

An unusual cause of acute urinary retention

Introduction

The hymen is a thin fold of mucous membrane situated at the orifice of the vagina, which normally perforates in the later stages of embryonic development. Failure to do so results in an imperforate hymen which in turn can lead to retained menstrual blood collecting within the vagina and uterus (haematocolpometra). Patients are typically virgo intacta, and classically complain of cyclical abdominal pain without menses. Associated symptoms include urinary tract obstruction, urinary tract infection and constipation secondary to pressure on the bladder and rectum. This article highlights the importance of early diagnosis in haematocolpometra, as it can be treated definitively but can be easily misdiagnosed if not suspected.

Discussion

Imperforate hymen is the most common congenital cause of genital outflow obstruction in females, occurring in 0.1% of girls born at term. The hymen is an embryological remnant derived from the epithelium of the urogenital sinus, which eventually forms the distal end of vagina. Normally, the hymen perforates in the later stages of embryonic development. Failure to do so leads to an imperforate hymen, which is thickened, fibrotic and non-elastic in nature (Bakos and Berglund, 1999). When menstruation commences, menstrual blood is retained and progressively collects within the vagina and uterus, a phenomenon known as haematocolpometra.

Although the majority of cases of imperforate hymen are sporadic, familial occurrence with dominant transmission has been reported (Stelling et al, 2000).

Patients usually present with cyclical, monthly lower abdominal pain, without any history of menses, and despite normal secondary sexual characteristics (unless associated with specific syndromes). Haematocolpometra can lead to mechanical pressure on the urethra and bladder, and almost 58% of patients present with urinary tract problems, including infection and obstruction (Chirop, 2003). Patients may also complain of an abdominal mass and constipation.

Less commonly, if the fallopian tubes become distended with blood (haematosalpinx), patients may present with peritonitis secondary to rupture and spillage of blood into the peritoneal cavity (Loscalzo et al, 1995; Bakos and Berglund, 1999).

Examination of introitus reveals a tense, bulging hymen that may be discoloured blue. These findings are pathognomonic for haematocolpometra. In more equivocal cases, the differential diagnoses includes other causes of vaginal obstruction, including vaginal agenesis, transverse vaginal septum, vaginal cyst, labial adhesions and

pseudohermaphroditism. Rectal examination may be of use in revealing a pelvic mass (the distended vagina and uterus) lying anterior to the rectum (Dickson et al, 1985).

The investigation of choice is ultrasound which, in cases such as this, can readily demonstrate the pathognomonic appearances of haematocolpometra (*Figure 1*). Ultrasound also has the added advantages of being radiation-free and widely available. In cases of haematocolpometra, fluid (i.e. menses) will be seen within the distended uterus and vagina, and sedimented blood products may also be seen as echogenic debris lying within the dependent portions of both viscera. If required, magnetic resonance imaging can be useful in differentiating other causes of haematocolpometra from vaginal blockage (Basaran et al, 2009).

The definitive treatment is surgical hymenectomy with T, X or cruciate incisions. With cruciate incisions, as was used in this case, quadrants of the hymen are excised and the mucosal margins approximated with fine delayed absorbable sutures. Care has to be taken not to excise the hymenal tissue too close to the vaginal mucosa in order to avoid scarring and

Case Report

A 15-year-old girl was referred to hospital by her GP with acute urinary retention. She had complained of abdominal pain for the previous 5 days and was being treated with antibiotics for a suspected urinary tract infection. The patient had also been treated on several occasions over the past year for recurrent urinary tract infections. Urinalysis had so far been unremarkable. The patient was not sexually active and had not yet reached menarche, but she had reported experiencing cyclical cramps and lower abdominal pain for approximately 12 months.

There was no significant medical, surgical or family history. The patient was cardiovascularly stable, and full blood count, and kidney and liver function tests were normal. Urine pregnancy test was negative.

On examination, the abdomen was soft. Tenderness could be elicited over the suprapubic area, and the bladder could be palpated up to the umbilicus. Secondary sexual characteristics were normal. The patient was catheterized, draining a large volume (755 ml) of urine. Urinalysis was unremarkable.

An urgent abdominal ultrasound scan was organized. This demonstrated an abnormally distended uterine cavity filled with fluid (*Figure 1*). The fluid extended through the cervix, via the cervical canal, into a large cystic collection within the vagina. Following micturition, the patient's bladder still contained 110 ml of urine, consistent with lower urinary tract obstruction (normal <50 ml). A diagnosis of haematocolpometra leading to urinary tract obstruction was made. Vaginal examination revealed the underlying cause to be an imperforate hymen. The patient underwent surgical hymenectomy using a cruciate incision, which allowed 400 ml of altered blood to be drained. The patient was discharged without complication, and has remained well since.

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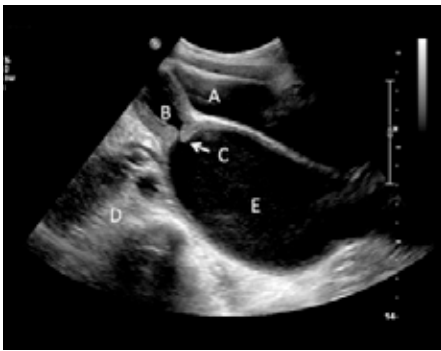


Figure 1. Longitudinal section transabdominal ultrasound image of the pelvis demonstrating haematocolpometra. A = bladder containing urine; B = peri-pubertal uterus abnormally distended with fluid (menses); C = cervical canal; D = rectum; E = vagina markedly distended with menses.

stenosis (Te Linde et al, 1997). Given that blood is a good culture medium, prophylactic antibiotics are recommended.

An alternative method of management uses a minimal incision to allow passage of a Foley catheter into the vagina, which is then left in situ for 2 weeks. Topical oestrogen cream is also given to restore as much of the hymen as possible. This method is popular in cultures where physical evidence of defloration is necessary (Ali et al, 2003).

In cases with associated complications, such as bladder perforation or ruptured hydrosalpinx, which can both lead to an acute abdomen, laparoscopy and laparotomy may be required (Tuncer et al, 1997).

Conclusions

A history of lower abdomen fullness and pain, with or without urinary or bowel symptoms, in a virgo intacta female aged 12–20 years old with no history of menses should arouse a strong suspicion of an imperforate hymen. Ultrasound is the investigation of choice and definitive treatment is surgical incision of the imperforate hymen. **BJHM**

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LEARNING POINTS

- Acute urinary retention in an adolescent girl may be caused by haematocolpometra secondary to an imperforate hymen.
- Imperforate hymen is a relatively rare condition but should be considered in any adolescent female presenting with lower abdominal pain and amenorrhoea, particularly if secondary sexual characteristics are otherwise normal.
- Diagnosis can be confirmed by a simple pelvic examination and ultrasound.
- Surgical treatment should be undertaken as early as possible to reduce complications.

IMAGES IN MEDICINE

A burst waterpipe

An 81-year-old woman presented with sepsis associated with mild right upper quadrant tenderness. Despite antibiotic therapy, her condition failed to improve. Subsequent abdominal computed tomography scan revealed a hydronephrotic right kidney and fluid collection around the lower pole, extending into the pelvis, compatible with a urinoma (Figure 1).

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Drain insertion produced 3.5 litres of fluid with simultaneous settling of inflammatory markers and pyrexia. Computed tomography intravenous urogram showed resolution of the collection but revealed a filling defect within the collecting system suspicious for a urothelial tumour.

Despite initial symptom relief, the urinoma reaccumulated and drain fluid cultures grew coliforms and yeast. Although high risk for surgery, she underwent a nephrectomy for definitive management. Operative findings included adherent tissue with minimal integrity and 1.5 litres of pus. Histology showed dilated urinary pelvis and calyces and several peri-renal abscesses, but no evidence of malignancy.

Postoperatively the patient developed pneumonia and died. **BJHM**

Figure 1. Coronal computed tomography image of the abdomen and pelvis, showing a right-sided urinoma extending from a hydronephrotic kidney into the pelvis.

