VOLUME - 11, ISSUE - 06, JUNE - 2022 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Obstetrics & Gynaecology

ISOLATED UNILATERAL LEFT FETAL VENTRICULOMEGALY: CASE REPORT

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ABSTRACT

Introduction: Ventriculomegaly is defined as dilation of the fetal cerebral ventricles (>10mm). (1) The incidence of mild to moderate fetal ventriculomegaly on prenatal ultrasound is 1 percent.(2) It is characterized into mild, moderate and severe. Ventriculomegaly maybe associated with genetic, structural or neurocognitive disorders and outcome maybe normal or it may result in severe impairment. The case being described is of mild unilateral ventriculomegaly wherein the patient was diagnosed at 21 weeks of gestation followed by prenatal testing to rule out structural, genetic and infectious causes. After ruling out structural genetic and infectious causes the pregnancy was continued till term giving due consideration to prognosis. Patient was delivered at term by Caesarean-section with good fetomaternal outcome.

KEYWORDS : Ventriculomegaly, Caesarean section, Cephalopelvic disproportionation

CASE REPORT

The patient is a 25-year-old 2nd gravida with 1 previous caesarean section. Routine anomaly scan at 21 weeks of gestation showed that the fetus has increased nuchal fold thickness (8.5mm), dangling choroid plexus and unilateral mild left ventriculomegaly with left ventricular diameter of 10.8 mm and right ventricular diameter of 7.2mm and fetal maturity of 21-22 weeks with no other structural anomalies.

Patient had a history of fever in first trimester hence was tested for TORCH and genetic aneuploidy to rule out infectious and genetic causes of fetal ventriculomegaly.

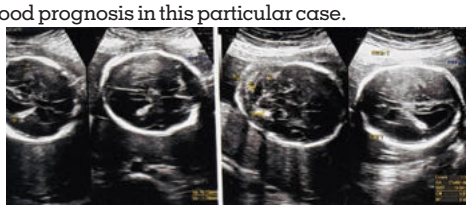
Testing for anitibodies against Toxoplasma, CMV and Rubella showed positive IgG for all 3 (Toxoplasma, CMV and Rubella) and negative IgM suggesting immunity and past infection therefore ruling out infection as a cause for fetal ventriculomegaly.

Amniocentesis was performed under ultrasound guidance and Fluroscence in-situ hybridization and karyotyping was done on interphase cells for chromosomes 13,18,21 X and Y. Results were found normal and no aneuploidy was detected hence ruling out genetic cause for mild venticulomegaly.

It was thus concluded that mild unilateral left fetal ventriculomegaly in this particular case was most likely a normal variation.

Follow up ultrasounds after detection were done to assess progression, stability or resolution. Progression was defined as increase in ventricular diameters by 2mm, Regression as decrease in ventricular diameter by 2mm and <2mm increase or decrease was defined as Stable considering interobserver variability.(3) Left ventricular diameter on follow up scans ranged between 10.8 to 11mm (stable) suggesting good prognosis.

At 37 completed weeks of gestation patient delivery was done by Caesarean section. Postnatal examination and ultrasound were found to be normal reinforcing the diagnosis of mild unilateral left fetal ventriculomegaly as a normal variation with good prognosis in this particular case.



Ultrasound examination at 21 weeks of gestation showing unilateral left fetal ventriculomegaly with left ventricular diameter of 10.8mm

DISCUSSION

Fetal cerebral ventriculomegaly is defined as an atrial diameter of >10 mm on prenatal ultrasound. (1)The atrium of the lateral ventricle is defined as the part where the temporal horn, posterior horn and body converge and this diameter remains stable between 15-40 weeks of gestation. (2) The mean diameter of lateral ventricle ranges from 5.4 to 7.6mm and a measurement of 10 mm is 2.5-4 standard deviations above mean.(2) A sonographic measurement of <10 mm is considered as normal. (2) Ventriculomegaly is classified as Mild (10-12mm) , Moderate (13-15mm) and Severe (>15mm) . (2) In this case isolated mild unilateral left ventriculomegaly (atrial width 10.8 mm) was detected on prenatal ultrasound at 21 weeks of gestation.

Causes of ventriculomegaly are

Structural abnormalities: Ventriculomegaly may be associated with a number of underlying central nervous system abnormalities for example holoprosencephaly, hydranencephaly, porencephaly, or schizencephaly, and cystic lesions, such as arachnoid cysts resulting in abnormal fluid collections in the fetal brain and which can be misinterpreted as ventriculomegaly.

Structural abnormalities leading to dilation or enlargement of the lateral ventricles include aqueductal stenosis (most common) , agenesis of the corpus callosum, Dandy-Walker malformation, neural tube defects, cortical defects, heterotopia, and choroid plexus papilloma.

Case correlation: Result of a detailed second trimester ultrasound for fetal anomalies in this case showed no other CNS structural anomalies.

Genetic Disorders: On genetic testing approximately 5% fetuses with mild to moderate ventriculomegaly are found to have an abnormal karyotype, most common being trisomy 21. While another 10-15% have abnormal findings on chromosomal microarray. (2)

Case correlation: Results of FISH for chromosomes 13,18, 21 and X and Y and karyotyping following amniocentesis were found normal and no aneuploidy was detected hence ruling out genetic cause for mild venticulomegaly in this case.

Infectious etiology: Approximately 5% cases of mild to

moderate ventriculomegaly result from congenital fetal infections, such as Cytomegalovirus, toxoplasmosis, and Zika virus.

Case correlation: Results of Immunoglobulin G and Immunoglobulin M antibody testing for Toxoplasma, Cytomegalovirus and Rubella showed positive Immunoglobulin G and negative Immunoglobulin M for all three, suggesting immunity and past infection therefore ruling out infection as a cause for fetal ventriculomegaly in this case.

Normal variation: Fetuses with a ventricular atrial diameter of 10-12 mm (that is mild to moderate ventriculomegaly) have a normal postnatal evaluation in >90% of cases. (2) Mild ventriculomegaly may represent a normal variant if its is not associated with other structural abnormalities and aneuploidy screening or diagnostic genetic testing results are normal. About 7 to 10% fetuses with isolated mild ventriculomegaly are found to have other structural abnormalities on postnatal examination.

Case correlation: Ruling out all genetic, structural and infectious causes pregnancy was carried to full term with follow up ultrasounds showing non progressive (stable) ventriculomegaly suggesting good prognosis (>90% of cases).

Delivery was done at 37 weeks of gestation as patient has 1 previous caesarean section for a recurring indication (cephalopelvic disproportionation) and cephalopelvic disproportionation in this pregnancy due to increased fetal head circumference (355mm) and biparietal diameter (101mm) as a result of ventticulomegaly.

Postnatal evaluation is normal in >90% cases of mild fetal ventriculomegaly. In this particular case of mild fetal unilateral ventriculomegaly postnatal examination and ultrasound were normal with good prognosis for the fetus. Hence such cases of mild ventriculomegaly can be managed conservatively ruling out pathological causes without adverse neonatal outcome.

CONCLUSION

Structural, genetic and infectious etiologies should be ruled out as differential diagnosis of unilateral fetal ventriculomegaly. Early clinical assessment, differential diagnosis and cerebral imaging allow the clinicians to do complete assessment and manage such cases of mild fetal unilateral ventriculomegaly as per prognosis.

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