Agreement between fetal brain ultrasonography and Magnetic resonance imaging in measurements of the corpus callosum and transverse cerebellar diameter

Eldad Katorza, Omer Bar-Yosef, B. weisz , Or Yahal, Michal Berkenstadt, Shai Shrot, Chen Hoffmann, Noi Nachmias

Department of Obstetrics and Gynecology and, Sheba Medical Center, Tel-Hashomer, Tel–Aviv University, Israel

Objectives: Our aim was to assess the level of agreement and correlation between US and MRI, by measuring the corpus callosum (CC) and transverse cerebellar diameter (TCD), in terms of length (in millimeters -mm) and percentiles (%).

Methods: measurements of CC and TCD length and percentile where documented between the years 2012-2018, in a tertiary center. All US and MRI examinations performed in the customary planes and subcategorized by valid reference charts. Exclusion and inclusion criteria were set before the collection and processing of the data.

Results: The final population of the study included 156 out of 483 fetuses.

A positive strong correlation (r=0.78) and an excellent agreement (ICC=0.76) was found in the measurement of TCD length (mm). CC length (mm) had a moderate agreement (ICC=0.49).

In comparison to the agreement of TCD and CC length (mm), TCD and CC percentile (%) had a lower level of agreement, moderate agreement for TCD percentile (ICC=0.44), and a slight agreement for CC percentile (ICC=0.36).

Conclusions: Our study indicates an excellent agreement between MRI and US in the assessment of TCD length. Thus, MRI can provide thorough neuro fetal assessment, especially when the sonographic evaluation is lack.