Personalized charts for fetal corpus callosum length: rationale and clinical application

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Objective

To personally customize the antenatal ultrasound charts for the fetal corpus callosum (CC) length.

Methods

A retrospective analysis of fetal neuro-sonography scans. Cases were grouped as normal neuro-sonographic evaluation (normal) or as high risk and suspected brain anomaly (abnormal). The normal group was subcategorized according to Cignini's CC length charts. Data of fetuses with a CC length between the 5th-95th percentile served for creating new charts, describing the ratio of the CC length to the major biometric parameters as a function of gestational age (GA).

Results

A total of 410 measurements were included. Of them 255 were normal and 155 abnormal. The CC length/EFW ratio had the strongest linear association with GA ($R2=0.929$). Applying charts using this ratio to the normal group, significantly increased the percent of CC length measurements defined as normal from 84.7% to 94.5% ($P<0.001$). Conversely, applying these charts to the abnormal group non-significantly decreased the number of measurement defined as normal from 89% to 83.2% ($P=0.137$).

Conclusion

The CC length/EFW ratio is strongly and linearly associated with GA. Using this personalized ratio may improve the diagnostic accuracy of CC evaluation by adjusting the CC length to the fetus's natural proportions.