# Primary anterior abdominal wall actinomycosis

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## ABSTRACT

**Actinomycosis of the anterior abdominal wall is rare. We report a 50-year-old diabetic man who presented with a left hypochondrial mass of three weeks duration associated with fever. Abdominal computed tomography showed a 2x4 cm mass projecting from the internal abdominal wall associated with surrounding inflammation. The mass did not decrease after a week of intravenous antibiotics. Excision of the mass and primary closure of the abdominal wall were performed. The mass involved the deep muscles of anterior abdominal wall. The omentum was adherent to the parietal peritoneum underneath the mass. Microscopical examination of the mass was consistent with actinomycosis. The postoperative period was uneventful and the patient recovered completely. The patient received penicillin for six months.**


**Key words: actinomycosis, abdominal muscle, abdominal wall mass.**

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## INTRODUCTION

Actinomycosis is a subacute/chronic bacterial infection that affects different body regions. It is caused by gram-positive filamentous anaerobic to microaerophilic bacteria. Actinomyocytes are common saprophytes in the mouth, gastrointestinal tract, and vagina. It may present as chronic suppurative inflammation or sinus formation[1,2]. Abdominal involvement is usually associated with right-sided infection following appendicitis that causes breakdown of the mucosa. Isolated involvement of the abdominal wall is extremely rare. Only eight cases have been reported in the English literature[3]. Herein, we report a recently-diagnosed case of abdominal wall actinomycosis.

## CASE REPORT

A 50-year-old Bangladeshi man complained of a painful left hypochondrial swelling of three weeks duration associated with fever. The patient denied any history of trauma, abdominal surgery, accidental pricks, or injection at that site. He is a known diabetic on oral hypoglycaemics and had an attack of myocardial infarction four years ago. On admission to the hospital, the patient had normal temperature, with a regular pulse of 90/minute, and normal blood pressure. Abdomen was soft. A relatively fixed tender mass with smooth surface and ill-defined edges, was located in the left hypochondrium. Blood investigations revealed haemoglobin of 13.1 g/dL, total white blood cell count of 10.2 x$10^9$/L and serum glucose of 290 mg/dL. Serum amylase, blood electrolytes, liver function test, and chest and abdominal radiographs were all normal.

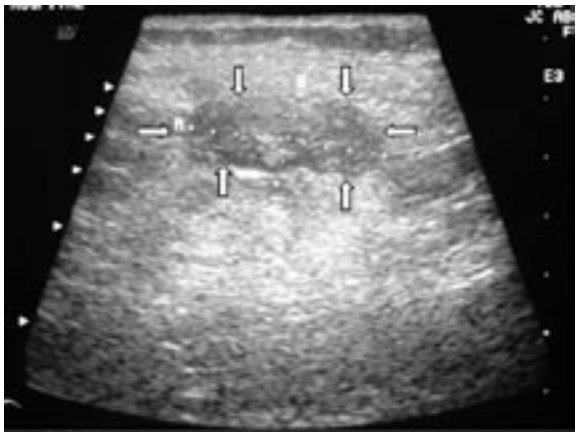

**Fig. 1** Abdominal US image shows an irregular 5cm diameter mass in the left hypochondrial area close to the anterior abdominal wall (arrows).

Ultrasonography showed an irregular mass measuring 5 cm in diameter in the left hypochondrial area close to the anterior abdominal wall (Fig. 1). Computed tomography (CT) of the abdomen with oral and intravenous contrast showed an irregular density measuring 2x4 cm projecting from the internal abdominal wall. The lesion showed a faint contrast enhancement and mild surrounding inflammatory changes with no involvement of the bowel (Fig. 2). Colonoscopy showed a polyp at the mid-colon, which was excised. Histology of the polyp showed

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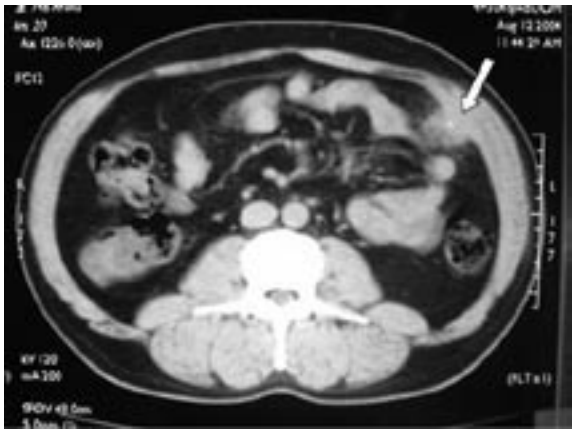

**Fig. 2** Abdominal CT image shows an area of irregular density projecting internally from the left anterior abdominal wall (arrow).

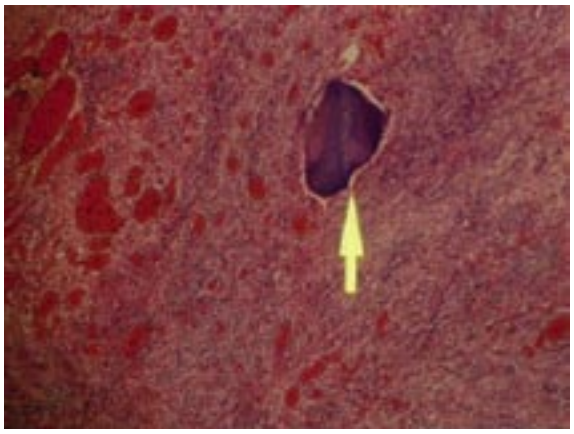

**Fig. 3** Photomicrograph shows gram-positive bacterial filamentous colonies, which are seen within the microabscesses, are consistent with actinomycosis (arrow). (Haematoxylin & eosin, x10).

inflamed colonic mucosa with dominant infiltration by eosinophils. There was no evidence of dysplasia or malignancy.

CT-guided fine-needle aspiration cytology and trucut biopsy of the mass showed features consistent with a non-specific inflammatory process. Both were negative for malignancy. The patient received Tazocin 4.5 mg intravenously eight hourly for one week but the mass did not decrease in size. The patient had a normal body temperature during this period. Since malignancy could not be ruled out, a decision to excise the mass was made. Excision of the mass en-bloc was done under general anaesthesia. The mass was formed of loculated areas containing yellowish granules. It involved the deep layers of abdominal wall muscles, invading the peritoneum, and it was adherent to the omentum. The mass was separated from the omentum, excised completely, and sent for frozen section to rule out neoplastic lesion. It was reported as actinomycosis. The wound was then closed primarily.

Histological examination of the mass showed severe non-specific inflammation with formation of microabscesses. Gram-positive filamentous bacterial colonies were seen within the microabscesses, consistent with actinomycosis. There was no evidence of malignancy (Fig. 3). The postoperative period was uneventful and the patient recovered completely. The patient received intravenous penicillin, Three million units every four hours for ten days followed by oral penicillin, 500 mg every six hours, over a total duration of six months.

## DISCUSSION

Actinomycetes are anaerobic gram-positive filamentous bacteria that was previously misdiagnosed as a fungus. The most common isolated species are *Actinomyces israeli, gerencseria,* and *naeslundii*[2]. Actinomycosis is generally a polymicrobial infection. Establishment of disease in man may require the presence of companion bacteria that act as a co-pathogen to enhance the relatively-low invasive power of actinomycetes. This may be responsible for the early manifestation of fever[1, 4].

Immunocompromised status, such as diabetes mellitus, steroid therapy, and neoplasm, is a significant predisposing factor for actinomycosis. Bowel surgery or ingestion of a foreign body may introduce the disease into the deep tissues[3]. Retrograde spread of the actinomycetes from the duodenum can affect the gall bladder[5]. In our case, as no obvious history of mucosal disruption or trauma was found, haematogenous spread of the bacteria can explain such rare locations of actinomycosis[6]. The disease usually presents as a slowly-growing mass with eventual formation of sinuses discharging serosanguinous pus containing "sulfur" granules, which represent macrocolonies of actinomyocytes[7].

The diagnosis of primary actinomycosis of the anterior abdominal wall is established by exclusion of intra-abdominal organ involvement. The infection involves mainly the musculo-aponeurotic layers of the abdominal wall similar to our patient[8,9]. The actual pathogenesis of the isolated abdominal wall actinomycosis remains unclear. If seen, the "sulfur" granules are pathognomonic, but these are not always present[10]. In our patient, we noticed these granules only during surgery.

There is no diagnostic serological test for actinomycosis. CT usually reveals an infiltrative lesion with irregular density and contrast enhancement. Fine-needle aspiration and trucut biopsies are occasionally non-diagnostic, and in our case, showed only features of non-specific inflammation. Surgery limited to incision and drainage of large abscesses

with abscess wall biopsy may reach the diagnosis in some cases. Excision of the mass was indicated in our patient because of suspicion of a muscular tumour[10]. Definitive diagnosis was reached only after the histological examination of the excised mass.

Because of excessive fibrosis and low vascularity, actinomycosis infection needs a lengthy antibiotic administration. Penicillin is the drug of choice and if the proper dose is given, cure is almost certain[11].

In summary, isolated actinomycosis of the abdominal wall is an extremely rare clinical entity. The exact pathogenesis remains to be elucidated. Clinicians should be aware of such presentation so that when it is suspected appropriate anaerobic cultures can be taken and tissues carefully examined.

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