Abdominal actinomycosis following a forgotten intrauterine contraceptive device

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INTRODUCTION

Pelvic actinomycosis has been associated with the use of intrauterine contraceptive devices (IUCDs) (Henderson, 1973; Purdie et al, 1977), and actinomyces-like organisms are found quite commonly in cervical smears in the presence of such devices (Gupta et al, 1976; Valincenti et al, 1982). In the majority of cases, this probably represents superficial colonization or superficial infection, and invasive actinomycosis is only a rare complication. However, the risk of invasive infection is known to increase with the length of use of such a device (Fiorino, 1996).

CASE REPORT

A 57-year-old housewife presented with a 4-month history of anorexia and weight loss of 3 stone, abdominal distention and discomfort. Her medical history included diet-controlled diabetes mellitus, diagnosed 6 years previously, as well as long-standing hypertension and arthritis affecting the knees and hands. She took atenolol to control her blood pressure and naproxen for her arthritis. She had stopped smoking 6 years previously and drank minimal quantities of alcohol.

Clinical examination revealed that she was unwell and cachectic, with a low-grade temperature of 37.5°C and a tachycardia of 115 beats per minute, but with normal blood pressure. The abdomen was distended and mildly tender, with two discrete rounded masses approximately 8 cm in diameter palpable just below the umbilicus and a further mass in the left hypochondrium. Initial investigations showed a markedly elevated white cell count at 34.3 x 10^9/litre (predominantly neutrophils) and C-reactive protein at 256 mg/litre. A plain abdominal film showed an intrauterine contraceptive device (IUCD) in situ and a suggestion of a soft tissue mass arising from the pelvis. A computed tomography (CT) scan of the abdomen and pelvis with contrast (*Figures 1* and *2*) revealed multiple thin-walled cystic masses (maximum diameter 5 cm) adjacent to the uterus, in the anterior abdominal wall, in the mesentery and in the left flank at the level of the tail of the pancreas. Thickened loops of small bowel were noted in association with proximal small bowel dilatation. An IUCD was also noted in the uterus. The appearances were thought most likely to represent disseminated malignancy.

An ultrasound-guided aspiration of one of the cystic lesions obtained offensive smelling pus. A Gram stain of the material revealed pus cells, Gram-positive branching bacilli, Gram-negative bacilli and Gram-positive cocci. Subsequently, *Actinomyces* and *Bacteroides* species were isolated.

On further questioning, the patient said that she had had a coil fitted some 20 years ago and that her periods had stopped some 15 years previously. Over recent months, she had noticed a brownish vaginal discharge. She had not consulted her GP concerning this and could not remember when she last had had a cervical smear. Vaginal examination revealed offensive discharge and the string of the IUCD, which was removed and sent for culture. Subsequently, *Actinomyces* and *Bacteroides* species were also isolated from the IUCD.

The patient was commenced on intravenous cefuroxime 1.5 g 8-hourly, benzyl penicillin 2.4 g 4-hourly and metronidazole 400 mg orally. The three largest collections of pus were drained percutaneously under ultrasound guidance; approximately 50 ml of pus was obtained on each occasion. Her course was complicated by upper intestinal obstruction; further CT and barium studies suggested the presence of small bowel involvement with a fistula in communication with the uterus. However, the signs of obstruction settled with conservative management. Approximately 14 days after starting antibiotic therapy, she had a large haematemesis, and an actively bleeding gastric ulcer was observed on endoscopy. Again, this settled on medical management. Thereafter, she improved markedly, and her antibiotic regimen was changed to intravenous ceftriaxone 2 g once daily with oral metronidazole so that she could be discharged home. Intravenous antibiotics were continued for a total of 10 weeks followed by oral amoxycillin to complete a total of 6 months' antibiotic treatment. A follow-up CT scan at 7 months showed resolution of disease, and she remains well 18 months after the original diagnosis.

DISCUSSION

Actinomyces spp., of which *A. israelii* is the most common, are Gram-positive, branching filamentous bacteria which are normal inhabitants of the gastrointestinal tract, including the oral cavity and possibly the female genital tract (Burden, 1989). The infection is characterized by chronic localized suppuration with abscess formation and tissue fibrosis. The commonest sites of infection are the jaw, lungs, liver, ileocaecal junction and pelvis (ranging from endometritis to pelvic inflammatory disease and abscess formation).

The diagnosis may be suspected on the Gram stain, particularly if the characteristic 'sulphur granules' are present, but prolonged anaerobic culture is required for isolation of the microorganism. Frequently, other anaerobic species such as *Bacteroides* spp. are also isolated. Computed tomography is considered to be the most useful imaging modality. Abdominal actinomycosis is characterized by invasion across

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Figure 1. Intravenous contrast enhanced axial computed tomography scan of the abdomen showing multiple thin-walled enhancing cystic structures in the anterior abdominal wall (arrows).

tissue plains, a marked fibrous reaction and multiloculated cystic masses with central areas of low attenuation, with patchy enhancement of cyst walls after contrast (Allen et al, 1987; Ha et al, 1993).

Actinomycosis in association with a modern IUCD was first reported in 1973 (Henderson, 1973), and approximately 90 such cases have since been described (Fiorino, 1996). On average, such infected patients have had an IUCD in situ for 8 years; invasive disease has not been described in users of less than 3 years. Subsequent studies have shown that actinomyces-like organisms are common (1–20%) in cervical smears taken from asymptomatic women fitted with these devices (Gupta et al, 1976; Valincenti et al, 1982; Fiorino, 1996). The importance of this finding is controversial as invasive pelvic actinomycosis is so rare. In addition, the microorganisms are no longer seen in the majority of smears within a month or so of removal of the IUCD even without antibiotic therapy, suggesting that the infection is superficial in most instances (Valincenti et al, 1982).

As demonstrated by this case, pelvic actinomycosis can mimic pelvic malignancy, and thus patients may undergo laparotomy (Stringer and Cameron, 1987; Perlow et al, 1991). However, if the diagnosis can be made preoperatively, treatment with antibiotics with or without percutaneous drainage may be sufficient. Prolonged antibiotic treatment, from several weeks to a year, is recommended (Burden, 1989). It is possible that this patient was more susceptible to this infection because of her diabetes.

CONCLUSIONS

While the risk of invasive actinomycosis as a complication of the presence of an IUCD is rare, such devices should be removed if they are no longer necessary. HM

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Figure 2. Intravenous contrast enhanced axial computed tomography scan of the pelvis showing a forgotten intrauterine contraceptive device within the uterus (arrow).