Umbilical Artery Doppler Patterns, but not Quintero Stage, are Associated Infant Survival in Twin-to-Twin Transfusion Syndrome

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Introduction

Twin-to-twin transfusion syndrome (TTTS) increases the risk for fetal/neonatal death in monochorionic (MC) diamniotic (DA) twin pregnancies. This study compares infant survival according to patterns of impedance to blood flow in the umbilical arteries (UA) among patients with TTTS prior to laser surgery.

Methods

- Retrospective study
- Absolute inter-twin difference in UA pulsatility index (DUAPI) was calculated prior to laser surgery.
- Twins with intermittent or persistent absent/reversed UA end-diastolic flow (EDF) were analyzed separately.
- Infant survival was compared between women with a DUAPI equal or above 0.4, derived from ROC analysis and those with a DUAPI <4, as well as between cases with intermittent vs. persistent absent/reversed EDF in the UA.
- Regression analyses to uncover UA Doppler patterns associated with increased dual infant survival, while controlling for GA at ultrasound, GA at delivery, Quintero stage, cervical length, selective fetal growth restriction, maternal age ≥35 years old, and BMI>35.

Results

Dual twin survival at birth:

- DUAPI <0.4: aOR: 15.53; 95% CI: 5.07-47.54; p<0.001
- Intermittent absent/reversed EDF in UA: aOR: 5.07; 95% CI: 1.55-16.58; p=0.007

Dual twin survival at 30 days

- DUAPI<0.4: aOR: 5.74; 95% CI: 1.85-17.76; p=0.002
- Intermittent absent/reversed EDF in UA: aOR: 5.33; 95% CI: 1.39-20.4; p=0.015

Conclusion

- Small inter-twin differences in impedance to blood flow in the UA are associated with increased dual infant survival in TTTS.
- Intermittent absent or reversed EDF in the UA portends better infant survival than when these Doppler abnormalities are persistently observed prior to laser surgery.