First trimester fetal neurosonography: clinical feasibility and diagnostic performance

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Objective. To report the clinical feasibility and diagnostic performance of first trimester fetal neurosonography in a low-risk population.

Materials and Methods. Prospective study including all fetuses with a low combined screening test scanned at 11-14 weeks of gestation. The aim of this study was to report the rate of visualization of the different fetal intra-cranial structures, as suggested by the ISUOG guidelines for the second trimester fetal neurosonography, at the time of the 11-14 weeks scan. The fetal central nervous system (CNS) structures assessed were interhemispheric fissure, frontal and posterior horns, thalami, third ventricle, peri-callosal artery and corpus callosum, cerebellum and cerebellar vermis.

Results. 167 fetuses were included. The interhemispheric fissure was assessed in all cases. Anterior and posterior horns of the cerebral ventricles were clearly differentiated in 98.5% and 98.7% of cases, while third ventricle in 45.2%. The pericallosal artery was visualized in 99.2% of cases while there was a direct visualization of the corpus callosum in only 15% of cases. Fetal cerebellum was clearly identified in 93.5% of cases and cerebellar vermis in 91%.

Conclusions. This is the first study exploring the diagnostic performance of first trimester fetal neurosonography at the time of the 11-14 weeks scan. First trimester assessment can identify most of the supra and infra tentorial intracranial structures.