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Unusual symptom of abdominal pain in imperforate hymen mimicking acute appendicitis: A case report

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ABSTRACT

Imperforate hymen (IH) is a female genital tract abnormality in which the hymen entirely blocks the vaginal entrance. Because of its low incidence, nonspecific symptoms, and poor physical examination, IH is frequently ignored or delayed in diagnosis. Here we report a case of an unusual symptom of IH like constipation along with abdominal pain mimicking appendicitis with 6 points Alvarado score that causes delayed diagnosis of IH. A 12-year-old girl presented with continuous abdominal pain, unable to defecate for three days, and dysuria. The patient was consulted to several departments due to unspecific symptoms. The initial diagnosis for the patient are constipation and suspect appendicitis until the patient consulted to a pediatric surgeon that successfully diagnose IH. Without proper management and timely treatment, IH may cause morbidity. This report points out the importance to assess IH's symptoms in female adolescence who experience abdominal pain to avoid delayed diagnosis, give the correct treatment of IH, and give the key findings to distinguish IH and acute appendicitis.

What is already known on this topic: Imperforate hymen is the most frequent congenital anomaly in females. Usually, the symptoms of imperforate hymen are not specific and may lead to a delayed diagnosis that causes severe conditions due to lack of physical examinations. One of the most common symptoms is abdominal pain that may mimic acute appendicitis conditions.

What this study adds: This study reported a case of delayed diagnosis of imperforate hymen. We write the key points to distinguish imperforate hymen and acute appendicitis.

How this study might affect research, practice or policy: We hope our report and key points may help the primary care physicians to distinguish imperforate hymen and acute appendicitis especially in developing countries. We also hope by reading this study, the physician may assess the abdominal pain symptoms carefully to avoid delayed diagnosis.

1. Introduction

Imperforate hymen (IH) is a rare female genital tract abnormality in which the hymen entirely blocks the vaginal entrance [1]. The

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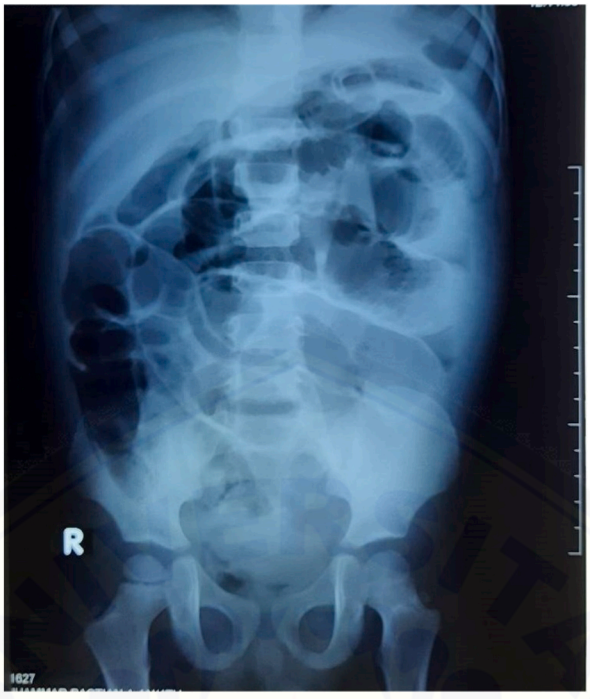

Fig. 1. The abdominal x-ray findings.

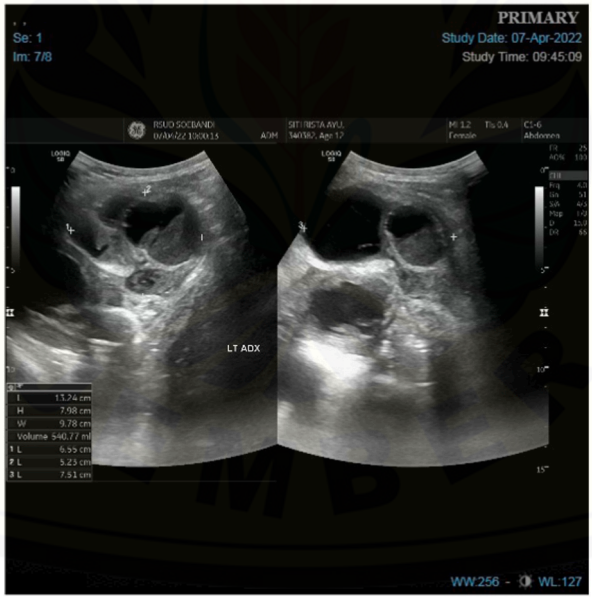

Fig. 2. The ultrasound examination.

incidence of IH is 1 in 1000–10,000 women worldwide. IH causes amenorrhea and cyclic pelvic or abdominal pain by obstructing uterine and vaginal secretions (also known as hematocolpos) [2]. The external genitalia, which has a bulging, bluish hymenal membrane, can be used to identify IH, but an abdomen ultrasound can reveal a pelvic cystic tumor [1]. Because of its nonspecific symptoms, and poor physical examination, IH is frequently ignored or delayed in diagnosis [3]. The delayed diagnosis of IH may cause additional intervention and morbidity in the patient. Other diseases such as subfertility, endometriosis, hydronephrosis, infection, and renal failure may result if IH is not treated with proper management [4]. Here we report a case of an unusual symptom of IH mimicking acute appendicitis along with abdominal pain that causes delayed diagnosis of IH.

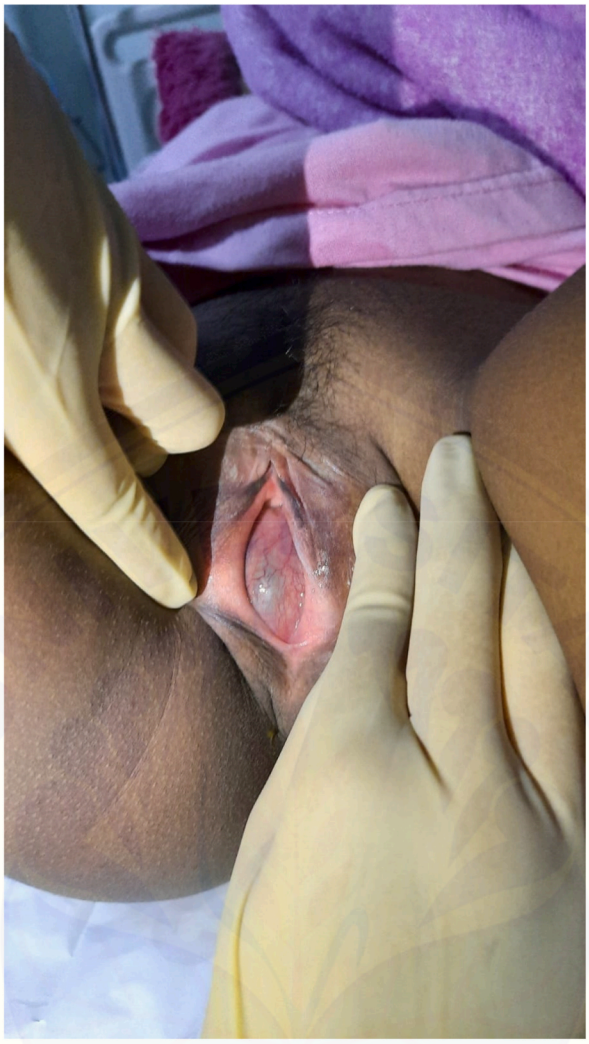

Fig. 3. Imperforate hymen before hymenectomy.

2. Case

A 12-year-old girl presented in the emergency department of dr. Soebandi General Hospital in April 6, 2022 with a history of continuous abdominal pain, unable to defecate for three days, flatus positive, dysuria for four days without history of nausea and vomitting. There is no history of vomiting. Pregnancy test was negative and Alvarado score for acute appendicitis was 6 or interpreted as possible diagnosis.

The physical examination showed a distended abdomen and abdominal pain. The abdominal x-ray and lef lateral decubitus (LLD) was normal. Laboratory test in emergency department showed leukocytosis with neutrophil dominance. Then the diagnosis of ileus with differential diagnosis constipation and urinary tract infection was made at first. Two hours later, pain was lessened. She was treated with D5 1/2 NS 1500 ml per day, analgesic three times daily, ceftriaxone 1g twice daily, lactulose syrup three times daily, and laxatives suppository once daily. BOF radiology of the abdomen (Fig. 1) showed marked large bowel distension in the ascending colon, transverse colon, and minimal distribution in the caecum that may illustrate an obstruction. A subsequent physical examination showed a positive muscular defense possible for appendicitis. The next day, she felt the abdominal pain did not decrease and the abdomen was still distended, then she was consulted to the pediatric surgeon. She was advised to have an ultrasound examination and a pregnancy test. The ultrasound examination (Fig. 2) detected a hypoechoic pelvic mass beneath the bladder, indicating hematocolpos. The ultrasound findings also showed hematometra. The hymen was imperforated, with bulging of the membrane occluding the vaginal canal on pelvic inspection (Fig. 3). The laboratory findings reveal an increase in WBC count, especially neutrophils, and a decrease in glucose level due to poor nutrition intake. The poor nutrition intake may be due to the abdominal pain she felt. The other laboratory findings were unremarkable. The final diagnosis of imperforate hymen was made. She underwent a hymenectomy procedure with the drainage of menstrual blood. Postoperatively, abdominal pain decreased and she made a good recovery condition.

Table 1
Key difference between IH and acute appendicitis.

Diagnostic Features	Imperforate Hymen	Acute Appendicitis
Sign and symptoms	- Primary amenorrhea - cyclical pattern (on menstruation period) of lower abdominal or pelvic pain - urine retention - constipation [5].	- Anorexia - nausea/vomiting - fever (40% of patients) - diarrhea - Urinary frequency or urgency [12].
Physical examination	- Genitalia examination: there is a bluish bulging imperforate hymen. Applying modest labial pressure when the patient is in the supine frog-leg or knee-chest posture is the ideal way to observe the hymen and view into the vaginal vault [5]. - There is no rebound tenderness or guarding [10].	- Abdominal pain on the right lower quadrant - Rebound tenderness specifically in McBurney's point [13]. - Positive Rovsing's sign, Psoas sign, Obturator sign, Dunphy's sign/
Radiology examination	- Ultrasound a buildup of echogenic fluid or a cystic mass in the vaginal canal that may extend to the uterus and hematocolpometra [5,11]. - CT The finding shows hematocolpos and hematometra - MRI depends on the bleeding episode and the blood in hematocolpometraT1: hyperintense fluid in the endometrium extending down to the hymenT2: hypointense fluid in the endometrium extending down to the hymen	- Ultrasound wall thickening (>3mm),aperistaltic, dilated appendix (>6mm outer diameter), hyperechoic appendicolith with posterior acoustic shadow, periappendiceal fluid collection - CT inflammation of the pericaecal mucosa, abscess, fluid in the right paracolic gutter, ileocecal mass, appendix dilation with an appendicolith, apical thickening, and adenopathy [7,14,15]. - MRIAlmost the same as other radiological modalities, luminal distension and widening, wall thickening, and periappendiceal free fluid

3. Discussion

The hymen is where the urogenital sinus and sinovaginal bulbs meet. The cause of IH is correlated with failure of perforation of the hymen during fetal development leading to no connection between the vaginal canal and vestibule [6]. IH is a disease with a global incidence is 1 in 1000–10,000 women [7]. IH appears sporadically in the community, but a study has reported a case of IH that develop in multiple family members [8].

Genuinely, in order to diagnose IH is easy but the clinician often missed it due to the low incidence. The key points to diagnosing IH are the presence of bulging hymen in female adolescents that still have not experienced the menstrual cycle and hematocolpos or hematometra in radiologic findings. In fact, these key points may be forgotten if the clinicians just focus on the symptoms that are not specific to each case [3].

In this study, we report a case of IH which mimics symptoms of acute appendicitis that lead to delayed diagnosis of IH. The patient has symptoms like being unable to defecate for several days and abdominal pain along with the radiologic findings that support the diagnosis of constipation blurred the diagnosis of IH at first. The patient was diagnosed with constipation and appendicitis at first. Constipation is not common in IH. The symptoms like constipation may appear due to the pressure effect of hematocolpos and hematometra on the rectum. The accumulation of menstrual blood must be large enough to cause these symptoms. This pressure also may cause dysuria due to pressure on the urethra [9]. After the treatment of constipation, the abdominal pain did not decrease. These findings provoke the clinician to suspect the patient had appendicitis. The misdiagnosed of IH by appendicitis has been reported in a case report by Amponsah-manu et al. [5]. Basically, people with appendicitis have clinical symptoms that are opposite to those of the imperforate hymen but have similarities, or maybe the center of the symptoms is in adjacent areas. For example, appendicitis has symptoms of pain in the right lower quadrant of the abdomen, diarrhea, and frequency. Meanwhile, an imperforate hymen can cause pelvic pain, constipation, and retention. In addition, a physical or radiological examination can be used as an adjunct to differentiate between IH and acute appendicitis although not all signs will appear in each patient (Table 1).

If IH is not treated properly due to delayed diagnosis, other diseases could happen that lead to morbidity. The differential diagnosis of IH is lower transverse vaginal septum since it also has obstructive reproductive tract anomalies symptoms [16]. There are several treatments option for IH such as hymenectomy, hymenotomy, insertion of foley catheter, and carbon dioxide laser. The patient may choose the treatment based on the patient's desire like if the patient wishes virginity, a simple vertical incision along with hymenectomy may be the choice. The outcome of IH that was treated with surgery is good and unlikely to recurrence [17].

4. Conclusion

There are key points to diagnosing IH are the presence of bulging hymen in female adolescents that still have not experienced the menstrual cycle and hematocolpos or hematometra in radiologic findings. It is important for clinicians to assess the IH's symptoms in female adolescent patients who experience abdominal pain in order to avoid delayed diagnosis and give proper treatment.

Contributions

S performing the surgery and giving an expert opinion also article guarantor, AIT and MYN drafting the manuscript, NA and SI follow-up the patient and take informed consent from the parents, ENS and MRFH editing the draft. All authors have approved the final manuscript for submission.

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Ethical approval

The ethical clearance was waived due to retrospective and literature review report.

Data availability

All data is presented in the manuscript. If there is something to confirm please kindly contact the corresponding author.

Informed consent

Informed consent was obtained from the patient's parents.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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