

## **A rare cause of recurrent intra-abdominal sepsis**

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### **Introduction**

Actinomycosis is a chronic granulomatous infection caused by *Actinomyces israelii* [1]. This organism causes a chronic inflammatory reaction in the host tissues leading to considerable morbidity. Since the clinical presentation mimics several other conditions such as malignancy, tuberculosis and Crohn's disease, there can be many pitfalls in its diagnosis. We wish to report a female who developed recurrent intra-abdominal abscess due to Actinomycosis.

### **Case report**

Our patient was 39 years old when she first presented with complaints of left lower abdominal pain, intermittent fever associated with chills and anorexia for duration of 1 month. She had no alteration of bowel habits. There were no features of intestinal obstruction. She had no urinary tract symptoms or menstrual irregularities. However, she used an intra-uterine contraceptive device (IUCD). There was no contact history of tuberculosis. She was a hypertensive patient on regular treatment. Although she was obese, a vague intra-abdominal mass was palpable in the left iliac fossa. The mass was tender, but rest of the abdomen was soft and non-tender. The clinical examination of the rectum was nil of note. She had low grade fever with a neutrophilic leucocytosis. All other

haematological and biochemical investigations were normal. Ultrasound and CT scans of the abdomen were suggestive of an inflammatory lesion in the left lower abdomen with abscess formation. As it was not feasible for percutaneous drainage, urgent exploratory laparotomy was planned to drain the abscess.

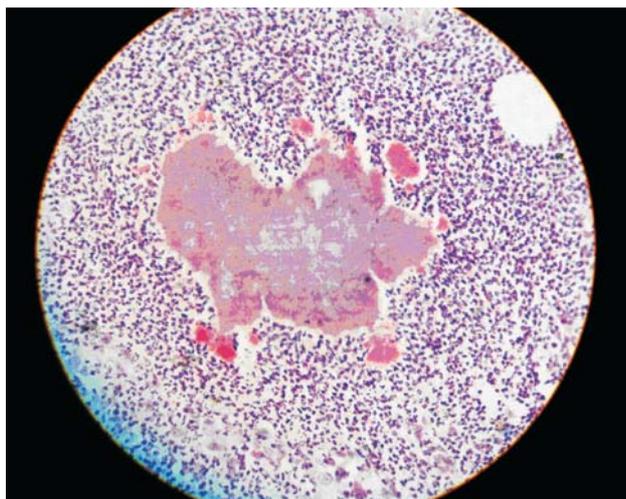
At surgery, a large inflammatory mass was seen involving the small bowel, sigmoid colon and omentum. Adherent bowel loops were released to drain the abscess and the involved omentum was resected. Pus and the resected omentum were sent for microbiological and histopathological assessment. There was no evidence of bowel perforation and the abdomen was closed without a drain. Intravenous Cefuroxime and Metronidazole were used as empirical antibiotics. She had an uneventful recovery and was discharged a week after the surgery.

The histopathological assessment of the specimen revealed sulphur granules with filamentous bacilli radiating from them, suggestive of actinomycosis (Figure 1). She had recovered fully from the procedure by this time and prophylactic oral Penicillin was started, with advice to continue the drug for at least six months. The IUCD was removed in the outpatient department.

Exactly a year later, she presented with similar complaints. A CT scan was done this time which confirmed a recurrence of the abscess at the original site. Open drainage was again performed and the size of the abscess was found to be smaller. Therapeutic doses (4 MU 6 hourly) of intravenous Penicillin were administered for three weeks postoperatively.

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**Figure 1.** Colony of *Actinomyces sp.* surrounded by neutrophils (H&E stain, 40 magnification)

Except for post operative fever during the first 48 hours, the recovery was uneventful. She was sent home with prophylactic oral Penicillin for another six months. On follow up, she shows no signs of a recurrence for the past 3 years.

## Discussion

Actinomycosis is an uncommon, chronic granulomatous disease characterized by abscess, sinuses and fistulae formation. A gram-positive, anaerobic filamentous organism named *Actinomyces israelii* is the human pathogen. With a worldwide distribution, it affects mostly middle-aged individuals and has a male preponderance [1]. As many other infectious, neoplastic, and drug-related conditions simulate actinomycosis, it is important to arrive at an accurate diagnosis to avoid undue morbidity.

Actinomycetes are commensals of the oral cavity and intestinal tract [2] and acquire pathogenicity through invasion of injured or necrotic tissue. With time the infection progresses, having little regard to tissue planes, causing extensive tissue fibrosis and necrosis, and gives rise to abscesses, sinuses, and fistulae [1]. There are four main clinical forms of actinomycosis. Faciocervical is the commonest (50%). Intra-abdominal (usually ileocaecal), thoracic and hepatic are the other varieties [3].

Actinomycosis is an elusive disease and many an occasion the clinician confuses it with

malignancy, tuberculosis, Crohn's disease or carcinoid, subjecting the patient to laparotomy or resection. The infection seems to occur after the mucosal surface is breached by disease, perforation, or trauma. When the mucosal barrier is broken, actinomyces may cause multiple abscess formation, draining sinuses, abundant granulation, and dense fibrous tissue, abdominal involvement, or mass lesions [4]. Typically, patients present, like our patient did, with a chronic, non-tender, slow growing, indurated mass, which evolves into an abscess, fistulae, and sinus tracts. Diabetes mellitus, immunosuppression, malnutrition and poor oral hygiene are pre-disposing factors. As in our patient, abdominal actinomycosis has an association with the use of intra-uterine contraceptive devices [5].

Barium enema and CT scan can help in determining the exact site and extent of pathology, but the findings are non-specific and could be elusive. Colonoscopic findings are also varied, but help in obtaining a tissue sample for histologic evaluation [5]. Definitive diagnosis of actinomycosis depends on demonstrating the organism or its sulphur granules in pus or in tissue section. On microscopy, gram positive branching bacilli are seen to radiate from central sulphur granules, hence the nick 'ray fungus' [6]. Culture is more specific, but it requires an anaerobic environment and takes two to four weeks for the organism to grow [1,6].

Penicillin is the drug of choice in actinomycosis. Initial intravenous treatment with high doses of Penicillin G (10-20 MU daily in divided doses) followed by oral Penicillin for another six to twelve months is usually adequate. Clindamycin, Erythromycin and Tetracycline are alternatives for those who are allergic to Penicillins [1]. Surgery is indicated when there is necrosis, abscess formation, recurrent disease or when a definitive diagnosis is not made. A combined medical and surgical treatment is curative in the majority and mortality is rare [1].

Authors wish to draw the attention of the readers to the recurrent, chronic nature of this infection, which can give rise to considerable morbidity.

The need for a high index of suspicion, especially in those who are vulnerable and its association with intra-uterine contraceptive devices is also highlighted.

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### Key Learning Points

Recognize actinomycosis as a cause of recurrent chronic intra-abdominal sepsis.

Importance of differentiating actinomycosis from other conditions that it may mimic, such as malignancy, Crohn's disease and tuberculosis.

Association of abdominal actinomycosis with intra-uterine contraceptive devices.