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CASE REPORT

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Isolated tubal torsion: a rare cause of pelvic pain at menarche. Sonographic and MR findings

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Abstract Isolated torsion of the fallopian tube is a rare clinical entity, especially in adolescents and at menarche. The diagnosis is essentially made at laparoscopy or at laparotomy because of nonspecific clinical signs. We present a case of isolated tubal torsion in a 12-year-old girl a few days after menarche, highlighting the sonographic and MR findings. Both techniques demonstrated the enlarged and tortuous fallopian tube with normal ovaries and uterus, but MR was also able to characterize contained blood and absent vascular supply. Although this condition is uncommon it should be considered as a cause of acute pelvic pain in adolescents because of the possibility of salvage surgery with early diagnosis. Sonography and MRI have a complementary role in this diagnosis.

Keywords Fallopian tube · Torsion · Menarche · Ultrasound · MRI · Child

Introduction

Adnexal torsion is a well-known, though uncommon, cause of acute lower abdominal pain occurring at or before puberty. It is mostly associated with adnexal pathology, but in children the ovary may be normal. Prompt diagnosis and surgery may prevent irreversible vascular changes [1]. Isolated torsion of the fallopian tube is a rarer event, most commonly occurring after menarche [1, 2]. It has only rarely been described before menarche or during the menopause [2–6]. Diagnosis is rarely made before surgery because of the nonspecific clinical presentation [7–9]. We report a 12-year-old girl who was admitted to hospital soon after menarche with sudden-onset pelvic pain. Sonography and MRI showed an enlarged left fallopian tube, and MR also demonstrated contained blood.

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Case report

A 12-year-old girl presented with a 7-day history of pelvic pain of sudden onset 4 days after menarche, then slightly remitting. Laboratory data were within normal ranges. Sonography was carried out with a Toshiba Power Vision 6000 SSA-370A scanner and an Acuson Sequoia 512 scanner, with a probe frequency ranging from 5 to 7.5 MHz. Sonography demonstrated a dilated, serpiginous left fallopian tube with an enlarged end extending towards the midline. The tube contents were fluid with a small amount of low-level echoic debris. The wall was thickened and there were visible mucosal folds on the inner border. The ovaries appeared normal with demonstrable vascular flow on colour Doppler. The uterus was normal (Fig. 1).

On MR imaging (Magnetom 1.5 T, Siemens, Erlangen, Germany) the markedly dilated and serpiginous left fallopian tube with an enlarged fimbriated end was shown to contain blood that was hyperintense on T1-weighted fat-saturated sequences. There was no contrast enhancement of the thickened tubal wall. Mucosal folds were recognizable along the inner borders of the fallopian tube (Fig. 2).

Pelvic inflammatory disease was unlikely because of the patient's age, proximity to menarche and absence of general inflammatory signs or local increased vascular supply. She underwent surgery on the suspicion of an

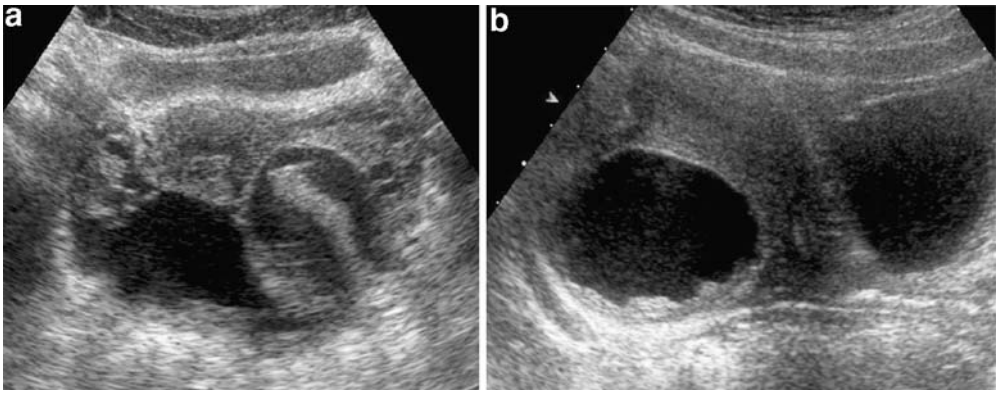

Fig. 1 Sonography. Transverse (**a**) and longitudinal (**b**) images show a serpiginous, dilated, fluid-containing left fallopian tube with an enlarged fimbriated end extending towards the midline and the pubertal uterus. There are visible mucosal folds on the inner aspect of tube wall. The ovaries are normal

obstructed dysplastic fallopian tube resulting in a haematosalpinx, tubal endometriosis, or isolated tubal torsion. The mass could not be removed laparoscopically because of tenacious adhesions. At laparotomy there was a threefold twist of the long axis of a largely necrotic fallopian tube necessitating salpingectomy.

Discussion

Isolated torsion of the fallopian tube is a rare event, most commonly occurring during the reproductive years. The overall incidence is 1 in 1.5 million women. The condition is generally unilateral, the right tube being more frequently involved, perhaps because the sigmoid colon prevents excessive adnexal movements [7, 9–11].

The aetiology of tubal torsion is still unclear. Intrinsic causes include congenital anomalies such as abnormal length of the mesosalpinx or a spiral course of the salpinx, or acquired pathology such as hydrosalpinx, haematosalpinx, tubal neoplasms and previous tubal operations—mainly tubal ligation in particular using the Pomeroy technique. Extrinsic causes are represented by ovarian or paratubal masses, vestigial remnants, adhesions, pelvic infections, pelvic congestion and trauma. Even sudden body movements may be possible underlying factors, and it has also been reported during pregnancy [2, 7, 9]. As most risk factors for tubal torsion occur in the reproductive age group, it has only rarely been described before menarche or during the menopause [2–5].

Adnexal torsion is a well-known, infrequent cause of acute lower abdominal pain in girls and early diagnosis can lead to prompt surgical treatment before irreversible damage occurs [1]. However, isolated torsion of a fallopian tube, without vascular compromise of the ovary, is less common, but still possible because the vascular supply to the tubes and ovaries arises from both ovarian and uterine vessels [12]. Because many other conditions, e.g. extrauterine pregnancy, pelvic inflammatory disease and inflammatory bowel disease, simulate adnexal torsion, the correct preoperative diagnosis is rarely made [7–9, 11]. However, early recognition of this condition can allow tube-sparing surgery. Although pregnancy has been reported after detorsion of the tube [13], recurrence is also possible [8].

In our patient, sonographic evidence of a dilated and tortuous left fallopian tube and MR hyperintensity on T1-W fat-saturated sequences suggesting contained blood raised several possible diagnoses: obstructed dysplastic fallopian tube, endometriosis and, because both ovaries looked normal, isolated tubal torsion. Unlike in other reported patients in whom a cystic adnexal mass with a wide differential diagnosis was shown [5, 7, 9, 11], in our patient the morphology of the salpinx was substantially

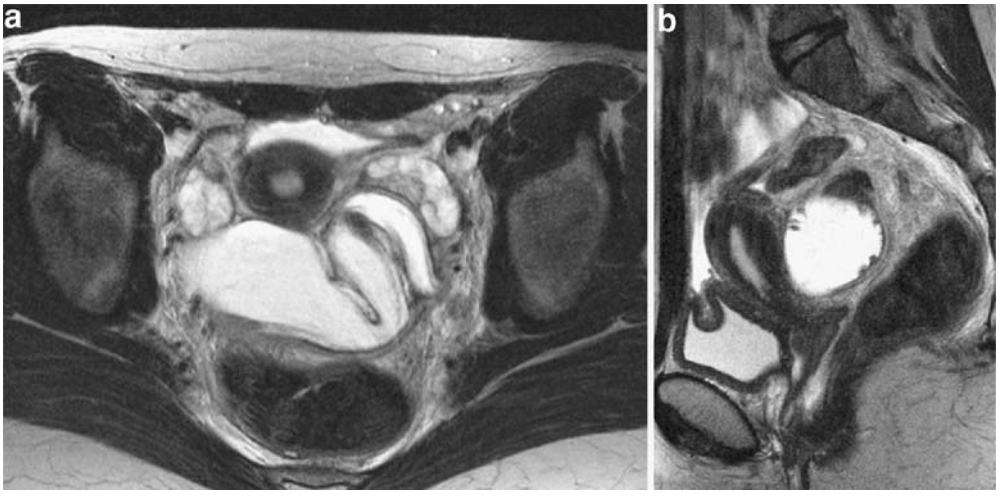

Fig. 2 MRI. Axial T2-W (**a**) and sagittal T2-W (**b**) images demonstrate a serpiginous, dilated left fallopian tube containing T2-hyperintense fluid. The tube wall is thickened and mucosal folds are recognizable on the inner border

preserved apart from being markedly dilated with a thickened wall.

Sonography has been widely considered the gold standard imaging technique in the evaluation of suspected adnexal torsion. Colour Doppler can be useful, but the presence of normal flow does not necessarily exclude torsion because of the dual vascular supply to the ovary [1, 14]. MRI and CT have been reported as not allowing earlier or more precise detail [4, 10]. In our opinion MRI did add useful information by suggesting the bloody nature of the tubal contents that had been shown to have non-specific low-level echoes on sonography. There was no contrast enhancement of the tube walls; these elements can lead to the correct diagnosis of tubal torsion [15].

Isolated tubal torsion should be considered in the adolescent with pelvic pain, particularly as early surgery may prevent complications such as necrosis and gangrenous transformation, haemoperitoneum and peritonitis.

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