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Hemorrhagic Ovarian Cyst Following Blunt Abdominal Trauma in Early Adolescence: A Case Report

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Abstract

Hemorrhagic ovarian cyst (HOC) is a common cause of acute abdominal pain in women of reproductive age. However, its rare occurrence in early adolescence often leads to misdiagnosis and mismanagement. Here, we report the case of a 15-year-old girl who presented with acute abdominal pain after blunt abdominal trauma, which was later diagnosed as HOC by ultrasonography. The patient was conservatively observed and subsequently discharged with a follow-up ultrasound revealing complete resolution of the cyst. Our case highlights the importance of considering HOC as a possible differential diagnosis for acute abdominal pain, even in younger women, even after traumatic events.

Keywords: HOC, FAST, TRAUMA, ABDOMEN

Introduction

Acute abdominal and pelvic pain is among the most common causes of women presenting to the emergency room, specially in reproductive ages, and it has a wide range of differential diagnosis such as gynecologic, gastrointestinal, and urinary tract. Because of the

similarity in signs and symptoms, it's often hard to identify its etiology based on clinical findings alone without using various image modalities [1,2].

Hemorrhagic ovarian cyst (HOC) is one of the most common causes of acute abdominal and pelvic pain in women, specially of childbearing ages. Because HOC is less prevalent in early adolescence, it is often not considered a differential diagnosis of lower abdominal pain and can be missed [1,2].

In nonpregnant female individuals, reproductive organs are placed deeply in the pelvis. Therefore, pelvis structures usually protect these organs in case of Blunt abdominal trauma [1,2].

In this case, we report HOC in a 15-year-old girl who presented to the Emergency department with acute abdominal pain after blunt abdominal trauma.

Case presentation:

A 15-year-old single woman was admitted to the emergency department with acute abdominal pain, nausea, vomiting, and several facial and cervical Ecchymosis due to receiving multiple blunt trauma during a quarrel. In physical examination, she had abdominal tenderness in the hypogastric region without rigidity, guarding, rebound tenderness, or pelvic instability. She was hemodynamically stable with a Glasgow Coma Scale (GCS) of 15/15. Her respiratory auscultation and neurological examination were normal. She was a virgin and didn’t permit vaginal examination but reported experiencing vaginal spotting. She was in the middle of her menstrual cycle.

A primary Focused Assessment with Sonography for Trauma (FAST) examination was carried out, which only showed a rim of free abdominal fluid in the pouch of Douglas without any free fluid in the splenorenal and hepatorenal recesses, which was then approved by a secondary FAST examination which performed 1 hour later.

Abdominal and pelvic ultrasonography (6 hours after admission) revealed a right hemorrhagic ovarian cyst 57mm in diameter and the same free fluid rim without expansion or other pathologic findings. Both ovaries had normal blood flow in color Doppler ultrasonography which excluded complete ovarian torsion but didn’t exclude partial ovarian torsion.

Her laboratory data showed a White Blood Cell (WBC) count of 10300/mm3 with neutrophil dominance (73%) and a hemoglobin value of 12.9g/dl with negative serum beta-human chorionic gonadotropin (Beta-HCG).

Due to our limited accessibility to enhanced Computed Tomography (CT scan),

We performed a non-contrast abdominal CT scan with no pathologic findings.

After considering the patient's description and consulting with both surgery and gynecology departments, we decided to conservatively observe the patient in the emergency department under monitoring vital signs for 24 hours.

She was then discharged with stable vital signs and no abdominal pain present. The one-month follow-up abdominal ultra-sonography revealed resolution of HOC.

Written informed consent is present. The patient's father was explained about confidentiality, and the case information will only be used for educational purposes.

Discussion

FAST is the first imaging modality commonly used in the emergency department for patients with blunt abdominal trauma. Ultrasonography cannot detect conditions like bowel perforations, pancreatic lesions, and injuries without adequate free fluid to be detectible [1,2]. though FAST sensitivity is limited, it can be increased by performing serial FAST examinations or further assessment like CT scans, specially In patients with significant injury [3].

Differential diagnosis of intraperitoneal free fluids in the pouch of Douglas includes pathologic conditions such as ectopic pregnancy, pelvic inflammatory diseases, tubo-ovarian and pelvic abscesses, and physiologic conditions like ruptured follicles during normal ovulation [4].

Because of the high soft tissue contrast provided by Magnetic Resonance Imaging (MRI), it's the most accurate imaging modality in evaluating abdominal and pelvic pain. However, its application is limited in emergency settings because of its high cost and limited availability [5]. Therefore, in the emergency department, CT scan examination is more frequently used for evaluation of abdominal pain and to differentiate between gastrointestinal tract, urinary tract, and gynecological diseases (such as ureteral stones and appendicitis) and to identify life-threatening events, so CT scan is the next step and gold standard imaging modality in assessing patients with intraperitoneal fluid in FAST [5,6].

HOC is a common condition in women of childbearing age. But it's not common in younger female individuals. The vast etiology behind abdominal pain, alongside its rarity in early adolescence, can often result in misdiagnosis and mismanagement by pediatricians and pediatric surgeons [7].

Premenopausal women can experience mid-cycle pain due to rupturing of follicles developing in the first half of the menstrual cycle, usually less than 3 cm in diameter. Malfunctions in follicle maturation or corpus luteum formation can both result in HOC. Corpus luteum-derived HOC Usually occurs in the last week of the menstrual cycle [8]. In pregnancy, corpora lutea hemorrhage is common and usually resolves spontaneously by 12 weeks of gestation. Follicles can get bigger in case of failure of ovulation and form follicular cysts, which can result in hemorrhage. Follicular cysts are usually asymptomatic and self-limited and will be resolved after 4 – 8 weeks [7].

Hemorrhagic events are usually associated with coagulopathy, but because of the protection provided by pelvis structures, especially in nongravid women, blunt abdominal trauma can rarely cause HOC [7]. The probability of hemorrhage and rupture is higher on days 20-26 of the ovulation cycle due to increased vascularity. Stretching of the ovarian capsule caused by hemorrhage into the cyst and peritoneal irritation caused by cyst rupture results in abdominal pain [9].

HOC diagnosis is initially based on the patient's history, clinical presentation, and laboratory data which are similar to gastrointestinal tract diseases such as appendicitis.

Laboratory findings usually consist of mild leukocytosis, anemia, and elevated C-reactive protein (CRP). To rule out ectopic pregnancy, evaluation of serum Beta-HCG is necessary [5,10,11].

HOC sonographic appearance changes through the course of the disease from anechoic to blood clot and finally resolution. Then a peripheral blood flow appears as a "ring of fire" on Color Doppler ultrasonography, which can help to confirm the diagnosis [5,9,12].

Management

Historically, HOC management was mainly surgical, but nowadays, a conservative approach with analgesia and observation is recommended when there is no other condition, such as intraperitoneal hemorrhage or malignancy, and the patient is hemodynamically stable. Patients with HOC should be followed up and re-evaluated with imaging to confirm complete resolution [13,14].

Laparoscopy is indicated as the first minimally invasive approach in hemodynamically unstable patients, patients with persistent symptoms after 48 h, patients with increasing hemoperitoneum in follow-up Ultra-sonography, or patients with decreasing hemoglobin concentration in the first 4-6 hours, and in those cases which diagnosis is uncertain or there is likelihood of torsion [9,15].

Conclusion

Abdominal pain has many differential diagnosis, and identifying the origin of pain is necessary to manage patients properly. Abdominal blunt trauma will rarely cause gynecological injuries such as HOC, which is rare in early adolescence. Still, it should be considered as one of the differential diagnosis of abdominal pain, even in younger women. It should be managed conservatively after ruling out other conditions, such as torsion.

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