AFRICAN JOURNAL OF FETOMATERNAL MEDICINE

Case Report

An Incidental Finding of Lumbosacral Meningomyelocele During Routine Ultrasound Scan At 28-Weeks of Gestation

Oluwatomi Y.Oni [1], Olaolu O. Oni [2], Janet A. Akinmoladun[3*].

1. Department of Radiology, University College Hospital, Ibadan, Oyo state, Nigeria.
2. Department of Obstetrics and Gynaecology, University College Hospital, Ibadan, Oyo state, Nigeria
3. Department of Radiology, University of Ibadan/University College Hospital, Ibadan, Oyo state, Nigeria.

Abstract

Spina bifida is the most common congenital abnormality of the central nervous system with meningomyelocele accounting for approximately 85% of lesions. Meningomyelocele is a devastating malformation associated with significant perinatal morbidity and mortality. Mid-trimester anomaly ultrasound scan is key to making the diagnosis of the anomaly because of the detailed assessment of the fetal anatomy. However, in experienced hands, the anomaly can be diagnosed during a routine third trimester ultrasound scan. Timely diagnosis of the anomaly allows for prenatal counseling and informed management choices which include termination of pregnancy, fetal surgery, or postnatal surgery. We report a case of meningomyelocele which was incidentally detected in a 22-year-old primigravida woman who came in for a routine obstetric ultrasound scan at 28-week gestation. Patient opted for termination of the pregnancy and the anomaly was confirmed.

Keywords: Meningomyelocele, Neural Tube Defect, Obstetrics Ultrasound

Corresponding author:
Dr J.A Akinmoladun
Department of Radiology,
University of Ibadan /University College Hospital, Ibadan,
Oyo state, Nigeria. jaakinmoladun@yahoo.com
08105492196

Introduction

Meningomyelocele or open spina bifida, is the most common open neural tube defect and it is a devastating congenital malformation of the central nervous system (CNS) associated with significant morbidity and mortality. It is characterized by failure of the neural tube to close during embryonic development, leading to the herniation of the meninges and spinal cord through a vertebral defect.[1] The malformation is usually associated

with significant lifelong disabilities which include neurogenic bowel and urinary bladder, associated hydrocephalus and hind brain herniation. Orthopaedics abnormalities like club foot and rarely accessory limb may also be associated.

The prenatal diagnosis can be made during mid trimester anomaly ultrasound scan with the presence of widening of the posterior ossification center of the affected vertebral body/ies with a mass seen extending from it. We present a 28-week-old foetus with an incidental finding of lumbar meningocele during routine ultrasound scan.

Case Report

A booked 22-year-old primigravida presented for routine obstetric ultrasound at 28 weeks and 2 day gestational age (GA) on the 14th of October, 2021. She had two previous ultrasound scans in the index pregnancy at facilities outside the hospital at 12 weeks and 22 weeks GA respectively, and both did not report any abnormalities.

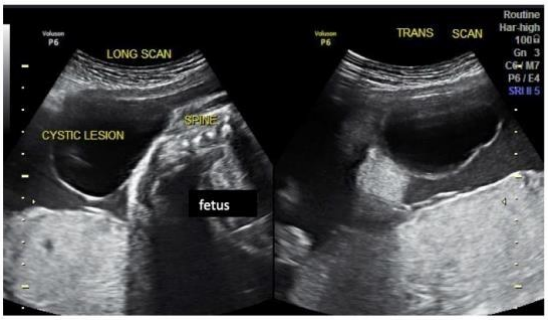

Figure 1: B mode Obstetrics ultrasound scan image of the fetus (longitudinal and transverse views) showing the cystic lesion attached to the fetal lumbar spine. The placenta is seen posteriorly

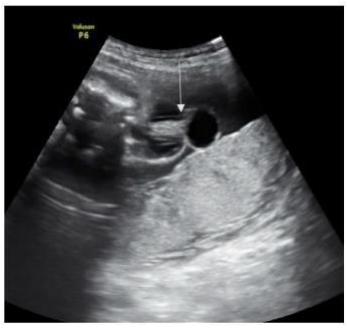

Figure 2: B mode Obstetrics ultrasound scan of the cystic lesion showing some linear echogenic structures (arrows) within it in keeping with neural elements.

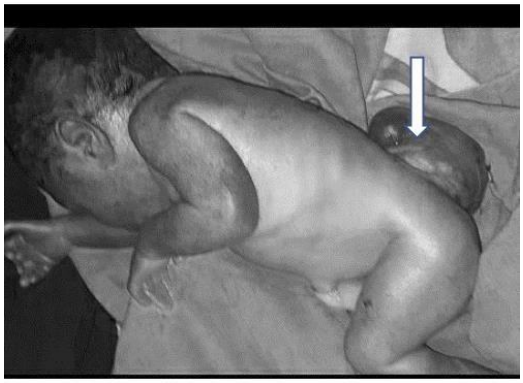

Figure 3: Image of the baby after delivery showing the mass (arrow) over the lumbosacral region. No other obvious abnormality was seen.

She had no underlying ailment and was not on any medication apart from "Pregnantcare" which she started taking when she discovered she was pregnant. No history of use folic acid in preconception period.

Obstetrics ultrasound scan done in our facility showed a live intrauterine fetus in longitudinal lie and cephalic presentation. A defect was observed in the lower lumbar vertebral bodies with a cystic structure seen projecting from the spine. The cystic structure measure 4.68cm x. 3.91cm x 5.65cm in Longitudinal x Anterioposterior x Tranverse diameters with an estimated volume of 53.8mls (Figure 1). Multiple hyperechoic strands were seen projecting into the aforementioned cystic structure in keeping with neural elements (Figure 2). The fetal head showed no evidence of ventriculomegaly. No other obvious abnormality was detected. The placenta was positioned posteriorly, away from the internal cervical os and the amniotic fluid was normal with amniotic fluid index of 15.8cm. A diagnosis of lumbar meningomyelocele was made, which is a severe congenital anomaly.

The managing obstetrician was informed, and the patient and her husband were adequately counselled about the abnormality and the treatment options available. They opted to terminate the pregnancy, and this was done the following day by induction of labour. A live male fetus was delivered, and the lumbosacral cystic structure was confirmed after delivery. It measured 5.2cm x 4.2cm x 5.8cm

in its dimensions with an estimated volume of 66mls (Figure 3). The baby died about 3 hours after delivery. The parents had another session of counselling after the delivery, and they were advised to present for mid trimester anomaly scan in the next pregnancy. Verbal informed consent was obtained from the parents to report the case.

Discussion

Neural tube defects (NTD) are congenital abnormalities of the CNS which result from defective closure of the neural tube during early embryogenesis, usually between 3rd and 4th week of intrauterine life. Spina bifida is the most common NTD with a prevalence of one in 1000 births. It usually occurs due to failure of the fusion of vertebral arches with or without protrusion of the meninges and dysplasia of the spinal cord [1]. Spina bifida can be classified into two; Spina bifida occulta and Spina bifida cystica.

Meningomyelocele is most common form of Spina bifida cystica and it is a severe anomaly characterized by protrusion of spinal cord through an open vertebra into the amniotic fluid. Females tend to have a higher risk of developing Spina bifida when compared with males with a ratio of 37 [1]. The presented case was a male fetus with a Spinal bifida cystica.

The exact cause of meningomyelocele is unknown with most cases occurring sporadically. However, some risk factors that have been identified include maternal exposure to radiation, use of anticonvulsive drugs, exposure to chemicals, folic acid deficiency and genetic determinant [1,3]. The incidence has also been found to increase in mothers with lower socioeconomic status and older maternal age. There is also an increased risk of having a baby with NTD if there is a previous delivery of a child with a form of NTD. The mother of the newborn presented was 28 years old primigravida. There was no history of a similar anomaly in the family. The mother started taking folic acid when she discovered she was pregnant. No known risk factor was identified in the mother.

Meningomyeloceles can be localized in the lumbosacral, thoracolumbar, or cervical spines, however the most common location is in the lumbosacral spine which was found in the presented case.

Most cases are diagnosed prenatally by ultrasound screening for anomaly between 18- and 22-week gestation although with recent advances in ultrasound, it can now be suspected during the 11-to-14-week scan. Typical ultrasound findings during the mid-trimester fetal anomaly ultrasound scans are usually in the skull and spine. Intracranial signs are critical for open spina bifida diagnosis during ultrasound however they could be absent. Cranial features include an abnormal lemon shaped skull, banana shaped cerebellum with obliteration of the cisternal magna. Hydrocephalus could also be detected in up to 73% of cases. Spinal lesions include splaying of the posterior ossification centers of the affected vertebral bodies with protrusion of the cystic structure containing cerebrospinal fluid with some echogenic neural elements within it. In the present case, only the spinal features were demonstrated, the intracranial features were not seen.

Once the diagnosis of meningomyeolocele is made, extensive prenatal counseling must be undertaken to discuss the natural history of the anomaly and offer additional prenatal testing.

Management choices of the anomaly include termination of pregnancy, postnatal surgery, or fetal surgery if available. The parents opted for termination of the pregnancy which was done the following day and the anomaly was confirmed at delivery.

Post-natal counseling is also important to inform the parents about the risk of having another baby with NTD and the need to present in the next pregnancy for prenatal ultrasound screening for anomaly during the 18-to-22-week GA. The parents of the index case were counselled and the mother was told to present early for booking and ultrasound scan before 13 weeks GA and anomaly scan at 20 weeks. She was also placed on preconception folic acid. By the time this case report was being written, about a year after, she had a baby girl with no congenital defect.

Conclusion

Lumbosacral meningomyelocele is a severe anomaly associated with many neurological disorders and the diagnosis can be made with precision during the prenatal ultrasound screening for fetal anomalies.

Hence there is need for more expertise and giving attention to details when performing an obstetric scan to avoid missing the diagnosis. Also, every obstetric ultrasound scan done should be as detailed as possible because the diagnosis can still be made anytime from the second trimester.

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