Reminder of important clinical lesson

Candida: an unexpected cause of the acute abdomen

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SUMMARY

The infected intrauterine contraceptive device (IUCD) is a well-described cause of the acute abdomen. However, severe pelvic infection from *Candida* is an extremely rare complication of the IUCD. We present the first reported description of a *Candida*-infected IUCD manifesting as an acute abdomen where the degree of infection precluded a conclusive diagnostic workup and necessitated multiple laparotomies. This case highlights the importance for the clinicians to thoroughly exclude such causes of acute sepsis even after exclusion in the presenting history.

BACKGROUND

Amongst the myriad complications of intrauterine contraceptive devices, the complication of pelvic infection with *Candida albicans* subsequently presenting as an acute abdomen has never previously been reported.

CASE PRESENTATION

A 51-year-old Caucasian woman was referred by her general practitioner to the surgical assessment unit with a 2-day history of worsening right loin pain associated with anorexia and severe urgency of defaecation. Past medical history included poorly controlled diabetes mellitus, smoking 10 packs/year and no recent sexual activity. Abdominal examination revealed generalised abdominal distension and a firm, tender, suprapubic mass. She was pyrexial (38.4°C) with a respiratory rate of 25/min, pulse of 114/min and blood pressure of 154/94 mm Hg.

Urgent blood tests yielded leucocytosis (25.4×10⁹/l, normal 4–11×10⁹/l) and a raised C reactive protein (471.7 mg/l, normal 0–5 mg/l). Plain abdominal radiography was unremarkable. An abdominal and pelvic ultrasound was carried out, which revealed dilated intrahepatic and common bile ducts and bilateral hydronephroses. An intrauterine contraceptive device (IUCD) was seen in the cervical region and a cystic mass with prominent septae (figure 1) was seen adjacent to the bladder raising the possibility of an ovarian cyst. Within this time, two separate sets of blood cultures (ie, a second set obtained due to repeated spikes in temperature), including urine and stool cultures, revealed no infectious organisms whatsoever.

A CT scan of the abdomen was requested and this revealed a large pelvic abscess (14.5 cm × 8.5 cm, figure 2) containing a small focal density. The radiological diagnosis was that of an appendicular abscess with a small appendicolith. Bilateral cystic dilatations related to the adnexa suggested secondary hydrosalpinges. The IUCD was confirmed to be lying within the cervix (figure 3). The patient was started on intravenous fluids and antibiotics (cefuroxime and metronidazole). In view of the clinical and radiological findings, a laparotomy was performed and the pelvic

abscess was drained. The cause of the abscess was not easily identifiable so a thorough lavage was undertaken. Two drains were placed into the pelvis and the abdomen was closed.

Three days later, the patient again deteriorated, showing signs of severe sepsis (temperature 38.5°C, pulse 123/min, blood pressure 117/67 mm Hg and respiratory rate 30/min). Another set of blood cultures was obtained but, as with previous sets, this also eventually revealed no infectious organisms. A subsequent CT scan demonstrated a recurrent right adnexal collection and a left-sided pelvic collection tracking up anteriorly to the left psoas muscle. The decision was made for a 'relook' laparotomy and a gynaecological opinion was requested intraoperatively. A salpingectomy was performed for a right pyosalpinx; the appendix was also removed followed by a pelvic lavage. It was at this juncture that a discussion occurred about the IUCD being the likely cause of pelvic infection. The IUCD threads were visible at the cervix and the copper device was easily removed. After 2 days in intensive care, the patient was transferred to the ward.

Microbiological analysis of pus samples from the pelvis and the IUCD was positive for *Candida albicans*. It was suggested that the tubo-ovarian abscess and subsequent pelvic infection were consequences of the *Candida*-infected IUCD. The patient later described having the IUCD inserted over 10 years prior to this without having the IUCD checked or changed since then.

OUTCOME AND FOLLOW-UP

Our patient underwent a relatively prolonged inpatient recovery but was well when reviewed 2 months post-discharge.

DISCUSSION

Loin pain in the acute abdomen is commonly urological in origin (eg, pyelonephritis). In females, differential diagnoses include gynaecological (eg, ectopic pregnancy, ruptured ovarian cyst, endometriosis, pelvic inflammatory disease (PID)) and gastrointestinal (eg, appendicitis, bowel abscess) pathologies.

Figure 1 Pelvic ultrasound scan demonstrating a hypoechoogenic region with visible septae (thick arrows) and the adjacent bladder (thin arrow).

Figure 2 Pelvic CT scan demonstrating a 14.5×8.5 cm abscess (arrows) within the pelvic cavity.

Figure 3 Pelvic CT scan confirming the presence of the intrauterine contraceptive device within the cervix (arrow).

The loin pain in our patient was attributed to tubo-ovarian abscess but the cause of this could not be identified at the first laparotomy—the sheer amount of pus in the abdomen had precluded adequate identification of pelvic anatomy. Despite medical treatment and surgical drainage, worsening sepsis ensued. The second CT scan localised the displaced IUCD previously suggested on ultrasound. The second laparotomy saw far better anatomical definition following the abscess drainage; the IUCD was then removed and the patient subsequently improved. It should be noted that over the course of treatment, no antifungal drugs were prescribed empirically (ie, before confirmation of IUCD contamination) because of the rarity of *Candida* in such presentations (see below). In addition, the local microbiologist on many occasions advised against the administration of antifungal treatment even after IUCD removal because not only had the source of infection been removed, but all previous blood cultures had been negative.

In this case, the displaced IUCD was believed to be the source of the pelvic abscess. A literature search of Medline, Embase and NHS Evidence revealed rare descriptions of septic complications of uterine coils. Prolonged retention of an IUCD (>8 years) may lead to salpingitis and tubo-ovarian abscess.¹ There is a small increase in the risk of pelvic infection in the first 20 days after insertion of an IUCD. Thereafter, the risk is the same as in the non-IUCD using population during licensed use. In the UK, the greatest duration of licensed IUCD use is 8 years. However, it is accepted UK practice to recommend that a copper IUCD inserted at age

40 years or over may be retained beyond the licensed duration until contraception is no longer required.² The overall rate of PID among 22 908 IUCD insertions and during 51 399 woman-years of follow-up was 1.6 cases per 1000 woman-years of use.³ A retrospective study of 62 cases of pelvic abscesses showed that 36% underwent either laparotomy or laparoscopy.⁴

Despite the above, the authors acknowledge that sheer contamination of an IUCD does not necessarily implicate it as an infectious focus of sepsis or imply that the contamination is the source of any subsequent ascending infection. It is increasingly acknowledged that PID may be caused by fastidious, hard-to-culture, organisms (eg, certain anaerobes).⁵ Whether or not empirical antifungal treatment would be beneficial in such situations is unclear but it is imperative that expert microbiological advice is sought in all of such circumstances.

Actinomyces israeli is the commonest organism associated with IUCD-related pelvic abscesses and septic complications. While IUCD-related actinomycosis is well-documented in the literature, only two cases of *Candida*-related tubo-ovarian abscess from IUCDs have been published to date.^{6,7} Our patient had several risk factors for candidiasis, including her age, poorly controlled diabetes mellitus and smoking. However, it may be worth considering the possibility that although only *Candida* was cultured from our patient's IUCD, the intravenous antibiotics administered may have suppressed any *Actinomyces* or other co-existing organisms. Nonetheless, *Candida* should be considered a cause in any case where tubo-ovarian abscess remains unresponsive to conventional antibiotic treatment particularly

in patients with risk factors for *Candida* infection and who have an IUCD in situ.⁴

In the UK, approximately 5% of all sexually active women use IUCDs.⁸ Current standards of follow-up care have significantly reduced the incidence of associated PID and pelvic abscess in long-term IUCD users. Nevertheless, we recommend that the presence of an IUCD be thoroughly excluded in all cases with a working diagnosis of pelvic abscess based on clinical or ultrasonographic evaluation. Within the realm of general surgery, it is imperative that a focused gynaecological history be obtained in all cases of acute abdomen in females: particularly, the type and duration of contraception should be ascertained, regardless of age.

In summary, intrauterine devices should always be considered as a potential source of infection in gross PID. The authors also emphasise the need for IUCD users and primary care practitioners to be aware of the role of regular 'coil checks' in avoiding such rare but potentially life-threatening complications.

Learning points

- ▶ Clinicians must always consider forgotten contraceptive devices as a potential cause of acute sepsis even after exclusion in the presenting history.
- ▶ Infected devices may yield atypical organisms that are often unresponsive to initial treatment—further investigations must be sought immediately to prevent unnecessary deterioration.
- ▶ Both IUCD users as well as primary care practitioners must advocate regular device checks for as long as local guidelines dictate.

Competing interests None.

Patient consent Obtained.

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Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Thrumurthy SG, Tiew S, Wood N, Bhowmick A. *Candida*: an unexpected cause of the acute abdomen. *BMJ Case Reports* 2010;10.1136/bcr.04.2010.2948, date of publication

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