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Outcomes of pregnancies with congenital cytomegalovirus infection and normal fetal brain imaging

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Objective

To describe outcomes of pregnancies with congenital CMV infection (cCMV) after maternal primary infection in the first trimester without abnormal brain findings on prenatal imaging.

Methods

A retrospective monocentric cohort study was conducted and included all the cases of proven cCMV infection after maternal primary infection in the first trimester from 2014 until 2019. Cases with sign of cerebral involvement at prenatal ultrasound or MRI were excluded. All pregnancies were followed according to our protocol which offer the possibility to perform amniocentesis at least 7 weeks following the onset of infection, serial ultrasound scans at 20, 28 and 32 weeks of gestation and a fetal MRI in the third trimester. Follow-up of neonate was obtained directly when woman had given birth to our hospital or by telephone interview.

Results

We found 33 neonates with cCMV, confirmed at birth by PCR for the CMV genome in neonatal urine samples. Amniocentesis was performed in 28 pregnancies of our cohort of neonates with cCMV and was negative for CMV in 7 (7/28, 25%). All children with negative amniocentesis were asymptomatic at birth. Three and four fetuses presented extracerebral signs of CMV infection, respectively at second (20-22 weeks of gestation) and third trimester (28-32 weeks' gestation) ultrasound. Only 16 patients underwent MR imaging in the third trimester, and in all cases brain MRI was normal. Among 33 newborns, 25 were classified as having asymptomatic cCMV (25/33, 75,7%) and 8 as symptomatic at birth (8/33, 24,3%), according to European Society for Paediatric Infectious Diseases (ESPID) definition. The rate of neurosensorial hearing loss (SNHL) was 9,1 % (3/33): unilateral in 2 and bilateral in 1. Four neonates with normal hearing loss at birth had delayed onset SNHL. One case of hearing loss at birth improved after treatment and returned to normal hearing. Five newborns had neurologic signs at cranial ultrasound or cerebral MRI performed at birth (5/33, 15%) and were treated with valganciclovir or ganciclovir. Neuroimaging findings included calcifications (n = 1), cysts/pseudocysts (n = 3) and white matter abnormalities (n = 2). None of these cases presented neurodevelopment abnormality at follow-up. The risk of sequalae at a median follow-up of 27 months (range 12-84 months) was 18% (6/33).

Conclusion

The risk of sequelae following first trimester CMV infection is reduced in the presence of normal fetal brain imaging. In the prenatal period we are unable to predict the development of neurosensorial hearing loss.