Role of fetal MRI in fetal primary CMV infections without sonographic findings
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Objective
Congenital cytomegalovirus infection occurs in 0.4 - 0.8% of live births and 15 - 20% of infected children develop long-term disability. The risk of sequelae is higher following first trimester infection and when prenatal imaging findings are detected. In our institution, fetuses with proven transmission are evaluated by repeated fetal sonography and 3rd trimester fetal MRI. The aim of this study was to assess the benefit of fetal MRI in cases without sonographic findings throughout gestation.

Methods
Fetal CMV infection was confirmed by viral DNA amplification by polymerase chain reaction in amniotic fluid obtained by amniocentesis at 22 - 24 weeks. Prenatal evaluation included monthly detailed US scans and MRI scan at 30 - 34 weeks of gestation. Sonographic findings were classified as severe and non-severe cerebral and extra cerebral findings, as suggested by Ville. et al, and MRI findings were classified as suggested by Cannie et al.

Results
117 patients with congenital CMV infection before 18 weeks were included in the study. 11 patients (all 1st trimester infection) decided to terminate the pregnancy after proven vertical transmission without further evaluation. 106 patients were further evaluated for abnormal imaging. Two patients decided to terminate the pregnancy following US findings and 7 other patients declined MRI. 97 patients were evaluated by both fetal sonography and MRI. Among them, 26 patients (27%) had abnormal US findings (9 severe brain, 8 non-severe brain, 9 extra-cerebral). Presence of US findings significantly increased the risk of having MRI findings (+LR 4.0; 1.74 - 9.65). There was also a significant correlation between grading of US findings and the risk of MRI findings. Patients without US findings on serial sonographic evaluations had 11% risk of an abnormal MRI, significantly less than patients with abnormal US findings (p < 0.001). Most MRI findings in patients with normal US are hyper-intense signals. Two patients had additional anatomical findings on fetal MRI (cystic lesions in the temporal lobe in both cases) and one decided to terminate the pregnancy, due to these findings.

Conclusion
The risk of having abnormal MRI is associated with the presence and severity of US findings. In cases of normal US, most MRI findings are hyper-intense signals with uncertain clinical significance. Only about 3% of patients with normal US will present "new" anatomical findings, not observed on fetal neurosonography.