A case of unilateral ovarian torsion: Tale with a twist

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Section: Genital (female) imaging
Area of Interest: Genital / Reproductive system female Pelvis
Procedure: Contrast agent-other
Imaging Technique: MR
Imaging Technique: Ultrasound
Special Focus: Cysts Pathology Case Type: Clinical Cases
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Patient: 7 years, female

Clinical History:

A seven-year-old female child presented with diffuse abdominal pain of 10 days duration with recent exacerbation and a single episode of non-bilious vomiting. No history of fever or diarrhoea. There was no haematuria or haematochezia.

Imaging Findings:

Plain T2-weighted coronal MR (magnetic resonance) image shows a midline cystic lesion which appears to be arising from right adnexa and few small follicles in normal left ovary. Sagittal T2 image shows the same cystic lesion in pelvis located posterior to urinary bladder and anterior to rectum. An axial gradient image shows the lesion connected to a tube-like structure, which appears to be a dilated fallopian tube. The adnexal vessels are seen twisted around the tube. A contrast enhanced T1-weighted fat-suppressed axial MR image reveals peripheral enhancement of the cystic lesion, which was subsequently found to be an enlarged oedematous right ovary with necrosis intraoperatively. No associated mass lesion was identified.

Discussion:

There are two peaks of age occurrence of paediatric ovarian torsion - one in infancy and the other at around 12 years of age.

Arterial supply of the ovary is from – 1) ovarian artery which is a branch of abdominal aorta and 2) branches of uterine artery which arise from anterior division of internal iliac artery. Right ovarian vein drains directly into inferior vena cava (IVC) and left ovarian vein drains into IVC via the left renal vein.

Symptoms can vary from acute abdominal pain, dysuria, nausea, vomiting, fever to abdominal mass or may even be asymptptomatically detected on ultrasound. In neonatal period, they can present as a mass in the abdomen as normally they descend into pelvis by puberty. Failure of complete descent can be a predisposing factor for torsion. [1]

In case of torsion first there is obstruction to lymphatic outflow, followed by venous and finally arterial. The ovary may be normal, or torsion can be associated with an underlying mass lesion such as teratoma or follicular cyst. Teratoma will appear as a complex solid cystic mass lesion with dermal elements. Presentation may be in the form of a midline mass. Cyst with retractile clot may be seen and sonographic findings can vary with time. Double wall sign on ultrasound is finding an inner hyperechogenic wall and outer hypoechoic wall. Free fluid in pelvis may be a finding in acute cases. [1]
Unilateral enlarged oedematous ovary with peripheral distribution of follicles is a characteristic sign of torsion of ovary. In late stages, necrosis might set in leading to heterogeneous or cystic appearance such as in above case and same confirmed intraoperatively. Dependent debris with fluid level within the enlarged ovary is specific for ovarian torsion in neonatal age group. Colour Doppler cannot reliably exclude torsion. [2] MRI can sometimes show the twisted vascular pedicle. [3]

Treatment is guided largely by imaging findings, hence timely detection and investigation is important. Imaging also aids in differentiating surgical from non-surgical cases. [4,5]. Conservative management with detorsion and oophoropexy is generally recommended where possible. Oophorectomy may be required in late presentation where necrosis has set, in which was the mode of treatment chosen in this case. However, the possibility of laparoscopic surgery or minimally invasive surgery should be considered in salvageable cases. [6]

Written informed patient consent for publication has been obtained.

**Differential Diagnosis List:** Functional ovarian cyst and mature cystic teratoma presenting with torsion, Right ovarian torsion with enlarged oedematous right ovary

**References:**


Description: Plain T2-weighted coronal MR image shows a midline cystic lesion measuring 3.5x2.5x2.7 cm, which appears to be arising from right adnexa. Left ovary was normal. **Origin:** © Department of Radiology, All India Institute of Medical Sciences, Patna, Bihar, India 2019
Description: Sagittal image shows a large T2-hyperintense cystic lesion in pelvis located posterior to urinary bladder and anterior to rectum. There were no internal septations or solid components.

Origin: © Department of Radiology, All India Institute of Medical Sciences, Patna, Bihar, India 2019
Description: Axial gradient image shows the lesion communicating with dilated right fallopian tube which has hypointense adnexal vessels twisted around it. Origin: © Department of Radiology, All India Institute of Medical Sciences, Patna, Bihar, India 2019
Description: A contrast enhanced T1-weighted fat-suppressed axial MR image reveals peripheral enhancement of the cystic lesion which was concluded to be enlarged edematous right ovary. Follicles were not visualized within it. Origin: © Department of Radiology, All India Institute of Medical Sciences, Patna, Bihar, India 2019