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Case Report

Prenatal and Postnatal Ultrasonographic Findings of the Torsioned Ovarian Cyst: A Case Report and Brief Literature Review

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Cystic and solid tumors of the ovary are rare during the newborn period and infancy. We present the case of a term female infant born to a mother of 28 years of age and found to have a cystic abdominal mass through prenatal sonographic evaluation in the third trimester. The complex cyst was also demonstrated by postnatal abdominal ultrasonography. Laparotomy revealed a large cystic mass with a torsed right ovary. Pathologic examination of cyst revealed hemorrhagic necrosis with ovarian torsion.

Key words: Neonatal ovarian torsion – Ultrasonographic diagnosis – Complex ovarian cyst – Ovarian necrosis

A congenital ovarian cyst is a rare entity which can be diagnosed antenatally by ultrasonography (US). It is the most common intra-abdominal cyst in female neonates with good prognosis. However, it may undergo complications such as torsion or rupture in intrapartum or postnatal period causing risk to the fetus or it may cause dystocia or intestinal obstruction.[1] They are generally diagnosed in the third trimester of pregnancy since nowadays antenatal and neonatal ovarian cysts are encountered more frequently due to the improvement of imaging techniques as well as routine antenatal ultrasound scanning. Once the diagnosis of a fetal ovarian cyst is made, it is important to perform serial ultrasonographic exam-

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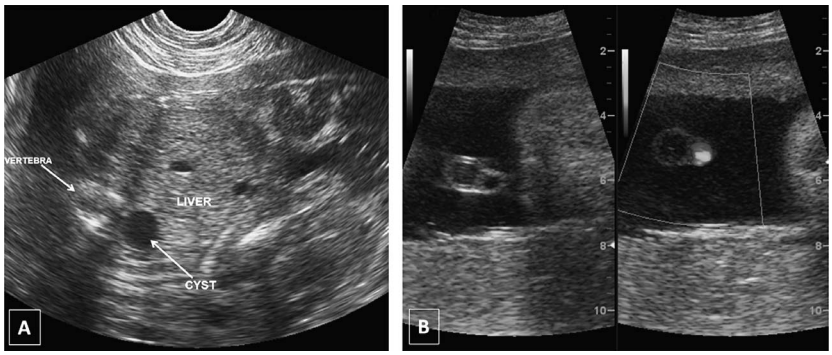

Fig. 1 (A) Simple ovarian cyst discovered on prenatal sonography at 25 weeks of gestation. (B) Single umbilical artery shows on prenatal sonography at 25 weeks of gestation.

inations to detect any structural changes in size, appearance, and complications.[2,3]

In this study, we presented a case of fetal ovarian cyst with torsion. The cyst under examination was diagnosed at the 25th week of the pregnancy during a routine antenatal US and was observed closely in terms of size and appearance at the 29th and 33th week of the pregnancy and during the postnatal period.

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A 3540-g full term female infant was delivered of a healthy 28-year-old G2F1 mother. A routine antenatal ultrasound at 25 weeks showed a well-defined thin wall cyst measuring 25 × 30 mm in right side of pelvis of the fetus (Fig. 1A). Single umbilical artery was also found during the ultrasound monitoring of the pregnancy (Fig. 1B). In follow up antenatal ultrasound at 29 weeks, there was nonvascular, irregular, and thick internal septations within a cyst (Fig. 2). An antenatal ultrasound at 33 weeks showed a complicated cystic pelvic mass including the echogenic material. A complex ovarian cyst was initially suspected and considered the most likely diagnosis. Antenatal ovarian or cyst torsion was also considered as differential diagnosis. No other maternal or fetal abnormalities were found during the ultrasound monitoring of the pregnancy. Postnatal physical examination of the neonate revealed a mildly distended abdomen with fullness on palpation of the right side. Postnatal ultrasound showed a large well-defined cystic mass measuring 55 × 30 × 68 mm in right side of pelvis including multiple septations and internal fluid-debris levels suggesting a diagnosis of a right ovarian cyst with torsion (Fig. 3A and 3B). The remaining ovarian tissue adjacent to the cystic mass was also revealed by ultrasound examination. All the routine hematologic and biochemical investigations were within normal limits.

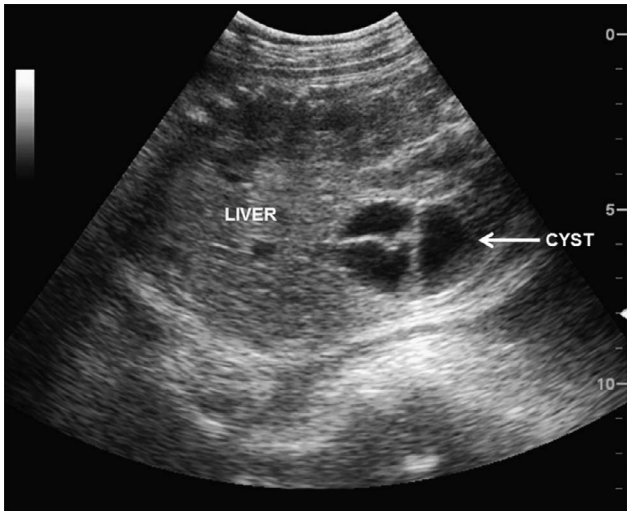

Fig. 2 Complicated ovarian cyst with fluid level and internal septations: prenatal sonography at 29 weeks of gestation.

The neonate was taken for operative exploration. Exploratory laparotomy revealed a large cystic mass in the right lower quadrant consistent with a torsed right ovary and fallopian tube. The left ovary and tube appeared normal. The brown color cystic mass was excised and sent for histopathology. The pathology report described hemorrhagic necrosis with an organizing cystic hematoma consistent with antenatal ovarian torsion in the right ovary and fallopian tube. The postoperative course was uneventful, and the infant was discharged 5 days after surgery.

Discussion

Advances in perinatal sonography have brought the problem of ovarian cysts in the fetus and their

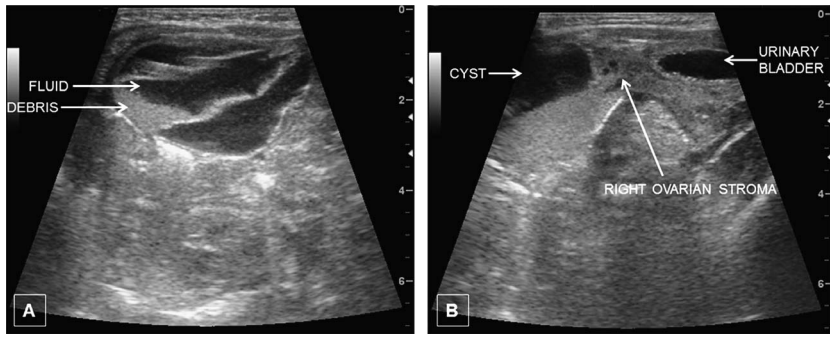

Fig. 3 (A and B) Longitudinal sonogram obtained at 2 weeks old shows several characteristics of complex ovarian cysts: echogenic wall, debris–fluid level, and thick internal septations.

management during the pregnancy and after the birth into the light. This is probably owing to technical improvements. Antenatal US may result in the discovery of fetal ovarian cystic lesions whose management may then be planned prior to delivery. Ultrasonographic diagnosis of ovarian cysts has been previously reported.[4–6] The first case of an ovarian cyst was reported in 1889 in a stillborn premature.[1] When a cystic abdominal mass is diagnosed in the female fetus, differential diagnosis should be established for mesenteric and urachal cysts, intestinal duplication anomalies, cystic teratoma, and intestinal obstruction.[5]

On the other hand, the etiology of a fetal ovarian cyst has not been entirely clarified.[1] It is considered to be gonadal hyperstimulation due to immature hypothalamus–pituitary–ovarian feedback as well as to fetal exposure to, maternal estrogen, maternal and fetal gonadotrophins associated with excessive release of placental chorionic gonadotrophins, diabetes, preeclampsia, or rhesus immunization.[6] Moreover, other suspected hypotheses include a precocious FSH peak between the 20–30th weeks of gestation and an abnormal HCG peak due to disorders of theca interna. It has also been suggested that prematurity and fetal hypothyroidism are associated with the development of ovarian cysts.[3] Associated anomalies with ovarian cyst are congenital pyloric stenosis, hydrocephalus, agenesis of the corpus callosum, and fetal hypothyroidism.[7]

Nussbaum *et al*[8] categorized fetal ovarian cysts according to ultrasound criteria into two groups: simple (uncomplicated) and complicated. The sonographic features of uncomplicated cysts are anechogenic and usually < 2 cm in diameter, unilocular, intrapelvic, or more often intraabdominal, unilateral or seldom bilateral, thin-walled, and more or less mobile with the mother's positions. Sonographic features of complicated cysts are heterogeneous with hyperechogenic components, thick-walled, containing free-floating material, with intracystic septations.[8]

Ovarian cysts in the female fetus usually present in the abdomen rather than in the pelvis, because pelvis is small and fetal ovary is an abdominal organ rather than pelvic organ. As opposed to this statement, in the present case, ovarian cyst was in the right side of the pelvis of the fetus.

Once the prenatal diagnosis of a probable ovarian cyst has been made, it is necessary to perform serial ultrasound examinations to detect any structural change (size, appearance) in the mass or complications. By doing so, potential maternal and fetal complications might be reduced. Those complications of fetal ovarian cysts include torsion with loss of ovary, rupture, hemorrhage, perforation, and intestinal obstruction. Among those, torsion is the most common complication since the newborn ovary has a long pedicle (50–78%). Torsion has been observed to occur more frequently during the fetal life than the postnatal period, the presented study showed a right ovarian cyst with torsion during prenatal period. The risk of torsion is associated with the diameter of the cyst. It was reported in the literature that large (4 cm or more) neonatal ovarian cysts or cystic ovaries have the risk of undergone and torsion.[8] As with our reported case, postnatal ultrasound check showed cystic mass that is 55×68 mm in diameter, including multiple septations and internal fluid-debris levels that support our diagnosis of the right ovarian cyst with torsion. Such a timely diagnosis of fetal ovarian cystic mass and cyst complications enabled the patient to undergo the operation right after the delivery without losing any time.

In conclusion, this study reports that the antenatal US is an important tool for the diagnosis and the follow-up of the torsion and the ovarian cyst and by means of this tool, fetal and maternal complications might be reduced.

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References

1. Mudholkar VG, Acharya AS, Kulkarni AM, Hirgude ST. Antenatally diagnosed neonatal ovarian cyst with torsion. *Indian J Pathol Microbiol* 2011;**54**(1):228–229
2. Crombleholme TM, Craigo SD, Garmel S, D'Alton ME. Fetal ovarian cyst decompression to prevent torsion. *J Pediatr Surg* 1997;**32**(10):1447–1449
3. Carlson DH, Griscom NT. Ovarian cysts in the newborn. *Am J Roentgenol Radium Ther Nucl Med* 1972;**116**(3):664–672
4. Gauderer MW, Jassani MN, Izant RJ. Ultrasonographic antenatal diagnosis: will it change the spectrum of neonatal surgery? *J Pediatr Surg* 1984;**19**(4): 404–407
5. Jafri SZH, Bree RL, Silver TM, Ouimette M. Fetal ovarian cysts: sonographic detection and association with hypothyroidism. *Radiology* 1984;**150**(3):809–812
6. Sandler MA, Smith SJ, Pope SG, Madrazo BL. Prenatal diagnosis of septated ovarian cysts. *J Clin Ultrasound* 1985;**13**(1):55–57
7. Nussbaum AR, Sanders RC, Hartmann DS, Dudgeon DL, Parmley TH. Neonatal ovarian cysts: sonographic–pathologic correlation. *Radiology* 1988;**168**(3):817–821
8. Nussbaum AR, Sanders RC, Benator RM, Haller JA, Dudgeon DL Spontaneous resolution of neonatal ovarian cysts. *AJR Am J Roentgenol* 1987;**148**(1):175–176