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Acute Ovarian Torsion in a 6-year-old Girl: A Diagnostic Pitfall in the Emergency Department

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It is still a challenge to investigate and manage acute abdominal pain in the emergency department (ED), especially in children, because physical examination is not as easy as in adults. Acute ovarian torsion in children is an uncommon cause of acute abdominal pain and it is difficult to diagnose in a timely fashion in the ED.[1] However, since the diagnostic and surgical urgency after initial examination does appear to have an impact on ovarian salvage[2], the emergency physician should remain alert to this clinical entity to avoid irreversible ovarian necrosis. Herein, we report a case of acute ovarian torsion in a 6-year-old girl who presented in our ED with acute abdominal pain, which had initially been diagnosed as constipation at another hospital. Constipation is often confused with this condition in the ED and when making this diagnosis, especially in young girls, a careful re-evaluation and judicious utilization of radiological tools are necessary to rule out possible organ- or life-threatening causes.

Key words: mature cystic teratoma, ovarian torsion, acute abdominal pain, pediatric constipation

INTRODUCTION

Acute ovarian torsion initially impacts the venous circulation and lymphatic drainage and progresses rapidly to occlude the arteries of the ovary. The ovary may become necrotic and gangrenous, with eventual infection and peritonitis. In the emergency department (ED), the clinical symptoms of this disorder cannot be easily differentiated from other causes of acute abdominal pain in a timely fashion.[1] In children, acute ovarian torsion is an infrquent cause of acute abdomnal pain, but if it occurs, surgical detorsion should be performed as soon as possibile to salvage the ovary.[2] We report a case of delayed diagnosis of a mature cystic teratoma of the left ovary with irreversible torsion in a 6-year-old girl which was originally diagnosed as constipation at another hospital.

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CASE REPORT

A 6-year-old girl, with a history of constipation, presented in our ED because of intractable, intermittent, lower abdominal pain the preceding day. She had been seen one day earlier at a local medical clinic, where a large amount of stool was seen on abdominal radiography. She had been discharged after receiving a glycerine enema at the hospital.

She was brought to our ED after vomiting four times, with irritability and inability to sleep. The lower abdominal pain was described as intermittent, severe, and sharp, with no provoking factor and a feeling of defecation at the onset. On physical examination, she was a well-developed, well-nourished girl (height: 110 cm, body weight: 21 kg) who appeared ill. Her body temperature was 37.2°C, pulse rate was 110 beats per minute, and blood pressure was 116/60 mmHg. There was obvious palpable tenderness and rebound pain over the left lower quadrant of the abdomen, but no Rovsing's sign, obturator sign or psoas sign. Her rectal examination revealed a small amount of dry stool and marked tenderness over the left adnexal region during bimanual pelvic palpation per rectum.

A complete blood count showed a white blood count of 14,500/μL with predominant neutrophils of 90.6%, a hemoglobin of 12.7 g/dL, and a platelet count of 435,000/

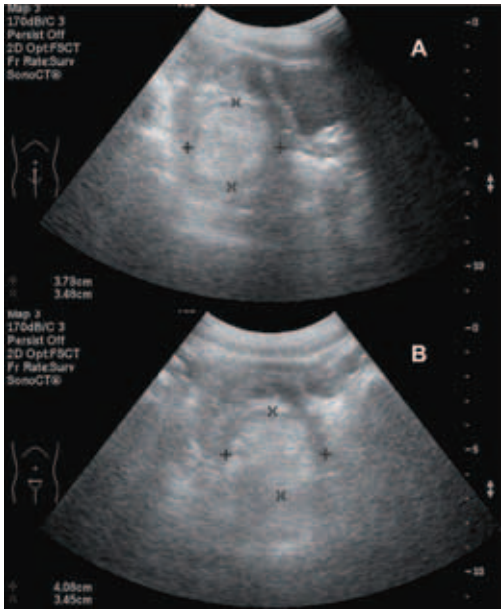

Fig. 1 Sonography of the abdomen depicts a homogeneous hyperechoic pelvic mass below the bladder.

μL. Urinalysis showed 14-16 white blood cells and 1-3 epithelial cells per high power field, 1+ leukocytes and no nitrites.

Under the impression of unknown intra-abdominal or urinary tract infection, sonography of the abdomen was done. It depicted a homogeneous hyperechoic pelvic mass below the bladder (Figure 1). Because the sonographic results were not definitive, multidetector computed tomography (MDCT) of the abdomen was done, which showed an ovoid-shaped mass with fat and soft-tissue components over the pelvic cavity, favouring a diagnosis of an ovarian teratoma with acute torsion (Figure 2, 3). The patient underwent an exploratory laparotomy. A large left adnexal mass (5 cm×6 cm×5cm) was noted with a concomitant necrotic, torsed left ovary. A left salpingo-oophorectomy was performed and the final pathologic report confirmed a mature cystic teratoma with a necrotic hemorrhagic ovary. The postoperative course was uneventful, and the patient was discharged home 3 days later.

DISCUSSION

The incidence of ovarian tumor is known to be lower in children than in adults[3], but acute ovarian torsion is reported to be the fifth most common gynecologic emergency, with a prevalence of 2.7%[4]. A mature cystic

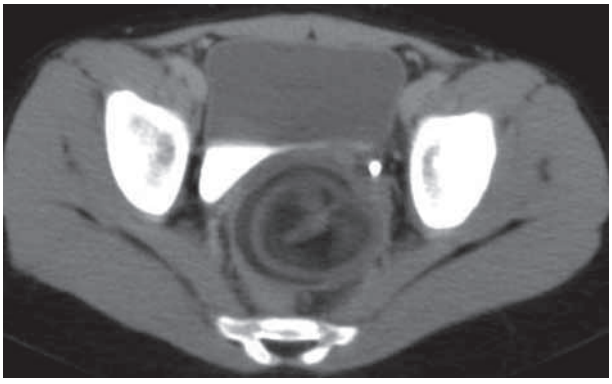

Fig. 2 Axial view on multidetector computed tomography (MDCT) of the abdomen shows an ovoid-shaped mass with fat and soft-tissue components below the bladder.

teratoma, usually occurring during the first year of life or around menarche, is the most common ovarian tumor causing torsion.[1] Surgical detorsion should be performed within 8 hours of symptom onset to preserve ovarian tissue.[5] Emergency physicians need sufficient knowledge about the disorder and should remain alert to its possibilty in young girls with acute abdominal pain.

Although constipation is one of the most common cause of acute abdominal pain in children in the ED[6], an emergency physician should carefully re-evaluate patients after making this diagnosis. In the present case, constipation was diagnosed because of the large amount of stool on plain radiography of the abdomen. The girl's mother also reported that the girl had a history of constipation and had received glycerine enemas several times at a local medical clinic. These clinical clues may narrow the focus of the emergency physician in patients with acute abdominal pain. Laurell et al. reported that constipation is often a diagnostic pitfall in the ED, and some patients with acute abdominal pain who are diagnosed with constipation may require surgery for potential organ- or life-threatening conditions.[7]

The symptoms and signs of acute ovarian torsion, including fever, acute abdominal pain, urinary symptoms, anorexia, nausea, and vomiting, are not specific and often lead to delays in diagnosis and treatment.[8] Many clinical entities, including acute appendicitis, pelvic inflammatory disease, ruptured ovarian cyst, ileitis, gastroenteritis, urinary tract infection, and colic, mimic ovarian torsion and are more frequently encountered in the ED.[1,7] Making an accurate differential diagnosis early with only a history and physical examination is not easy. In 1997, Schmitz-Stolbrink reported that ultrasound

Fig. 3 MDCT of the abdomen with coronal reformation shows an ovoid-shaped mass with fat and soft-tissue components over the pelvic cavity. There is a whirl sign around the pedicle over the left lower quadrant of the mass (arrow).

is the diagnostic method of choice in girls with acute abdominal pain, especially for pain of gynecological origin[9]. In 2002, Kupesić et al. indicated that ultrasound is an important and easily available tool used for woman with acute pelvic pain of different origins[10]. In the same year, specific sonographic findings of ovarian torsion were well described[11]. However, elaborate sonography of the abdomen is technically dependent on the operator's expertise.

With progress in the technology of medical imaging, Gittleman et al. reported that computed tomographic findings may be pathognomonic for the diagnosis of ovarian torsion, which should lead to prompt surgical treatment.[12] In our patient, MDCT facilitated non-definitive sonography of the abdomen to clarify the diagnosis of a mature cystic teratoma with acute ovarian torsion. To avoid the high radiological hazards of CT in a young girl, some authors have performed magnetic resonance imaging (MRI) in diagnosing a twisted ovarian teratoma.[13] In emergency situations, MRI does have the disadvantages of machine availability and length of examination which may require sedation or anesthesia for young pediatric patients.

In conclusion, we emphasize that emergency physicians should remain alert to acute ovarian torsion in the differential diagnosis of acute abdominal pain in a young girl. Constipation should be considered a symptom, not a diagnosis, until other possible clinical entities are ruled out. Frequent re-evaluation and a careful physical examination, such as a bimanual pelvic palpation via the rectum, are mandatory for a pre-pubertal girl in emergency conditions. A positive physical finding could lead to early imaging study and prompt surgical cosultation, which are key elements in salvage of the ovary.

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