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CASE REPORT

A rare cause of acute abdomen in a paediatric patient: A case report of a twisted ovarian cyst

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Abstract

Ovarian cysts are rare in children. Their common presentation is acute abdomen, which can be a life-threatening event that needs emergent investigation and intervention. Herein, we report a gynaecological case of a twisted ovarian cyst in an 11-year-old girl who presented to the emergency department with sudden-onset generalised abdominal pain. Multiple strong analgesics were prescribed, and pain-controlled analgesia was then started. Abdominal ultrasound revealed a left adnexal mass, and abdominal computed tomography showed a non-enhancing soft tissue tumour with multiple cystic components in the pouch of Douglas. The patient underwent emergency laparotomy, which revealed a gangrenous left ovarian mass measuring 9×5 cm that was twisted five times. Histopathology showed extensive haemorrhagic infarction with no remnant of viable tissue, consistent with a twisted ovary. It was challenging to determine the origin of the pain in this patient, as thorough examination could not be performed because she was in severe pain. Abdominal ultrasound helps guide diagnosis, as a gynaecological cause is rare in premenarchal children. A vigilant assessment is important to avoid delays in diagnosis and emergency intervention.

Introduction

Acute abdomen is a common presentation in the emergency department that needs emergent evaluation and intervention. The most common medical emergency is acute gastroenteritis, while the most common surgical emergency is acute appendicitis. A twisted ovary is an uncommon gynaecological emergency in children owing to non-specificity of the symptoms and physical findings. The incidence is 4.9 per 100,000 girls.[1] The incidence of ovarian cysts in infants and prepubertal children is lower than that in neonates and premenarchal and menarchal girls because gonadotropin stimulation of the ovary decreases after the neonatal period and generally remains low until puberty.[2] Ovarian torsion should be highly suspected in cases of unresolved pain and unclear physical findings. The present case is discussed to highlight clinical presentations and continuous assessments that may help in diagnosing the condition in emergency settings for early referral to a gynaecologist and intervention.

Case presentation

An 11-year-old girl presented to our emergency department with sudden-onset severe generalised abdominal pain. The pain was described as cramping and colicky, not radiating and relieved by leaning forward. She reported some nausea, vomiting out of clear fluid once and reduced oral intake. However, she denied having had diarrhoea, any altered bowel habit, abdominal distension, per-vaginal bleeding, urinary symptom, fever or trauma. She had not attained menarche. There was no family history of malignancy.

On examination, she was in severe pain, crying, lying in a lateral position with her legs flexed towards the abdomen and tachycardic. Her pain score was 8/10. Other vital signs were normal. Abdominal assessment revealed generalised tenderness and guarding with a vague mass over the left iliac fossa. Bowel sounds were present. Cardiovascular and respiratory examinations revealed no abnormalities.

Blood investigations did not suggest sepsis. The white blood cell count was 9600/mm^3; haemoglobin level, 13.5 g/dL; and platelet count, 375×10^9/L. Her renal profile and liver function were normal. Her tumour markers were within normal ranges, including a CA125 level of 26 U/mL. Unfortunately, the serum alpha-foetoprotein and beta-HCG levels were not measured in the patient. Abdominal x-ray showed no dilated bowel, while chest x-ray revealed no air under the diaphragm.

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The patient was immediately intravenously administered with an analgesic. Her pain was refractory to treatment and required strong doses of analgesic – morphine and fentanyl. Subsequently, she was started on patient-controlled analgesia – fentanyl; however, the pain score still ranged from 8 to 10. Owing to unresolved abdominal pain, abdominal ultrasound was performed to identify the source of acute abdomen. Abdominal ultrasound showed a left adnexal mass measuring 9×5 cm, which was multiloculated with mixed echogenicity (**Figure 1**). Abdominal computed tomography (CT) was ordered and revealed a non-enhancing soft tissue tumour in the pouch of Douglas with multiple cystic components measuring 2.9×4.5×8.9 cm (**Figure 2**).

Figure 1. Abdominal ultrasound showing a multiloculated left ovarian tumour measuring 9×5 cm with mixed echogenicity.

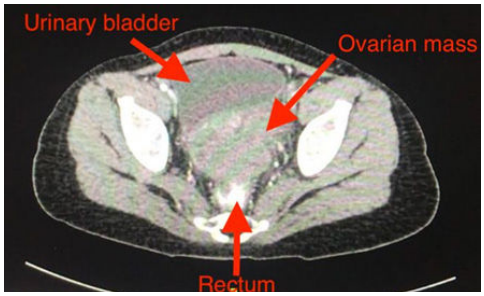

Figure 2. Abdomino-pelvic computed tomography showing a well-defined heterogeneous non-enhancing lobulated pelvic mass between the uterus and rectum.

Based on the clinical presentation of acute abdomen and imaging findings, an ovarian cyst was highly suspected, and the patient was then referred to the obstetrics and gynaecology team. Emergency laparotomy was conducted and revealed a gangrenous left ovarian mass measuring 9×5 cm that was twisted five times, a mildly inflamed appendix adhering to the right ovary and minimal blood-stained peritoneal fluid. Left salpingo-oophorectomy and appendicectomy were performed, as the ovary appeared gangrenous with a non-viable gelatinous appearance. Histopathology of the specimen revealed haemorrhagic infarction consistent with a twisted ovary. After surgical intervention, the pain was resolved, and the patient was discharged on day 4 post-operation. During three monthly follow-ups, there was no evidence of recurrence of ovarian cyst based on the clinical symptoms and serial ultrasound findings.

Discussion

Acute abdomen is defined as any serious acute intra-abdominal condition attended by pain, tenderness and muscular rigidity, for which emergency surgery must be considered.[3] In general, it is a clinical diagnosis, but true diagnosis is often made only with laparoscopy or laparotomy. Making a correct diagnosis is clinically difficult, as some conditions camouflage critical illness in patients with acute abdominal pain, including an advanced age, immunodeficiency, cognitive impairment or inability to communicate effectively.

It is rare and challenging to diagnose twisted ovarian cysts in children compared with those in adults, as children tend to report diffuse pain because it is difficult for them to localise the pain. The common aetiologies of acute abdomen among the paediatric population are gastroenteritis, urinary tract infection and constipation, whereas surgical emergencies, such as appendicitis and volvulus, are less common.[4] The location of the pain is beneficial in evaluating the illness and identifying the contributing disease. The probable diagnosis can be further narrowed down on the basis of the symptomatology, including vomiting, abdominal distension, altered bowel habits, fever, muscular rigidity and shock. Continuous assessment, especially for unresolved acute abdominal pain, is important until the exact cause of the pain is determined.

Abdominal pain is the most common presenting symptom of ovarian tumours, followed by abdominal and pelvic masses.[5] The presence of vomiting is considerably associated with a twisted ovary.[6] Both abdominal pain and vomiting were present in this case. Some modalities, such as serial ultrasound and CT, can help in narrowing down the diagnosis and guiding early intervention. If an adnexal mass is suspected, abdominal ultrasound and CT can be used to localise the mass and differentiate it from other causes that have similar symptoms, as in this case. A gynaecological origin was

listed at the bottom of the list of the differential diagnoses herein, as our patient had not attained menarche, and there was no clinical evidence of an apparent well-defined pelvic mass. However, it became the main differential diagnosis in this case after thorough serial examinations.

Approximately 18% of acute abdomen cases are of a gynaecological origin.[7] An ovarian mass, either benign or malignant, is uncommon during childhood or teenage years; however, it should be considered in patients presenting with pelvic pain or unexplained acute abdominal pain. More than 80% of twisted ovaries have masses sized more than 5 cm, and twisting is more likely to occur in benign tumours than in malignant tumours.[7] However, Huang found that premenarchal girls with a twisted ovary are more commonly found to have a normal ovary.[7] Bhattacharyya et al. showed that most ovarian tumours are observed in paediatric populations aged 16–20 years and that 77.4% of ovarian tumours are benign.[5] Oltmann showed that children aged 1–8 years had the highest incidence of ovarian malignancies.[8] Accordingly, even though the majority of ovarian tumours in paediatric patients are benign, infancy and early childhood are associated with higher risks of malignancy.

Although the current literature strongly recommends ovarian preservation for paediatric patients with ovarian torsion,[9] oophorectomy was unavoidable in our patient. The consequence of unilateral oophorectomy is better than that of bilateral oophorectomy owing to the compensatory mechanism of the preserved contralateral ovary. Patients who have undergone unilateral oophorectomy have been reported to have an earlier onset of menopause by 1 year than those who have not undergone oophorectomy.[10] However, there is no significant negative effect in terms of fertility, assisted reproduction, endocrine function and cardiovascular risk.[10] All patients diagnosed with an ovarian mass must undergo regular follow-ups in gynaecology clinics to review the symptoms and perform abdominal ultrasound to detect any recurrence of ovarian cyst and rule out the risk of malignancy, as conducted in our patient.

Conclusion

A twisted ovarian cyst in paediatric patients can be diagnosed with detailed history-taking, continuous assessment and a high index of suspicion. The presentation of a twisted ovarian cyst in paediatric patients differs from that in adults, as children tend to present with diffuse pain rather than localised pain. Non-specific acute abdominal pain may mimic other causes of acute abdomen; thus, continuous assessment and imaging are needed for early diagnosis and intervention. In a setting where imaging and specialties are limited, it is best to refer patients with suspected life-threatening acute abdomen to tertiary hospitals.

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Conflicts of interest

The authors declare no conflicts of interest regarding the publication of this case report.

Author contributions

Hani N and Mohd Tahir MA helped in finding a case and started the writing. Sjahid AS supervised and finalised the writing. Abu Bakar MA gave an input from emergency point of view. Omar AA gave an input from gynaecological point of view.

Patient's consent for the use of images and content for publication

Verbal consent for the publication of this case report with the accompanying images was obtained from the patient's parents

What is new in this case report compared to the previous literature?

- In cases of severe non-specific abdominal pain in children, assessment must rule out any life-threatening causes of acute abdomen, including gynaecological causes.
- Continuous assessment and further management are needed before making a diagnosis.
- All patients with a twisted ovarian cyst need regular follow-ups to rule out recurrence.

What is the implication to patients?

For female patients who visit any clinic or hospital with acute abdomen with severe pain that is not resolved by painkillers, gynaecological causes, such as a twisted ovarian cyst, must be ruled out apart from other life-threatening causes of acute abdomen. Early imaging is needed to achieve early diagnosis and referral to prevent complications, morbidity and mortality.

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