Predicting symptomatic neonatal CMV infection in infected fetuses without brain anomalies at the time of prenatal diagnosis

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Objective
To develop a multivariate model based on prenatal ultrasound (US) and fetal biological parameters to predict the prognosis of infected fetuses.

Methods
Retrospective analysis of 85 prenatally diagnosed cases of fetal CMV infection (2008 to 2013). Univariate and multivariate analysis at the time of prenatal diagnosis included gestational age at maternal primary infection and interval to prenatal diagnosis with US anomalies subdivided into severe brain anomalies and either extra-cerebral features (hyperechogenic bowel, hepato-splenomegaly, IUGR, ascites, placentitis, oligohydramnios, disseminated calcifications) or mild cerebral features (mild ventriculomegaly (10-12mm), isolated cyst of the germinal matrix) and biological parameters (viral load in amniotic fluid, fetal viremia and fetal platelets count).

Results
At the time of amniocentesis at 23(22-28) weeks' 19 cases presented with severe US brain anomalies. Of the remaining 66 cases, 23 cases showed non-severe US anomalies. Related outcomes included TOP in 5 cases for subsequent severe brain features and 61 livebirths with 51 symptomatic (IUGR(1), thrombocytopenia(3), bilateral hearing loss(1), unilateral hearing loss(5)) and 10 asymptomatic newborns. The risk of being symptomatic (TOP or symptoms at birth) was significantly increased by US features, each 1 log copies/ml increase in fetal viremia (OR=12.3; p=0.001) and each 10,000/mm3 decrease in fetal platelets (OR=0.76; p=0.03). Multivariate analysis, confirmed only fetal viremia and US anomalies to be significantly associated with a symptomatic outcome (OR=4.37; p=0.027 and OR=7.66; p=0.036 respectively).

Conclusion
Prognosis of infected fetuses is best assessed using ultrasound follow-up together with fetal viremia.