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Ultrasound studies in monochorionic twin pregnancies : results of TULIPS: Twins and ultrasound in pregnancy studies

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Chapter 9

Recommendations for clinical practice



Recommendations for clinical practice

Timely detection of TTTS in monochorionic twin pregnancies:

- First-trimester ultrasound examination to determine chorionicity. A “T” sign at the intertwin membrane-placental junction is the gold standard to diagnose monochorionicity before birth.
- Twin pregnancies with two separate placental masses can still be monochorionic and have vascular anastomoses.
- Patient instructions: maternal symptoms associated with twin-to-twin transfusion syndrome (TTTS), such as rapidly increasing uterine size with or without premature contractions, are to be reported immediately and followed by ultrasound examination as soon as possible, preferably the same day.
- Ultrasound examination at least every two weeks from 14 weeks onwards until delivery. Essential items to check at each examination: the intertwin membrane and the deepest vertical pocket (DVP) of fluid in both fluid compartments.
- If free movement of the intertwin membrane and normal DVP’s (>2 and <8 cm) of both twins are found, the next scan can be scheduled in two weeks. Normal bladder filling in both twins is reassuring.
- In case of evident TTTS, with a “stuck” twin and/or DVP’s of < 2cm and > 8 cm, consult a tertiary care center the same day.

Ultrasound examination after fetoscopic laser treatment:

- *Iatrogenic monoamnionity*

During fetoscopic laser treatment unintentional perforation of the intertwin membrane can be caused by introduction of the instruments or by firing through the membrane. Such a perforation can lead to significant rupture of the intertwin membrane and thus iatrogenic monoamnionity with high risk of cord entanglement. Because of the obstetrical implications it is advised in such cases to perform a cesarean section at 32-34 weeks of gestation.

- *Persistence, recurrence or reversal of TTTS*

Persistence, recurrence or even reversal of TTTS may occur due to incomplete ablation or recanalization of anastomoses, even after “successful” fetoscopic laser therapy. Therefore, it remains of importance to continue monitoring TTTS twin pairs after laser treatment regularly until birth. Polyhydramnios with discordant fetal bladder filling remains the hallmark of TTTS. Because the intertwin membrane might be unintentionally perforated during the procedure, its free movement after laser therapy is no longer a reliable criterion to rule out TTTS.

- *Twin anemia-polycythemia sequence*

Another phenomenon that may occur after TTTS is chronic intertwin transfusion without oligo/polyhydramnios sequence, named twin anemia-polycythemia sequence (TAPS). TAPS is the result of chronic, unidirectional blood transfusion through miniscule arteriovenous anastomoses, leading to severe fetal or neonatal hematological complications. TAPS occurs after laser therapy in up to 13% of treated cases (iatrogenic form). However, TAPS also has been described to occur spontaneously in uncomplicated monochorionic twin pregnancies (natural form). TAPS differs significantly from the typical form of chronic TTTS because there is no polyhydramnios. The peak systolic velocity of the middle cerebral artery (MCA PSV) has been proven to correlate well with the degree of fetal anemia. MCA PSV is very low in fetal polycythemia. Severe anemia may even lead to hydrops. In case of signs of TAPS, consultation with the center that performed the laser treatment is strongly advised.

- *Echocardiography*

The fetal heart is very sensitive to the hemodynamic changes that are involved in TTTS, before and after laser therapy. We recommend performing serial fetal echocardiography every two to four weeks until birth, to rule out congenital heart disease and especially right ventricular outflow tract obstruction before birth. Timely detection of cardiac pathology enables preparation for optimal postnatal care.