Fetal brain MRI: novel classification and contribution to sonography
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Objective
To evaluate and classify the indications for fetal brain MRI in a tertiary referral center. To assess the contribution of fetal brain MRI additionally to fetal neurosonography.

Methods
A retrospective study in a tertiary medical center during a two year period (2011-2012) included pregnant women who underwent fetal brain MRI. MRI was implemented at 32nd week of gestation unless a severe abnormality which may require earlier medical intervention was suspected.

Results
633 patients were included, 40 (6.3%) underwent repeated examinations with a total of 733 fetal MRI scans. Patients were classified to three main indication cohorts: Suspected primary brain anomaly (52.9%), non CNS disorders (32.5%) and obstetrical complications (14.6%). These cohorts were further divided into 16 separate groups, as lateral ventricles abnormalities being the most common (23.7%), followed by exposure to TORCH (17.5%) and cerebral cortex abnormalities (13%). 149 (19.3%) of fetal MRI scans have demonstrated additional findings. Repeated examinations were commonly implemented in complicated monochorionic–diamniotic (MCDA) twin pregnancies (34.6%) and in cases of supra-tentorial cysts (19%). The average gestational age for MRI scan in the MCDA group was 26.2 ± 4.5 weeks in comparison to ≥ 31st weeks in all other groups (p<0.001).

Conclusion
The current study describes a detailed picture of fetal brain MRI indications. Most patients were referred because of located CNS anomalies. The impressive diversity of 16 separate entities emphasizes the expanding use of fetal brain MRI. Complicated MCDA pregnancies, which may have dramatic events, constitute a unique challenge due to early and repetitive MRI examinations and may serve as a role model for the contribution of fetal MRI during antenatal evaluation. The contribution of MRI to prenatal evaluation in various indications is discussed.