Reminder of important clinical lesson

Hydronephrosis and loin pain as a presentation of tubo-ovarian abscess developing after Mirena coil removal

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We present an unusual and complicated case of a 39-year-old woman who was admitted three times in hospital over a period of 4 weeks, with abdominal pain initially and then right loin pain, fever and feeling generally unwell. She was investigated on each admission with different diagnoses set each time, but only on her last admission due to persisting symptoms, an MRI scan revealed a tubo-ovarian abscess associated with pelvic inflammatory disease (PID). We believe that the PID had developed secondary to the intrauterine device and a few weeks after the removal of the Mirena coil she was diagnosed with a tubo-ovarian abscess. As the case unfolds, we will introduce the possible diagnoses and causes that were likely to have led to the development of the abscess.

BACKGROUND

This is a rare presentation of a patient that developed a tubo-ovarian abscess after the removal of a Mirena coil. Owing to the complexity of the case, it required a multi-disciplinary approach to reach the diagnosis.

CASE PRESENTATION

A 39-year-old female patient presented to the accident and emergency department in October 2011, with abdominal pain and vomiting for 24 h. Examination revealed right iliac fossa tenderness with no signs of peritonitis. Investigations revealed a white cell count (WCC) of 19, C-reactive protein (CRP) of 95 and a negative pregnancy test. She had a medical history of peptic ulcer disease. She had four children in the past and a Mirena coil in situ for 5 years. She had been recently investigated for heavy irregular menstrual bleeding with a transvaginal ultrasound scan (USS) which was normal.

Admitting diagnosis of acute appendicitis was set, so she underwent a laparoscopic appendectomy. A normal-looking appendix was noted along with a smooth right ovarian cyst and some fibrin deposit on the uterus. Free fluid in the pelvis was sent for cultures. Postoperatively, she improved clinically with antibiotics and was discharged home 48 h later.

Postdischarge she was treated for a urinary tract infection (UTI) by her general physician (GP). The Mirena coil was also removed a few days later due to suspicion as a source of infection.

Ten days after the removal of the coil she was readmitted with right loin to groin pain, dysuria and nausea. Her inflammatory markers were raised with a WCC of 20.7 and CRP of 72. Urine and blood cultures were sent and she was started on intravenous antibiotics for UTI treatment. An USS suggested pyelonephritis in the right kidney with no hydronephrosis and a 4 cm mass lesion in the right ovary. She improved with intravenous antibiotics and was

discharged with oral ciprofloxacin. A transvaginal USS suggested that the mass lesion was a possible endometrioma or dermoid cyst and no adnexal masses or free fluid were seen.

The histology from the appendectomy showed a normal appendix and the peritoneal fluid had no growth. All her cultures from both admissions were negative.

She was readmitted six days later with recurrence of her symptoms and fever. The inflammatory markers were raised again with a WCC of 23.1, a CRP of 189 and normal renal functions. Repeat urine and blood cultures were sent and she was treated with intravenous cefuroxime and gentamicin, as discussed with microbiologist. After 3 days of intravenous antibiotics she was still spiking temperatures, so a CT scan was requested to exclude any cause of continued sepsis.

The CT scan showed a complex right deep pelvic soft tissue mass, encroaching on the pelvic course of the right ureter with secondary moderate right hydroureter and hydronephrosis (figure 1). An MRI of her pelvis showed that this mass was a complex multiseptate cyst with a right hydrosalpinx possibly due to pelvic inflammatory disease (PID).

TREATMENT

After consultation she was consented for an exploratory laparotomy and abdominal hysterectomy with bilateral salpingo-oophorectomy. She underwent a right retrograde ureteric stent insertion to protect the ureter and also improve the kidney drainage. The exploratory laparotomy which immediately followed revealed small and large bowel adhesions, pus in the pelvis and a large pelvic inflammatory mass. On closer inspection, there was a right tubo-ovarian abscess and also inflammation of her left fallopian tube and ovary. The appendix stump was normal. The pus was sent for culture and sensitivities. She had a bilateral salpingo-oophorectomy, but due to friability of the uterus the hysterectomy was not carried

Figure 1 Pelvic mass with associated hydronephrosis of the right kidney.

out. In view of the intraoperative findings metronidazole was added in her antibiotic treatment.

OUTCOME AND FOLLOW-UP

Postoperatively she spent 9 days in high dependency unit. Her recovery was slow and also complicated by post-operative ileus. Intraoperative cultures grew bacteriodes which were sensitive to metronidazole and there was no actinomycosis. Histology from the right inflammatory mass confirmed a tubo-ovarian abscess measuring 77 × 70 × 55 mm with acute on chronic inflammation and no evidence of malignancy. Histology of her left fallopian tube and the peritoneal surface of her left ovary also showed to be acute on chronic inflammation.

When reviewed in clinic 1 month after her discharge from hospital, she had fully recovered, her wound had healed and she had just started working again. She was offered Hormone Replacement Therapy after consultation but she preferred to start at a later stage.

DISCUSSION

This is an unusual presentation of a complex case which to the best of our knowledge has not been reported previously.

On her initial admission the patient was believed to have appendicitis and underwent a negative appendectomy. We believe her symptoms at that time were due to PID and the antibiotic started on admission helped mask her symptoms.

She had her intrauterine coil removed 1 week after her operation as this was suspected by her GP to be the cause of her symptoms. She was also on treatment for a UTI but this was not confirmed on medium secure unit possibly due to the fact that the patient had already been on antibiotics when the sample was taken. We can assume that the process of PID developing into a right tubo-ovarian abscess was probably delayed from her antibiotic treatment for a UTI. Looking into the series of events, the patient became more symptomatic and unwell

after her intrauterine device (IUD) was removed. It is considered as a possibility that the removal of the IUD exacerbated the PID which eventually evolved into a tubo-ovarian abscess. But we cannot be certain that this would not have occurred if the coil was left in place. At present, there are no existing publications that investigate complications related to PID after the removal of an IUD and especially a Mirena coil.

There have been reported cases of inadequately treated PID evolving to a tubo-ovarian abscess and this is usually confirmed on CT scan showing an adnexal thick-walled mass with or without hydronephrosis or hydronephrosis and periaortic lymphadenopathy.¹ Our differential diagnosis also included an infected or ruptured ovarian cyst or a dermoid cyst but they were not present on the USS 5 months prior to the patient's first admission and were not proven with pathology examination.^{2 3}

The Mirena coil is a levonorgestrel-releasing intrauterine system used in patients for contraception and heavy menstrual bleeding since 1995. Literature states that the protective effects of the Mirena coil against PID which was a question that was raised while managing our patient. Recorded side effects related to the intrauterine device are dysmenorrhoea, irregular bleeding, ectopic pregnancy, expulsion of device, PID and related to the progestogens released are bloating, weight gain and breast tenderness.^{1 4} Two possibilities were considered on why this patient developed PID despite having a Mirena coil. The first is that it is difficult to know from her records whether she had PID prior to the implantation of the IUD. The second is that the Mirena coil usually works for about 5 years after implantation and since the patient had already had hers for this amount of time it is possible that the effect of the progestogens was no longer there. This might also explain the recurrence of the patient's irregular menstrual bleeding a few months prior to her admission. Unfortunately, the Mirena coil from our patient was not sent for culture to confirm it as the source of infection.

Although it was difficult initially to understand the series of events that led to the tubo-ovarian abscess, by investigating this patient's medical history and with help from literature and imaging we can now understand how these possibly occurred.

Learning points

- ▶ Always suspect pelvic inflammatory disease as a cause of right iliac fossa pain especially in female patients with an intrauterine device.
- ▶ When removing an intrauterine device consider sending for cultures and sensitivities if suspected source of infection.
- ▶ In patients with recurrence of symptoms needing readmission consider performing imaging such as CT or MRI.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **Fulton IC**, Paterson WG, Crucioli V. Pelvic actinomycosis causing ureteric obstruction. *Case Reports Br J Obstet Gynaecol* 1981;**88**:1044–50.
2. **De Temmerman G**, Villeirs GM, Verstraete KL. Ruptured tuboovarian abscess causing peritonitis in a post-menopausal woman. A difficult diagnosis on imaging. *JBR-BTR* 2001;**86**:72–3.
3. **Saleh S**, Ahmad G, Majumdar A. Group A streptococcus necrotizing fasciitis from a levonorgestrel-containing intrauterine system ('Mirena' coil). *J Obstet Gynaecol, Gynaecology Case Reports* 2011;192–4.
4. **Lethaby A**, Cooke I, Rees MC. Progesterone or progestogen-releasing intrauterine systems for heavy menstrual bleeding. *Cochrane Database Syst Rev* 2005;**19**:CD002126.

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