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LOGIQ 3

ULTRASOUND technology UPDATE

Sonographic Findings in Fetal Duodenal Atresia.

Lillian Skibsted, M.D., Ph.D.

The Department of Obstetrical Ultrasonography, Roskilde County Hospital-Roskilde, DK

Duodenal atresia, or stenosis, is a leading cause of intestinal obstruction in newborns and one of the most common gastrointestinal anomalies that can be diagnosed prenatally. The incidence of duodenal atresia is 1 in 10.000 live births. Most obstructions involve the second and third part of the duodenum and are located close to the orifice of the bile duct and may be associated with an annular pancreas.

Early in gestation the lumen of the duodenum is obliterated by proliferating epithelium. This solid core of epithelium undergoes vascularization and recanalization, restoring the lumen. Failure of recanalization of the solid stage is held to result in duodenal atresia or stenosis. This theory has been questioned many times over the years and is questioned still. Atresia is more common than stenosis and occurs in approximately 70% of cases. More than half of the fetuses with duodenal atresia have other malformations such as: cardiac malformations, annular pancreas, bowel rotation and anal atresia. The risk of trisomy 21 is 20-30%. There is an increased risk of intrauterine fetal death and neonatal morbidity and mortality. But if the fetus is live born and there are no associated malformations the survival rate is near 100 %.

CASE

A 24 year old III para with 2 healthy children. A routine fetal ultrasound examination in the second trimester had been performed earlier, but this was not a malformation scan. The patient was referred for ultrasound examination because of polyhydramnios at GA 35+3. The ultrasound examination confirmed extensive polyhydramnios. A double bubble was seen in the abdominal region, and duodenal atresia was suspected. The patient had subjective symptoms of intrauterine pressure and was relieved of 1000 ml of amniotic fluid. The chromosomal analysis was normal. After the drainage the ultrasound findings were confirmed. No further malformations were found. The ultrasound examination was accomplished using the GE LOGIQ 3 ultrasound system with probe 3.5c. For optimal contrast resolution and cystic clarity THI (Tissue Harmonic Imaging) and ATO (Auto Tissue Optimization) were applied.

Figure 1

The image clearly shows the double bubble in the fetus abdominal region. Conventional imaging with 4 MHz.

Figure 2

Figure 3

THI and ATO were used to obtain excellent contrast resolution and cystic clarity.
Note the presence of small bubbles inside the venticle and duodenum.

A male child was delivered at GA 38+1 by vaginal route. The birth weight was 3550 g and Apgar score was 9/1 and 10/5. The baby was referred to a childrens surgical department and was operated two days old. The proximal duodenum was very short and connected with a two cm fibroid string to the distal duodenum. A pancreas annulare was found. Corrective surgery was performed and the child discharged, in good health, after 10 days.

GE Ultrasound Europe
GE Ultraschall Deutschland GmbH & Co.KG
Beethovenstr. 239, D-42655 Solingen
Tel: (+49) 212 2802-0, Fax: (+49) 212 2802-28
www.gemedical.com