This targeted study is performed for the detection of fetal anomalies in women at risk for having a malformed fetus. The pregnant patient expects to have information about baby's health and in case a congenital anomaly is present she wants to kwon the prognosis, the treatment and the recovery.

Routine use of ultrasound in low pregnancies has been offered for the decrease of labour inductions performed for postdatism, for the early detection of multifetal gestations, for detection of placental implantation abnormalities and for the antenatal diagnosis of congenital anomalies.

There is good evidence to support the recommendation that the sensitivity of the ultrasound screening in detecting fetal malformations in low risk pregnancies cannot be established with precision it will continue to be decided on a local level and varies in different centers with different level of operators training and financial resources.

Sonography for fetal biometry and when precise estimation of gestational age is required (in cases such as planning a caesarean delivery), should be performed in the first trimester or as early in pregnancy as feasible.

Eighteen to 20 weeks is the traditional and appropriate time to perform a targeted scan. This ultrasound study allows a detailed review of fetal anatomy and is early enough so that amniocentesis or other diagnostic procedures can be performed prior to fetal viability.

The genetic sonogram is a targeted study with special emphasis on ultrasonographic markers that may indicate aneuploidy.

Targeted ultrasonography at 18-20 weeks allows the couple to consider all of their options and allows for appropriate referral and counselling.

However some malformations are not easily visualised at this period. Hydrocephalus, bowel atresias may develop after this period and may not be demonstrable until after 24 week's gestation while the optimal time for fetal echocardiography is probably somewhat later (20-22 weeks).

By whom

Antenatal sonography is performed in different medical centers, doctor's offices, hospitals, by physicians of varying levels of experience or by technicians.

If a physician is unable to document formal residency, fellowship, or other postgraduate training, he or she must have completed 100 hours of American Medical Association category 1 continuing medical education in diagnostic ultrasound, with evidence of involvement at least 500 diagnostic examinations under the supervision of a qualified physician.

The experience of the obstetrician clinician with sonography must begin with detailed knowledge regarding fetal cross sectional anatomy. It is important for the clinician to know his or her limits with regard to the use of ultrasound.

Limitations of obstetrical ultrasonography should be briefly reviewed with patients prior to the initiation of the procedure. Some major malformations are easily detectable whereas other malformations present subtle ultrasound images, and may not be diagnosable in the midtrimester.

Ultrasound is used not only for diagnosis but as a tool for the management of a complicated pregnancy and for this reason the perinatologist is perfectly the right doctor to provide sonographic diagnosis and plan the management of a high risk pregnancy.

Conclusion

The issue of routine sonography for low risk pregnant women continues to be contentions even though, randomized trials have not been able to demonstrate a clear benefit. Although great progress is being made in the first trimester diagnoses of congenital anomalies, most targeted studies are performed at 18-20 weeks of gestation.

The highest rates of detection of congenital anomalies are seen in tertiary care settings such as a university medical center.

In high risk cases a counsulting perinatologist is commonly the physician most likely to integrate the ultrasound findings.

KÖ-26 [14:00]

Effective use of ultrasound for fetal heart evaluation

Oluş Api

Perinatology Unit, Department of Obstetrics & Gynecology, Yeditepe University Hospital, İstanbul, Turkey

Congenital heart defects have a multifactorial etiology and therefore their prenatal detection cannot be achieved solely by screening the high-risk population defined by medical history. Screening ultrasound is usually performed in the second trimester and is still the best means of detecting cardiac defects. Some technical aspects may contribute to unsatisfactory visualization of the heart, even at specialized centers, and include: gestational age, transducer frequency and some fetal and maternal factors. Maternal body habitus, previous abdominal surgery and early gestational age are the other major factors for suboptimal fetal heart scanning. An additional reason for inadequate examination is 'lack of time'. In some units the whole fetal examination usually has to be achieved within a short time period due to mass screeening. Under these circumstances there may be no time to wait for the fetus to change its position or to change the different presets of the machine or use other transducers.

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.