A case of bilateral ventriculomegaly caused by asymptomatic maternal CMV infection

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Introduction

Fetal ventriculomegaly is diagnosed when the atrial diameter of the lateral ventricle is more than 10 mm on prenatal ultrasound. When ventriculomegaly is identified, a thorough evaluation should be performed, including detailed sonographic evaluation of fetal anatomy, amniocentesis for karyotype and chromosomal microarray analysis, and a workup for fetal infection. In some cases, fetal magnetic resonance can be performed to identify other central nervous system abnormalities.

Presentation of case

A 20-year old woman, gravida 0, para 0 with gestational diabetes was referred to our department due to fetal ventriculomegaly (Lt. ventricle 1.85cm) at 35 weeks and 6 days of gestation. She had an operation history of ventricular septal defect in 3-year old. Ultrasound examination revealed Bilateral ventricular ventriculomegaly (Rt. 12.7mm, moderate, and Lt. 19.1mm, severe), with dilated third ventricle (2.9 mm).
Maternal serological test about toxoplasma, rubella, cytomegalovirus (CMV), herpes, and parvovirus was performed to rule out congenital infection. Initial results about CMV were IgG positive (30.4) and IgM indeterminate (0.963), while results other viruses were negative. Maternal CMV tests were repeated after 10 days, including CMV PCR. Result were IgG positive (30.4) and IgM positive (1.14), with CMV RQ-PCR was under 42.5 copies/ml. Due to suspected fetal skin edema on follow up prenatal ultrasound, cesarean section was scheduled at 38 weeks and 5days. A male fetus weighing 3350g with meconium stain was delivered with Apgar score of 3/8 at 1/5 min.

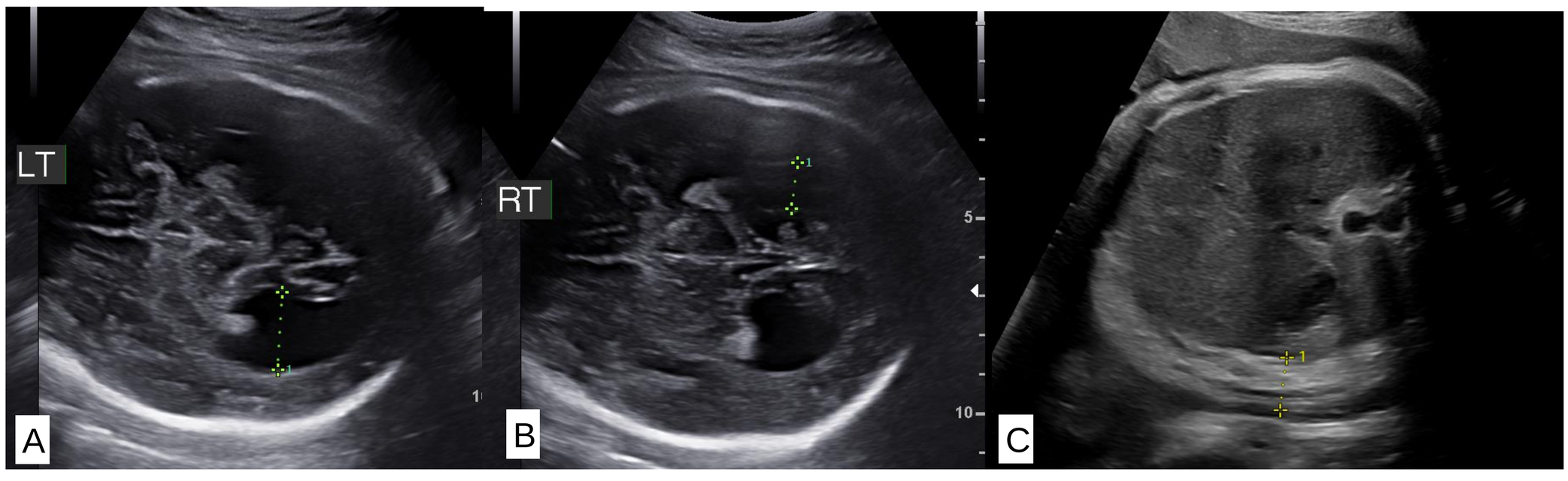

Fig.1) Prenatal ultrasonography
(A), (B) Lateral ventriculomegaly (Lt. 19.1mm, severe / Rt. 12.7mm, moderate), (C) Skin edema: 1.47cm

After birth, the baby was diagnosed with congenital CMV infection, showing results of CMV culture positive in saliva (1,600,338 IU/mL), spot urine (1,016,800 IU/mL), serum (16,089 IU/mL) and negative study in CSF. Whole body petechiae and thrombocytopenia were appeared which suggested bone marrow suppression. Treatment with ganciclovir was started and long term ganciclovir treatment was planned for at least 6 months. In a Brain MRI study (postnatal 5 days), ventriculomegaly of left lateral ventricle was improved (from 2.0 cm to 1.3 cm), with similar finding of right ventriculomegaly (from 1.2 cm to 1.3 cm). At postnatal 32 days, regression of right ventriculomegaly was observed (0.6 cm) in the US and viral loads were decreased in spot urine (6,478 IU/mL) and serum (1,484 IU/mL). There were no abnormal finings in hearing test, ophthalmic and neurological evaluations during neonatal period, but follow-up evaluations are scheduled.

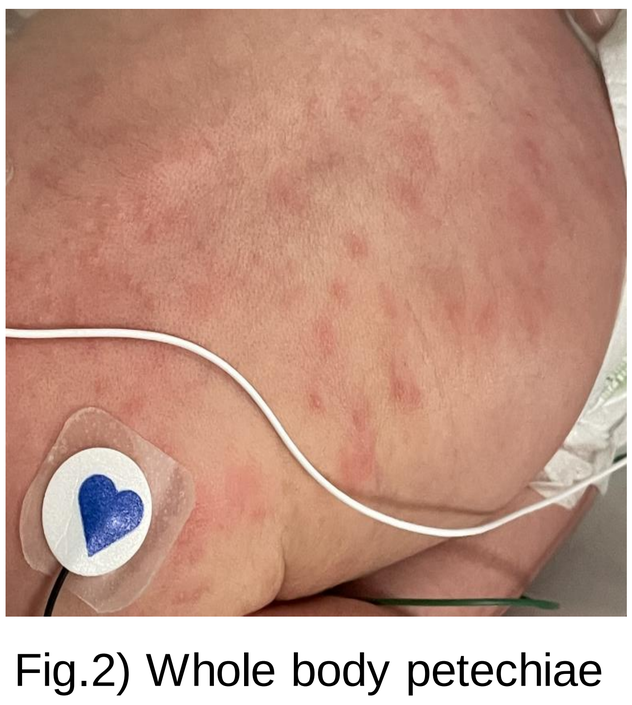

Fig.2) Whole body petechiae

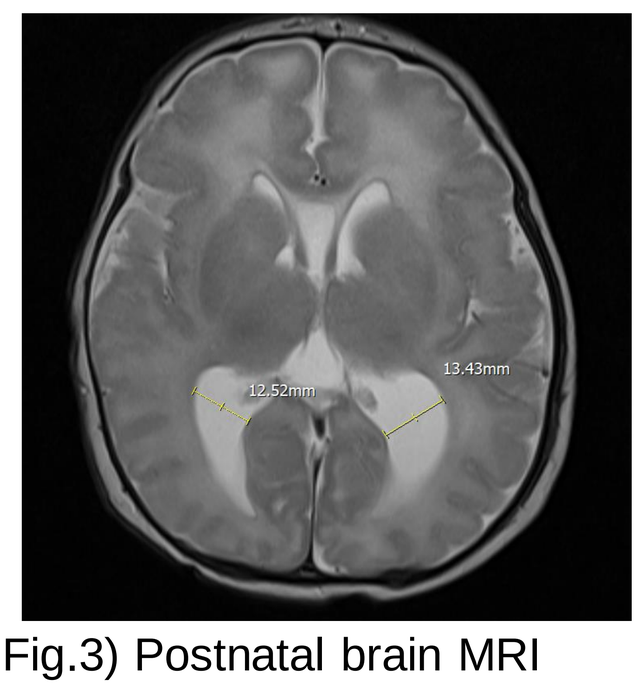

Fig.3) Postnatal brain MRI
: Lt. ventriculomegaly (1.3cm)
Rt. Ventriculomegaly (1.2cm)

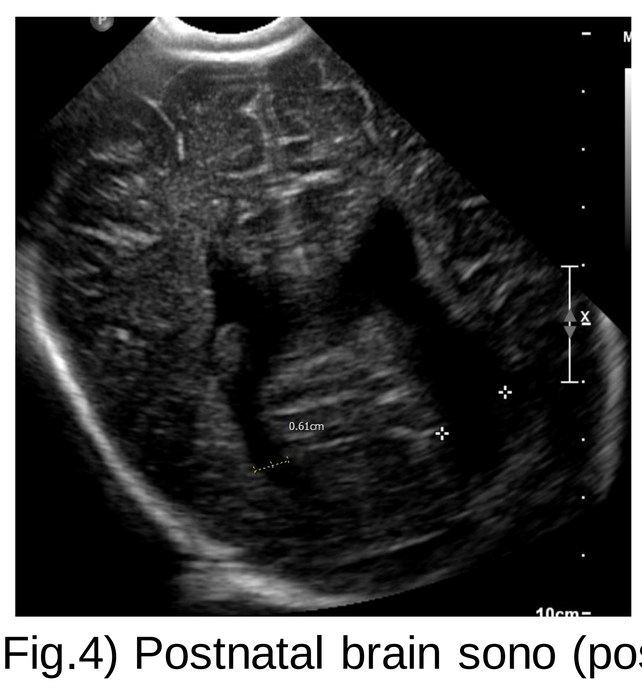

Fig.4) Postnatal brain sono (postnatal 32 days)
: Lt. ventriculomegaly (0.6cm)
Rt. Ventriculomegaly (1.3cm)

Conclusions

Congenital CMV infection can cause long-term neurologic sequale ; developmental delays, seizure activity, and gross neurologic impairment, and sensorineural hearing loss. Ultrasonographic findings of congenital CMV infection include microcephaly, ventriculomegaly, intracerebral calcifications, ascites, hydrops, echogenic bowel, intrauterine growth restriction, and oligohydramnios. When ventriculomegaly is observed on prenatal ultrasound, maternal serologic tests which are related with congenital infection, especially for CMV and toxoplasma, should be considered, with detailed ultrasonography for associated abnormal finding and genetic tests, if available.