Diagnosis and management of an ovarian cyst complicated by torsion in utero: A case report

Mika A.B. Matthews, Mehul V. Raval, Daniel J. Watkins, Denis King*
Department of Pediatric Surgery, Nationwide Children’s Hospital, Ohio State University College of Medicine, Columbus, OH 43210, USA

A R T I C L E   I N F O
Article history:
Received 17 June 2013
Received in revised form 25 November 2013
Accepted 26 November 2013
Available online 27 December 2013

Key words:
Fetus
Neonatal
Ovarian cyst
Ovarian torsion

A B S T R A C T
Advances in prenatal ultrasound (US) have increased the number of congenital anomalies detected in utero. We present a case of an ovarian cyst identified at 22 weeks gestation. Further imaging obtained postnatally demonstrated a 5.8 cm complex cyst in the right abdomen. Abdominal exploration at 2 months of age revealed a completely necrotic right ovary which was resected. Histologic findings confirmed extensive necrosis with no viable ovarian stroma remaining. This case provides an opportunity to highlight the diagnostic criteria and clinical management of in utero ovarian torsion.

© 2014 The Authors. Published by Elsevier Inc. Open access under CC BY-NC-ND license.

Ovarian cysts represent the most common type of abdominal tumor in female neonates, occurring in up to 30% of female newborns [1]. Because of advances in technology and the routine use of screening ultrasound studies in obstetrics, ovarian cysts are now frequently detected prenatally. At birth, maternal hormonal stimulation is withdrawn, which typically results in spontaneous resolution of ovarian cysts within the first year of life [2]. While most simple cysts resolve, lesions that are large, complex, or symptomatic may cause complications and may require surgical intervention. Rarely are findings mandating surgical intervention detected in utero so postnatal imaging is used to reevaluate suspected ovarian lesions. In this report, we describe a case of ovarian torsion in a 2 month old patient with an ovarian cyst which was initially suspected in utero and followed closely in the neonatal period with serial imaging.

1. Case report

During a routine prenatal ultrasound, a right-sided intra-abdominal cyst was identified in a 22 weeks gestation fetus.

Pregnancy continued without complication and the patient was delivered via caesarean section at 38 weeks gestation. An ultrasound performed on the first day of life demonstrated a complex cystic mass in the right side of the abdomen (Fig. 1). A follow-up ultrasound (Fig. 2) at 4 weeks of age confirmed that the complex cystic mass persisted and was unchanged in size. MRI (Fig. 3) was obtained to better characterize the lesion. This study identified a 5.8 cm complex cystic mass in the right side of the abdomen which contained hemorrhagic debris and a fluid layering interface. On physical examination, the patient's abdomen was soft and there was no appreciable tenderness to palpation. Despite its size the mass was not palpable. The external genitalia appeared normal. Based on the in utero identification of a cystic pelvic mass followed by postnatal imaging demonstrating complex internal characteristics, intrauterine ovarian torsion was suspected.

The patient was taken to the operating room on an outpatient basis for a mini-laparotomy. A 2 cm muscle cutting incision was made in the right lower quadrant and a necrotic right ovary was identified with no involvement of the fallopian tube. Dark-green fluid was then aspirated from the lesion and the necrotic ovary was resected. Adhesions to the fallopian tube and distal small intestine were divided. Histologic examination of the specimen revealed extensive coagulation necrosis, abundant dystrophic calcification, hemorrhage, and focal multinucleated giant cells with no residual viable ovarian stroma identified (Fig. 4). At a three month follow-up visit, the patient was noted to be healing well and without complication.
While most small (<5 cm) simple cysts resolve spontaneously within the first few months of life, some asymptomatic lesions may be identified incidentally during an unrelated intra-abdominal operation. These cysts can be aspirated or fenestrated during a clean procedure, but if a cyst is identified during a contaminated operation, it should not be disturbed and postoperatively serial US monitoring should be recommended [2].

Management of large cysts (>5 cm) is more controversial and is a topic of debate in the literature. Some authors suggest serial US monitoring of cysts larger than 5 cm unless they become persistent, at which time cyst excision with ovarian tissue sparing is recommended [2]. Others recommend postnatal aspiration without a period of observation because of a theoretical increased risk of torsion and other complications. Prenatal aspiration of these cysts should be avoided unless there is concern for the development of massive abdominal distension in the fetus which might preclude spontaneous vaginal delivery [3].

The management of complex ovarian cysts, which are defined by fluid-debris levels, echogenic walls, clots, and septa on US [5], is also contentious. Most authors agree that surgical intervention should be recommended once a complex cyst is identified, since diagnostic imaging cannot distinguish between a benign or malignant lesion [5] or from other intra-abdominal disease processes [3]. However, results from a recently published Italian study suggest that conservative management of asymptomatic complex ovarian cysts should be considered [6]. The protocol proposed by the authors consisted of ultrasonographic and clinical examinations every 3 months until cyst disappearance, with surgical intervention reserved for those without evidence of regression. Thirty-seven of the 41 children (90.2%) in the report did not require surgery. There were no cases of recurrence and no complications once the cyst resolved; however, the involved ovary was invariably atrophic at puberty [6].

The most serious complication of a complex ovarian cyst is torsion. Infants with ovarian torsion may present with abdominal pain, distension, fever, and vomiting. For asymptomatic patients, the diagnosis relies on US evidence of fluid-debris levels or a retracting clot [4]. Some authors recommend conservative management for neonatal ovarian torsion unless there is suspicion for malignancy [2]. If incidentally identified intra-operatively, ovarian detorsion should be performed, followed by aspiration or fenestration. If a solid component is identified in the ovary after detorsion, cystectomy with ovarian sparing is recommended [2]. In the case described, the involved ovary appeared to be completely necrotic. After cyst aspiration, an oophorectomy was performed. Pathology reported extensive necrosis with no viable ovarian stroma remaining. In this situation, ovarian sparing was not possible.

Fig. 1. Ultrasound of right pelvis with complex cystic lesion obtained on day of life one.

Fig. 2. Ultrasound of right ovary obtained at 4 weeks of age. Shown are (A) transverse and (B) longitudinal views of a right ovarian cystic lesion measuring 4.4 cm × 4.4 cm × 5.8 cm which contains a fluid-debris level.
3. Conclusion

While most neonatal ovarian cysts resolve spontaneously, the prenatal diagnosis of an abdominal cyst in a fetus or neonate deserves the attention of a surgeon. Depending on the size and complexity of the lesion, management may range from serial sonographic monitoring to ultrasound-guided aspiration, laparoscopic or open surgical intervention. These invasive procedures may help prevent ovarian torsion.

Conflict of interest statement

None of the authors listed have any financial or personal relationships related to this report.

References


Fig. 3. MRI of the abdomen obtained at 5 weeks of age. (A) Axial T1-weighted, (B) axial T2-weighted, and (C) coronal T1-weighted MR images identifying a 5.8 cm complex cystic mass in the right abdomen with a fluid-debris level, which suggests that torsion has occurred.

Fig. 4. Histologic examination of the resected specimen (H&E). (A) At low magnification, no viable ovarian stroma is identified. (B) At higher magnification, the tissue is seen to contain abundant dystrophic calcification (arrows), hemorrhage (asterisks), and (C) extensive coagulative necrosis.