Imaging for Residents – Quiz

Multiple Cerebral Abnormalities at Third-trimester Ultrasound Scan in an Uncomplicated Pregnancy

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Section 1 - Quiz

Case description

A 31-year-old pregnant woman, multigravida (G3P2), was referred to our outpatient department at 30 weeks of gestation for abnormal growth pattern at the mid-trimester ultrasound scan (3rd centile) performed at 20 weeks and 5 days of gestation despite normal morphology of the fetus for this stage.

Previous pregnancies were uneventful. Early antenatal care was managed at primary care. First-trimester ultrasound and combined screening demonstrated no anomalies and a reduced risk for aneuploidies. At her 1st- and 2nd-trimester antenatal screens, executed according to national policies, she was noted to be Rhesus positive, negative for HIV, hepatitis B, and syphilis. She was also found to lack immunity for the Rubella virus and Toxoplasmosis. Screening for gestational diabetes was negative.

At 31 weeks and 5 days, an ultrasound at our department revealed ventriculomegaly affecting the 3rd, 4th and lateral ventricles [Figure 1] with hyperechogenic ventricular walls [Figure 2]. At the posterior fossa, a hyperechogenic cerebellum with an apparent loss of substance was observed [Figure 3]. A review of the remaining fetal anatomy also evidenced the presence of a Grade 2 echogenic bowel [Figure 4]. The fetus had a standard amniotic fluid index and estimated fetal weight was 1672 g, corresponding to the 24th centile. The placenta was posterior, with no relation with internal cervical os and normal in appearance. Fetal Doppler and biophysical profile were normal.

At this visit, multiple diagnostic approaches were considered, and amniocentesis was offered. Karyotype, array comparative genomic hybridization, and infectious screening were carried

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Figure 1: Third and lateral ventricles dilation (* symbol) of fetal brain in axial (a) and corporal (b) planes (31w5d)

out in the amniotic fluid as was TORCH (Toxoplasmosis, Other [syphilis, varicella-zoster, parvovirus B19], Rubella, Cytomegalovirus, and Herpes infections) seroconversion investigated in maternal serum.

For further characterization of the ultrasound findings, magnetic resonance imaging (MRI) of the fetal brain was suggested. MRI was performed at 32 weeks and 5 days and demonstrated ventriculomegaly without subjective signs of hydrocephaly. Multiple periventricular calcified foci, bilateral temporal cysts, and extensive polymicrogyria were identified in cerebral hemispheres, and a cerebellar vermis hypoplasia was revealed [Figure 5].

WHAT IS THE DIAGNOSIS?

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Figure 2: Axial plane of fetal brain. Lateral ventricles measuring 10.35 mm showing ventriculomegaly with hyperechogenic ventricular walls at 31w5d scan



Figure 4: Grade 2 echogenic bowel (white arrow) noted at 31w5d scan

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal the identity, but anonymity cannot be guaranteed.

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Figure 3: Axial plane of posterior fossa showing loss of cerebellar substance and an increased cisterna magna with 15 mm



Figure 5: Fetal magnetic resonance imaging at 32w5d exhibiting hydrocephaly (red star), periventricular calcified foci (yellow arrow), and cerebellar vermis hypoplasia (blue arrow)

Conflicts of interest

There are no conflicts of interest.