCAM) is diagnosed prenatally when an ultrasound shows a cystic or solid lung tumor. Type I and II CCAM appear as cystic, fluid-filled masses while Type III appears as a solid mass.

Several researchers have demonstrated a survival rate of approximately 50% for hydropic fetuses with microcystic CCAM after surgery. Hydropic fetuses treated with steroids, however, have survival rates near 85%. If hydrops persists or emerges past 32 weeks, EXIT and neonatal resection remain options.

Macrocystic lesions that cause hydrops can be treated with catheter-based drainage techniques of the dominant cyst. Simple aspiration of the cyst is usually a temporizing measure but can slow down disease progression and help determine if a thoracoamniotic shunting will be effective. In lesions without a significant solid component, placement of a thoracoamniotic shunt can effectively decrease the CVR and reverse hydrops.

Broncopulmonary sequestration (BPS) is a rare congenital malformation of the lower respiratory tract, consisting of a non-functioning mass of lung tissue lacking normal communication with the tracheobronchial tree. Its appearance on fetal ultrasound mimics a CCAM of the microcystic type. The diagnosis, however, can be made by identifying a separate systemic artery from aorta feeding the sequestration.

For a large BPS, the presence of the systemic artery, however, opens a less invasive treatment option: minimally invasive coagulation of the blood supply. This may result in shrinking of the lesion and recovery of the fetus.

The incidence of fetal hydrothorax is estimated to be 1 in 15,000 pregnancies. Isolated hydrothorax is most often caused by congenital chylothorax, a primary lymphatic abnormality. Accumulation of fluid in the pleural space may lead to pulmonary hypoplasia, compression of the heart and obstruction of venous return with subsequent development of hydrops and compression of the esophagus leading to polyhydramnios. Untreated, the reported perinatal mortality is 22–53%. By far the most described procedure for treatment of fetal hydrothorax is placement of a thoraco-amniotic shunt. The vast majority of fetal shunt procedures have been done using a silicone double pigtail shunt as described by Rodeck, which is inserted under ultrasound guidance. In bilateral hydrothorax, shunts are usually placed on both sides.

The most common complications of thoraco-amniotic shunting are either failure or the need for reintervention (ranging from 6 to 33% in various series), PROM (15% in the largest recent series), and direct fetal loss (5–10%).

Overall survival rate was 63%, ranging from 54% for single thoracocentesis to 80% in the 5 cases treated with pleurodesis. Survival rate was ranging from 61 to 67% for shuntplacement with or without prior thoracocentesis.

In conclusion, the fetus with a lung mass but without hydrops has an excellent chance for survival with maternal transport, planned delivery, neonatal evaluation and fetal surgery.

11 Ekim 2014, Cumartesi

KÖ-28 [08:30]

Methods of screening and prenatal diagnosis in twins

Giovanni Monni, Ambra Iuculano, Maria Angelica Zoppi, Maurizio Arras, Alessandra Piras, Federica Mulas

Department of Obstetrics and Gynecology, Prenatal and Preimplantation Genetic Diagnosis, Fetal, Therapy, Microcitemico Hospital, Cagliari, Italy

Prenatal screening and testing for trisomy 21 in twin pregnancies poses a number of challenges: the exact estimate of the prior risk of trisomy 21, the choice of prenatal screening test and/or invasive techniques to employ for the diagnosis and the impact of the result on the options of treatment in case of discordant results within a twin pair.

The evaluation of the prior risk of trisomy 21 depends on the number of foetuses per pregnancy, on the gestational age and on the zigosity-chorionicity. A challenge in screening and diagnosis can include the underestimation of an ongoing twin pregnancy ("the appearing twin") or the misdiagnosis of an ongoing singleton pregnancy as one that started as a twin pregnancy or more ("the vanishing twin" phenomenon). These two circumstances could affect the outcome of screening test so they are important to detect. The assessment of chorionicity is equally important in order to prepare the following tests and diagnosis and is fundamental for determining zigosity. The evaluation of chorionicity could be performed invasively, by direct collection of foetal cells, and by non invasive methods that include ultrasound evaluation (fetal sex), and, as recent studies suggest, maternal plasma DNA sequencing.

In twin monozygotic pregnancies, the risk of both foetuses being affected is similar to the maternal-age risk, while the risk of only one foetus being affected is virtually null. Therefore, in monozygotic pregnancies, the risk could be calculated per pregnancy. In dizygotic pregnancies, the risk could be expressed per foetus and/or per pregnancy and special algorithms for calculation have been formulated. However, many issues regarding the estimate of the a priori risk of trisomy 21 in a twin or multiple pregnancy remain unresolved. Ultrasound and biochemical markers for screening in twin pregnancies are different from those in singleton ones. Literature published sofar suggests that monochorionic twins tend to have a higher percentage of increased nuchal translucency compared to dichorionic twins so the most effective screening method for trisomy 21 is using the average NT measure of the two foetuses, although others use also the average of the risk calculation in the two foetuses. The use of combined test, with biochemical markers, is not excluded in twins pregnancies although some screening test practice guidelines generally emphasise its low efficiency and that is not as accurate as desired to enable patients to make appropriate informed decisions about the pregnancy. Non invasive prenatal testing is possible applying the NIPT in twin pregnancy although problem issues may as well arise with twin dizygotic gestation. Invasive prenatal diagnosis in twins has certain peculiarities that are specific to this type of pregnancy and depending on corionicity.

KÖ-29 [08:45]

Ultrasound management of twin pregnancies

Kaouther Dimassi

Department of Obstetrics and Gynecology, Mongi Slim Hospital, La Marsa, Tunisia, Faculty of Medicine, University Tunis El Manar, Tunis, Tunisia.

The rate of multiple pregnancies is showing a significant increase all over the world. Twin gestations are considered as high-risk condition because they are responsible for the increase of perinatal morbidity and mortality.

The monitoring of twin pregnancies is mainly based on ultrasound. Usually, ultrasound monitoring is based on chorionicity. Thus, every attempt should be made to determine and report amnionicity and chorionicity when a twin pregnancy is identified. Dating should be done with first trimester ultrasound.

Beyond the first trimester, a combination of parameters rather than a single parameter should be used to confirm gestational age. However, to avoid missing a situation of early intrauterine growth restriction in one twin, in our unit we consider dating pregnancy using the larger fetus.

In twin pregnancies, aneuploidy screening using nuchal transluscency measurements should be offered. Detailed ultrasound examination to screen for fetal anomalies should be offered, preferably between 18 and 22 weeks' gestation, in all twin pregnancies. When ultrasound is used to screen for