Introduction

Congenital cytomegalovirus (CMV) infection is the most common perinatal infection in developed world [1]. CMV is a ubiquitous DNA herpes virus and fetal infection is found in 0.2 to 2.2 percent of all neonates [2]. However it is difficult to diagnose the maternal and fetal CMV infection because most maternal infections are asymptomatic and prenatal CMV serological screening is not currently substantially implemented [2, 3]. Here, we demonstrate a case of congenital cytomegalovirus of nonviremic mother at diagnosis

Case report

A 32-year-old multigravida woman was referred to Seoul St. Mary’s Hospital at 36+4 weeks’ gestation with fetal growth retardation (FGR), bilateral ventriculomegaly and intracranial cystic lesions. The patient’s antenatal examination was unremarkable except for FGR at level II sonography. The ultrasound at our hospital showed a single fetus with 2231 g (3.5th percentile) of expected body weight. The bilateral ventriculomegaly was noted; right lateral ventricle 9.3 mm and left lateral ventricle 10.4 mm. The third ventricle was enlarged, which looked like an intracranial cystic lesion. The amniotic fluid index was 7.5, suggesting borderline oligohydramnios. Considering ultrasonographic features, the fetal intracranial hemorrhage or infection such as CMV or toxoplasma was suspicious. The patient had suffered from cough and sore throat for about 3 weeks, however, she did not have fever. The studies were performed on the mother to diagnose infections such as herpes simplex virus (HSV), rubella, toxoplasma, parvovirus, syphilis, and CMV. All the results were negative, except for CMV infection. Both CMV IgG and IgM were positive, however real-time quantitative polymerase chain reaction (RQ-PCR) did not detect CMV virus. Because of FGR and possibility of fetal infection, immediate delivery was decided. To avoid compression of fetal head, cesarean delivery was performed at 36+5 weeks’ gestation, before the results of maternal serum test came out. A live baby boy weighing 2280 g was delivered with Apgar scores of 4 and 6 at 1 minute and 5 minutes, respectively. The amniotic fluid was severely stained with meconium and had foul odor, suggesting chorioamnionitis. Immediately after birth, brain sonography was done on the baby. It depicted germinal matrix hemorrhage and intraventricular hemorrhage (GMV-IVH) and ventriculomegaly; right side 12.7mm and left side 10.5 mm. It also showed extensive periventricular leukomalacia (PVL) and mineralizing vasculopathy. For further evaluation, brain magnetic resonance imaging (MRI) was performed. Bilateral ventriculomegaly was seen and fine septations were in both lateral ventricles. There were cystic lesions in both subependymal regions and several nodular low signal intensities were noted in both white matters on T2-weighted images and susceptibility weighted images, suggesting calcifications. The lack of development of brain gyri and sulci for the baby’s age was also noted.

The above MRI and ultrasonographic findings were compatible with CMV encephalopathy. From RQ-PCR of baby’s blood, urine and cerebrospinal fluid (CSF) detected CMV virus, however, CMV culture of baby’s blood, urine and CSF were negative. Other studies for toxoplasmosis, HSV, rubella and parvovirus infection were all negative also. Echocardiography and abdominal ultrasound examination on the baby were normal without pericardial and pleural effusion, ascites, or hepatosplenomegaly. Neither the baby did have CMV retinitis nor did have any abnormalities from the hearing test. After consultation with his parents, the baby was decided to treat with intravenous gancyclovir 6 mg/kg dose every 12 hours. Because mother’s blood test did not detect CMV virus, she did not take any treatment for CMV infection

Conclusion

In this case, we demonstrated a case of congenital CMV infection detected later gestational age by sonographic findings; intra-uterine growth retardation (5th percentile), oligohydramnios, ventriculomegaly and subependymal cyst. Actually, FGR was noted at earlier gestational age at level II sonography, and upper respiratory infectious symptoms persisted for 3 weeks before she came to the hospital, it was difficult to suspect CMV infection. As a result, when the baby was diagnosed to have CMV infection and chorioamnionitis, maternal infection had already gone. Because routine ultrasound during pregnancy has low sensitivity for detecting congenital CMV infection, it is possible to continuously undiagnose a large number of symptomatic fetuses in the absence of screening for CMV infection [1]. However, it is important to suspect and diagnose congenital CMV infection, because it opens up opportunities to target a group at high risk for progressive damage that could be considered for potential fetal treatment [1].

Fig. 1. Antenatal ultrasound of the fetal cranium at 36+4 weeks’ gestation (showing bilateral ventriculomegaly and intracranial cystic lesions) and respective postnatal neonatal brain magnetic resonance imaging