

Diagnostic dilemma posed by severe pelvic actinomycosis associated with prolonged use of copper intrauterine contraceptive device

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Abstract

Actinomycosis has been recognized to be associated with the use of intrauterine contraceptive device. We are reporting a case where a patient with severe pelvic actinomycosis presented with the clinical picture of an ovarian tumour. A 44-year-old lady attended the A&E with progressively worsening lower abdominal pain. A computerized tomography (CT) scan showed the presence of a large pelvic mass, right hydronephrosis and prominent para-aortic lymph nodes and an elevated C-reactive protein (CRP) and white cell count (WCC). When there was no improvement with antibiotic therapy, a laparotomy was performed, where bilateral tubo-ovarian abscess and dense adhesions were found. A subtotal hysterectomy, bilateral salpingoophorectomy and small bowel resection was performed. Histopathology of the specimen confirmed the diagnosis of actinomycosis. The case highlighted the diagnostic dilemma for ascertaining the nature of the pelvic mass in this patient. Due to its invasion of surrounding tissues and the formation of masses severe infection is often confused with an ovarian neoplasm.

Introduction

Actinomycosis is caused by the anaerobic bacterium *Actinomyces israelii*. Infection and asymptomatic cervicovaginal colonization with *Actinomyces* have been recognized as potential consequences of the use of intrauterine contraceptive device (IUCD).¹⁻³ The reported prevalence of infection with *Actinomyces israelii* in the IUCD user ranges from 1.6% to 11.6%.⁴ Rarely, symptomatic infection may occur, with the potential for extensive morbidity and even death.² We report a patient who presented with the clinical picture of an ovarian tumour but was later diagnosed with pelvic actinomycosis. Because of the current resurgence in the prescribing and use of IUCD,⁵ we

feel that it is particularly important to highlight this case.

Case Report

A 44-year-old lady attended the accident and emergency department with lower abdominal pain for two months, which was getting progressively worse. The pain was severe in nature and radiating to her back. Her urine pregnancy test was found to be negative. She was pyrexial (38.7°C) and had an elevated serum C-reactive protein (321 mg/L) and white cell count (19.8×10⁹/L). She was anaemic with haemoglobin of 6.5 gm/dL. At clinical examination a high vaginal swab, an endocervical swab and a Chlamydia swab were taken, which were found to be negative later on.

Her past medical history was unremarkable. She had one spontaneous vaginal delivery and three previous terminations of pregnancies. She also gave the history of weight loss of approximately 6 kg in last six months. She was using copper IUCDs for last twenty years, which were changed every five years with the exception of the latest IUCD, which was left in situ for seven years. This IUCD was only removed when the abdominal pain first presented two months ago.

After admission, she had a computerized tomography (CT) scan which showed the presence of a pelvic mass measuring 14×10×14 cm together with right hydronephrosis. The para-aortic lymph nodes were prominent. Although the provisional diagnosis was an ovarian tumour, her serum carcinoembryonic antigen and cancer antigen 125 (CA 125) were both normal. A pelvic ultrasound scan was subsequently performed which showed the presence of a mixed echogenic mass measuring 44×44×63 mm in the expected position of the right ovary with no abnormal blood flow detected within it. The left ovary measured 36×44×59 mm and contained a haemorrhagic cyst, which was very vascular centrally. The appearance of this ovary was noted to be atypical. There was a small amount of free fluid in the pelvis. The rectum was seen to contain fluid and appeared thick walled.

After empirical broad-spectrum parenteral antibiotic therapy (co-amoxiclav and metronidazole) for 3 days, there was no clinical improvement. A laparotomy via a midline infraumbilical incision was then performed. There was a large amount of turbid free fluid in the pelvis, a sample of which was sent for bacteriological culture and sensitivity as well as cytological examination. The uterus was noted to be small and fixed in the retroverted position as well as to the sigmoid colon. Bilateral tubo-ovarian abscess was noted which were adherent to the small and large

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Key words: actinomycosis, pelvic mass, ovary, neoplasm, copper intrauterine contraceptive device.

Received for publication: 9 October 2011.

Revision received: 9 October 2011.

Accepted for publication: 2 November 2011.

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Clinics and Practice 2011; 1:e112

doi:10.4081/cp.2011.e112

bowel. Both adnexae were digitally mobilised with pus seen draining and further swabs were taken for culture and sensitivity. At this stage, two bowel perforations (small bowel and sigmoid colon) were noted and the general surgeons were then consulted. A small tissue biopsy of the inflammatory mass was obtained for fresh frozen section, which showed the presence of inflammatory tissue only without any sign of malignancy. Following mobilisation of sigmoid colon from the uterine corpus, a subtotal hysterectomy and bilateral salpingoophorectomy was then performed. A small bowel resection with primary anastomosis as well as a Hartman's procedure (end colostomy and oversewing of the rectal stump) was then performed. The urological surgeon was then consulted in order for the right ureter to be stented and a retrograde ureterogram performed because of the presence of a dilated right ureter found on the pre-operative CT scan. The cystoscopy also showed the presence of squamous metaplastic changes in the bladder trigone.

Her intraoperative blood loss was estimated to be 1600 mL and hence the patient was transfused with 2 units of packed red blood cells. The patient was transferred to the High Dependency Unit (HDU) and total parenteral nutrition was then started after 2 days post-operatively. Her antibiotic treatment was changed to intravenous ceftriaxone due to the severity of the pelvic abscess observed during the laparotomy but this was subsequently changed to oral amoxicillin once the microbiological source of the abscess was known.

The pathology report showed that the right fallopian tube and both ovaries were ragged and congested with abscess formation with the presence of fibrinous exudate on the surfaces. There was also fusion of tubal plicae with

acute and chronic inflammation and thickening of the wall of the fallopian tube with acute xanthogranulomatous inflammation and granulation tissue formation. The tissue surrounding the left ovary also contained thick yellow material. A focal area of serosal congestion and fibrinous exudate was identified in the segments of large and small intestine but no intrinsic abnormality was identified.

Microscopic examination of the fallopian tubes and ovaries revealed inflammation and abscess formation with many small abscesses, in the centre of which branching filaments (highlighted on Gram staining, were present Figures 1 and 2). The appearances were typical of actinomycosis infection. Sections of the large and small intestines also showed extramural abscess formation, with actinomycosis present in the small bowel. There was no evidence of malignancy.

There was no significant growth obtained from the microbiological swab from the pelvis but specific culture for actinomyces infection was not undertaken on this swab, as the diagnosis was not suspected until the pathology report was obtained.

The patient was then subsequently discharged home after 3 weeks. We plan to continue treating this patient with long-term oral amoxicillin treatment for 12 months before the colostomy will be reversed.

Discussion

Actinomycosis is caused by gram positive bacteria which form fungus like branched networks of hyphae. Most cases of actinomycosis in humans are caused by *Actinomyces israelii*, which is part of the normal flora of the colon, mouth, and the female genital tract which is often associated with an IUCD being *in situ*.¹⁻³ The bacteria grow in clusters of tangled filaments surrounded by neutrophils and, once locally established, invade surrounding tissues producing chronic suppurative infection often with sinus formation and fibrosis. Pelvic actinomycosis is uncommon and may be found in the presence or absence of intrauterine contraceptive devices.⁶ Due to its invasion of surrounding tissues and the formation of masses is often confused with an ovarian neoplasm.⁷⁻¹⁰ It may also present with vaginal discharge, abdominal or pelvic pain, menorrhagia, fever, weight loss, or tubo-ovarian abscess.¹¹

This case was different from the previously reported cases in two main aspects. Firstly, the patient did not respond to broad-spectrum intravenous antibiotics administered for more than 72 h with static inflammatory markers and no alleviation of symptoms. Due to the lack of clinical improvement with conservative management, a decision was made to undertake a laparotomy. Secondly, the inflammation caused extensive small and large bowel adhesion resulting in the likelihood of bowel perforation during laparotomy. These two very important points should be remembered while undertaking surgical management of a patient with possible actinomycosis infection.

This case highlighted the diagnostic dilemma for ascertaining the nature of the pelvic mass in this patient and the significance of having a recent IUCD *in situ* (which was removed after a long time - seven years instead of usual five years), was not immediately apparent to all the health care professionals involved in her care. The clinical picture initially appeared to be that of ovarian cancer as she presented with weight loss and pain abdomen with the CT scan findings of a complex ovarian mass.

Long-term antibiotic therapy is required with pelvic actinomycosis to ensure that the

infection is adequately treated.¹² Whilst the patient is still on antibiotic therapy, it will be prudent not to attempt reversal of her colostomy. Radiological studies with barium contrast of the rectal stump will be undertaken following the completion of the antibiotic treatment prior to any attempt made to reverse this patient's colostomy.

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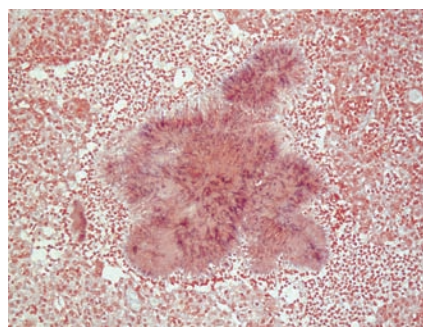


Figure 1. Right tubo-ovarian abscess with *Actinomyces* showing colonies of branching filaments with surrounding neutrophils polymorphs (Haematoxylin & Eosin $\times 100$ magnification).

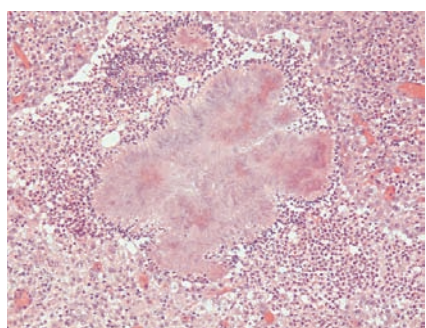


Figure 2. Right tubo-ovarian abscess with branching filaments of *Actinomyces* highlighted by Gram stain (Gram stain $\times 100$ magnification).