Case report

Actinomycosis of the colon with invasion of the abdominal wall: An uncommon presentation of a colonic tumour

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ABSTRACT

Actinomycosis is an uncommon chronic suppurrative infectious disease that is caused by Actinomycetes organisms, which are gram-positive, microaerophilic, anaerobic bacteria. The most common type causing disease in humans is Actinomyces israelii. This organism is a commensal of the human mouth and is seldom pathogenic. When it does cause disease, however, three main clinical types of involvement are recognized including cervico-facial, thoracic and abdominal actinomycosis.

Herein, we present the case of a 79-year-old male patient who underwent surgical exploration following presentation with abdominal pain and an abdominal mass, initially thought to be a malignancy. Pathologic examination confirmed this as a case of abdominal actinomycosis. This diagnosis should always be included in the differential diagnosis of patients who present with an infiltrative abdominal mass.

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1. Introduction

Abdominal actinomycosis is an uncommon chronic suppurrative infectious disease caused by the gram-positive microaerophilic and anaerobic bacteria, Actinomyces israelii. The disease is characterised by an infiltrative and granulomatous inflammation, which may result in multiple abscesses, and sinuses that drain sulphur granules. The organism is a common commensal of the oral cavity and has low virulence, causing disease only when the mucosal barrier has been breached.

Because the clinical presentation is so variable, the disease frequently mimics other chronic inflammatory intra-abdominal conditions or even malignancy. In fact, an accurate diagnosis is not often established pre-operatively in a significant number of cases.

We report a case of actinomycosis presenting as an inflammatory abdominal mass of the transverse colon with involvement of the abdominal wall.

2. Case report

A 79-year-old man, known to be hypertensive and diabetic, presented with a 3-week history of central abdominal pain associated with the presence of a supraumbilical mass. There was no history of constitutional symptoms or of a change in bowel habit. General physical examination revealed that he was afebrile with normal vital signs. Abdominal examination revealed a hard, 6 cm diameter, supraumbilical mass that was moderately tender and appeared to involve the abdominal wall. Digital rectal examination was normal.

A contrast-enhanced computed tomography scan demonstrated a mass involving the anterior abdominal wall. An abdominal ultrasound also identified the abdominal mass indicating involvement of the omentum. Differential diagnoses of incarcerated supraumbilical hernia or of an intra-abdominal malignancy, infiltrating the abdominal wall were considered. A colonoscopy was considered to assist with making the diagnosis but was not performed since the presence of abdominal tenderness may have indicated a perforated colonic malignancy with a pericolonic inflammatory mass.

Abdominal exploration was performed and this revealed a 12 cm diameter hard mass involving the transverse colon and omentum. The mass was attached to the anterior abdominal wall and was associated with significant fibrosis. A clinical diagnosis of carcinoma of the transverse colon was now made and en bloc resection of the mass, including the transverse colon and abdominal wall, was performed with primary colonic anastomosis.

Gross pathologic examination of the excised colon revealed a large tumour-like lesion within the bowel wall, beneath the mucosa, which extended to the pericolonic tissues. Histologic examination of this lesion revealed marked inflammation and fibrosis and many microabscesses containing typical actinomycosis organisms (Fig. 1). The abscesses extended through the markedly thickened bowel wall and into the pericolonic adipose tissues. The bowel, away from the mass lesion, revealed features of diverticular disease. There was no evidence of malignancy.
Following confirmation of the diagnosis of actinomycosis, the patient was treated with high doses of intravenous penicillin for a 2-week period and recovered without significant complications. He was discharged on amoxycillin and has remained well.

3. Discussion

Actinomycosis is an uncommon chronic suppurative infectious disease caused by gram-positive microaerophilic and anaerobic. Actinomyces bacteria. It forms characteristic colonies that are recognizable by the presence of sulphur granules. The organism was originally classified as a fungus because of its filamentous appearance and indolent growth that mimicked mycotic disease. However, the absence of a nuclear membrane or chitin in the cell membrane and reproduction by fission are among the characteristics that led to its reclassification as a bacterium and not a fungus. The Actinomyces bacteria that cause disease belong to a strain that can be divided into 6 sub-groups of which Israelii is the most common variety.

This organism is a normal inhabitant of the oral cavity but, despite its relatively frequent occurrence, Actinomyces is rarely pathogenic. It appears that the organism only causes infection when it enters the tissue following a breach in the mucosal barrier.

When infection occurs, three main clinical syndromes are described namely: cervicofacial, abdomino-pelvic and thoracic. The cervicofacial type is the most common presentation and accounts for 55% of patients followed by the abdomino-pelvic presentation in 20% and the thoracic in 15%. The cervicofacial variety occasionally follows dental extractions; the thoracic type is associated with pulmonary infections while abdomino-pelvic actinomycosis is thought to develop after disruption of mucous membranes in a variety of conditions, the majority of which include patients who have undergone previous surgery. For example, it has been reported following acute appendicitis, diverticulitis, and abdominal operations. It is interesting to speculate that inflammation of a diverticulum, with entry of the organism via that route, might have been the precipitating event in this patient, since diverticular disease was identified adjacent to the colonic mass, in the resected specimen. An increase incidence of abdomino-pelvic actinomycosis has recently been shown to occur in patients with an intrauterine contraceptive device in place.

The clinical presentation, in patients with abdomino-pelvic actinomycosis may include low-grade pyrexia, vague abdominal pain, nausea, vomiting and the presence of an abdominal mass or fistula. Radiological studies have generally not been very useful.

Imaging with CT scans or ultrasound may identify the presence of a mass without distinctive diagnostic features. However, it has been suggested that the presence of an infiltrative mass on abdominal CT scans should raise suspicions of a diagnosis of actinomycosis especially in patients with mild constitutional symptoms. The diagnosis may be further assisted by CT-guided aspiration with or without core biopsy of suspicious lesions.

The differential diagnosis, in patients who present with an abdominal mass includes: appendicitis, diverticulitis, inflammatory bowel disease, tuberculosis and pelvic inflammatory disease. A diagnosis of a malignant tumour is also frequently made. The ileocaecal site is the most frequently affected in patients with abdominal actinomycosis. Involvement of the transverse colon by the mass, in this case made a diagnosis of malignancy even more appealing.

The chronic suppurative infection that occurs in abdomino-pelvic actinomycosis usually leads to the formation of an abdominal mass, multiple abscesses and a marked inflammatory reaction that may involve the abdominal wall, occasionally with fistula formation. The diagnosis is confirmed by microbiological examination of pus, sinus drainage, or tissue biopsy. Gram staining reveals the typical filamentous branching gram-positive rods with the presence of sulphur granules. Because of the scarcity of granules in the specimen, multiple sections may be required. The presence of sulphur granules though important is not pathognomonic since other bacterial infections, e.g. those caused by nocardia, streptomycyes, and staphylococcus may be associated with this finding.

Surgical treatment is usually required for the drainage of abdominal abscesses, sinuses, or the presence of intestinal obstruction or an abdominal mass. Preoperative diagnosis aided by aspiration or biopsy of lesions may avoid surgical resection in patients without significant surgical complications. Regardless, antibiotic treatment will be required. The recommended antibiotic of choice is Penicillin G (18–24 million units/day). Where penicillin allergy exists, treatment with tetracycline, clindamycin, or doxycline has been reported. Prolonged treatment with amoxycillin for a 6–12-month period is advised after initial treatment with parenteral penicillin.

In conclusion, abdominal actinomycosis is an uncommon chronic suppurative disease caused by Actinomyces israelii, which results in infiltrative abdominal mass lesions, which are often indistinguishable from malignancy. In the majority of cases, the diagnosis is not suspected as was the case in this particular patient, and is only confirmed by positive cultures of the organism and the presence of sulphur granules in the resected specimen. Large doses of penicillin are required for several weeks for complete eradication of the organism.

Conflicts of interest
None.

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References