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Enhancing prenatal risk assessment in combined first trimester screening in twins

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Objective

This study aims to evaluate the clinical utility of the Atypicality Index (AcFTS) a multifactorial adjunct to the conventional combined first trimester screening (cFTS) in dichorionic diamniotic (DCDA) twin pregnancies. The objectives of this evaluation include supporting clinicians in handling multiple factors and exploring the use of pregnancy stratification to enhance prenatal risk assessment, pregnancy stratification, and clinical decision-making.

Methods

A Danish national register-based cohort study included all DCDA twin pregnancies with two viable fetuses at the cFTS. Only pregnancies with crown-rump lengths (CRL) between 45-84mm in both fetuses, nuchal translucency thickness (NT) measurements, cFTS low-risk fetuses (<1 in 100) of the major trisomies and known pregnancy outcome were included. The AcFTS was derived from NT, CRL, biparietal diameter, free β-human chorionic gonadotropin, and pregnancy-associated plasma protein-A. The pregnancies were stratified into four groups based on their AcFTS.

Results

The study included 8,540 DCDA twin pregnancies, accounting for 96.1% of all DCDA twin pregnancies. Highly atypical (AcFTS ≥99) and less typical (AcFTS (80-90]) pregnancies had a significantly higher risk of single intrauterine fetal death (IUFD) than the overall group. The risk of fetal reduction (FR) or birth weights of live-born children classified as small for gestational age (SGA) or fetal growth restriction (FGR) was increased in the atypical (AcFTS (90-99]) and highly atypical pregnancies, compared to the overall group. Typical pregnancies (AcFTS <80) had a significantly lower risk of FR.

Conclusion

The AcFTS is a valuable clinical tool that can identify DCDA twin pregnancies at risk of IUFD, FR, SGA, or FGR despite being cFTS low-risk while providing reassurance for typical pregnancy profiles. The use of AcFTS in combination with cFTS can enhance prenatal risk assessment, pregnancy stratification, and clinical decision-making for DCDA twin pregnancies.