Abnormalities of the umbilical cord may be related to cord length, diameter, cord coiling, vessel number, cord insertion, anomaly capable of impeding blood flow, funic presentation, and umbilical cord stricture.

Normal cord has 3 vessels: two arteries, one vein encased in Wharton jelly. Two arteries carry deoxygenated blood to placenta, one vein brings oxygenated blood back to fetus. Umbilical vein is the only conduit for oxygenated blood to return to fetus. Umbilical cord is is fully formed by 9 weeks gestation when cord is already coiled, where arteries coil around vein. Abdominal wall insertion is surrounded by intact skin while placental insertion normally centered on placental disc. Clinically, hypo-coiling has been associated with fetal demise, while hyper-coiling is correlated to fetal-growth restriction and intrapartum fetal acidosis and asphyxia. Both entity (hypo & hyper coiling) have been linked to trisomies and single umbilical artery.

Antenatal determination of cord length has technical limitations therefore evaluation of cord diameter use as a predictive fetal marker. The lean umbilical cords have been associated with poor fetal growth while large-diameter cords have been associated with macrosomia. The clinical utility of this parameter is still unclear.

Single umbilical artery (SUA) or two vessel cord is associated with growth restriction but if additional anomalies are present then risk for aneuploidy increases. The incidence is increased considerably in women with diabetes mellitus, epilepsy, preeclampsia, antepartum hemorrhage, oligohydramnios or hydramnios. Imaging findings have free loop of cord with 2 vessels seen best on cross section where only one UA is adjacent to fetal bladder. In more than 70% left UA is absent. In addition SUA is bigger than normal UA, almost 15% develop IUGR but are not coupled with trisomy 21.

Umbilical cord cyst (UCC) is cyst associated with umbilical cord and may be: Umbilical cord pseudocyst, Allantoic cyst, Urachal cyst, or Omphalomesenteric duct cyst. By definitions it is cyst or cysts associated with umbilical cord with paraxial location (in 60% eccentrically) where umbilical cord vessels are not displaced. It may be seen anywhere along length of cord, with thin walled cyst or cysts, usually anechoic with 2% prevalence. Most often it is transient finding usually as pseudo cysts. However multiple UCC are with increased risk of anomalies and aneuploidy If UCC is near fetal end of umbilical cord it should look at fetal bladder. Allantoic cysts can grow. In different diagnosis UCC may be similar with normal yolk sac or umbilical cord aneurysm or mucoid or cystic degeneration of Wharton jelly or embryonic duct remnants. It has excellent prognosis if transient. Single UCC has better prognosis than multiple UCC. In addition single umbilical cord cysts found in the first trimester tend to resolve completely, whereas multiple cysts may indicate miscarriage or aneuploidy (T18 and T13).

Umbilical cord aneurisms may be 1) Umbilical vein varix or 2) Umbilical artery aneurysm.

Umbilical vein varix is seen as focal dilatation of umbilical vein larger than 9 mm in diameter or larger than 50% of intrahepatic portion of umbilical vein. Best diagnostic clue for UV varix: is cyst-like space in upper abdomen with venous flow on Doppler. Umbilical vein varix in free floating loops of cord is much harder to see. UV varix is usually intra-abdominal but extrahepatic. It may also occur in free-floating loops of cord. Umbilical vein varix is usually seen as upper abdominal "cyst", oval or elongated shape, with thin walled, and anechoic.

It may occur in association with persistent right umbilical vein, may be large, must show continuity of "cyst" and presence of blood flow, usually runs between abdominal cord insertion site and inferior edge of liver with oblique orientation.

Umbilical artery aneurysm is dilatation of umbilical artery seen as sacular dilatation of umbilical artery with arterial flow. Umbilical artery aneurism is a rare congenital thinning of the vessel wall with diminished support from Wharton jelly. Aneurysm is usually near placental end of cord, where this support is absent.. UA aneurysm may have arteriovenous fistula to umbilical vein, usually associated with single umbilical artery, associated with multiple anomalies and trisomy 18. Cord "cyst" is near placental origin, wall may be calcified, it is much more rare than UV varix. Finaly it is arterial malformation not venous

Differential Diagnoses: Abdominal cysts (UVA), Umbilical cord cysts (UAV)

Pathology: UV varix may be first manifestation of abnormal venous pressure. Expanding varix in cord may compress umbilical artery

Clinical Issues: Karyotype if other anomalies present, close fetal monitoring, consider early delivery for UV varix.

Cord Entity Capable of Impeding Blood Flow are mechanical and vascular abnormalities of the umbilical cord, capable of impairing fetal–placental blood flow like knots, loops, funic presentation, umbilical cord stricture, hematoma, cysts, thrombosis, vessel dilatation

KÖ-37 [16:45]

Ultrasonic markers of fetal syndromes. Dysmorphic abnormalities detectable by ultrasound in the era of prenatal diagnosis

Asim Kurjak, Sanja Zaputovic Brajnovic

DIU Libertas International University, Dubrovnik, Croatia

From piece to a full puzzle

A dysmorphic feature is a difference of body structure. It can be an isolated finding, part of normal human variation in an

otherwise normal individual, or it can be related to a congenital disorder, birth defect or genetic syndrome.

Dysmorphic features can vary from isolated, mild anomalies and minor cosmetic imperfections (such as polydactyly) to severe congenital anomalies (such as holoprosencephaly).

In some cases, dysmorphic features are part of a larger clinical picture, sometimes known as a sequence, association or syndrome.

A syndrome is a pattern of multiple anomalies thought to be pathologically related, particular combination of major (essental) and minor (may be absent) criteria.

So, why searching for fetal syndromes?

Early diagnosis is very important especially in the delineation of best care for the patient, prognosis, likelihood of other abnormalities, identifying correct recurrence risk and the best approach to monitor future pregnancies.

Being able to provide as clear information as possible is of great importance to avoid confusion in parents as well as healthcare providers, to make a management plan and to put everything in the perspective.

Recognizing the patterns of fetal malformations is extremely useful for sonologist, practitioners providing prenatal diagnosis.

Ultrasound findings of abnormalities and patterns of more common fetal syndromes as well as some less common fetal syndromes are lined up in this presentation.

Technological advances in ultrasonography, particulary the introduction of high definition 3D and 4D ultrasound allowed us to study fetal anatomy in great detail in very early stages of fetal life, which on their hand helped us to detect fetal abnormalities easier and even earlier than ever before.

Beside fetal anatomy, we are now even able to study a function of some systems and fetal behavior. Fetal behavioral patterns are directly reflecting development and maturational process of fetal CNS. KANET test is the first method that attempted to use 4D US in order to asses and combine different parameters of fetal behavior and form a scoring system in order to determine their neurological status. So, now we are beeing able to detect not only structural abnormalities, but also their functional and behavioral abnormality patterns releted to a fetal syndrome in era of prenatal diagnosis.

KÖ-38 [17:00]

Antenatal diagnosis of urinary pathology/practice cours

Mounira Chaabene

Department of Radiology, Mahmoud el Matri Teaching Hospital, Faculty of Medicine of Tunis, Tunisia

Sonography is an extremely valuable technique for renal imaging. The congenital abnormalities of fetal kidney is subdivided in two dominant categories: those in which the fetal kidney appears hydro-nehrotic and those in which it does not. Among this in which the kidney appears hydro-nephrotic, the major task is to assign a level of obstruction (congenital uretero-pyelo-junction ,congenital megalo-ureter, bladder outlet obstruction and posterior valves)

The approach to non hydroneproic abnormalities is quite different. In this second categorie we have some devastating conditions Including renal agenesis, multicystic dysplasia kidney, which are lethal when seen bilaterally. They also include many group of disease commonly referred to polycystic disease associated or not to syndrome like Meckel Gruber syndroma or Bardet Biedel Syndroma.

On this topic we propose some clinical cases and demonstrate the approach to be followed to the analysis of different semiotic signs urinary and associated signs to make a diagnosis of the pathology. A family and of pregnancy women history can help to the approach of the diagnosis. We propose the follow up and the prognosis of different pathology.

KÖ-39 [17:15]

Obstructive uropathies

S. Cansun Demir

Çukurova University Faculty of Medicine, Adana, Turkey

All or some of the urinary system is dilated. If the obstruction is complete and in early fetal period, hypoplasia and dysplasia may occur (Potter type II).

If it occurs in the 2nd half of pregnancy hydronephrosis may develop.

Fetal urology society

Grade O: No dilatation, Grade I: Renal pelvic dilatation, Grade II: Pelvic dilatation and calyx are visible, Grade III: Renal pelvis and calyx are dilated, Grade IV: Grade III and parancime becomes thinner.

- <19 weeks: ≥5 mm.
- 20-29 weeks: ≥8 mm.
- >30 weeks: ≥10 mm(Mandell et al., 1991).

The risk of renal and urinary tract abnormality increases with:

- The severity of hydronephrosis,
- Persistence of hydronephrosis into the third trimester,
- Bilateral involvement, and
- The presence of oligohydramnios.

Hydronephrosis

There may be pelvicaliciel dilatation in 1% of all fetuses.

There may be transient hydronephrosis as a result of high maternal hormone levels or excessive maternal-fetal hydration.