Abdominal Actinomycosis—an Interesting Case

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Abstract Actinomyces are part of normal oral flora and cause disease only when the normal mucosal barrier is breached. Reported annual incidence of actinomycosis is 1 case per 300,000 persons (Weese and Smith, Arch Intern Med 135:1562–1568, 1975). Preoperative diagnosis of abdominal actinomycosis is difficult. An accurate diagnosis is always obtained by histological examination and often requires surgical resection. This case of mesenteric panniculitis due to fish bone penetrating the gut wall and lodging in the omentum has been taken for its rare presentation.

Keywords Abdominal actinomycosis · *Actinomyces* · Abdominal mass · Mesenteric panniculitis · Fish bone

Introduction

Actinomycosis is a chronic suppurative granulomatous inflammation caused by the *Actinomyces* species, a micro-aerophilic, anaerobic Gram-positive rod, that are a part of normal oral flora, upper respiratory, gastrointestinal, anal and genital tracts. The organisms have low virulence potential and cause disease only when the normal mucosal barrier is broken, leading to multiple abscess formation, fistula or a mass lesion [2]. *Actinomyces israelii* is the most common pathogenic species. Involved tissue becomes

indurated, forming multiple draining fistulas and discharging characteristic sulphur granules.

This case of mesenteric panniculitis because of fish bone penetrating the gut wall and lodging in the omentum has been taken for its rare presentation.

Case Report

A 52-year-old male patient presented with pain over epigastric region since 3 weeks. The patient had a history of mild abdominal pain at the same site since 10 years for which he was always treated as acid peptic disease.

Physical examination revealed a healthy, well-built male with a temperature of 37.3°C. Clinically per abdomen, an irregular firm mass measuring 4×2 cm was noted in the epigastric region, and a differential diagnosis of chronic parietal wall abscess and fatty hernia of linea alba was made. Abdominal ultrasound showed a solid mass lesion in the epigastric region below the muscular layer with an impression of a localized abscess/antibioma. Operative intervention was planned for the clinical diagnosis.

Intraoperatively, the parietal wall appeared normal, but after opening up the peritoneum, an indurated mass was noted arising from the greater omentum measuring 9×6×3 cm (Fig. 1a). On omentectomy, a projecting hard object was noted amidst the fibrous mass, which was a fish bone measuring 0.2 cm×3.2 cm (Fig. 1b). The omental inflammatory lesion was hard in consistency, mimicking a malignant lesion. Operative diagnosis was chronic inflammatory mass in the omentum around the foreign body.

Histopathological examination of the excised specimen showed adipose tissue with heavy infiltration of chronic inflammatory cells, fibrous tissue with Gram-positive filamen-

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Fig. 1 **a** Omental inflammatory mass with **b** Fish Bone

tous organisms (*Actinomyces*), suggestive of *acute-on-chronic mesenteric panniculitis with actinomycotic colonies* (Fig. 2).

The patient was given 12 million units of Penicillin G per day for 2 weeks, and followed by oral amoxicillin for 4 weeks. The follow-up period of the patient of 6 months was uneventful.

Discussion

Abdominal actinomycosis is one of the greatest challenges for diagnosis. It has been called “one of the greatest imitators in clinical practice” [3]. It accounts for 20% of all

actinomycotic infections. Delayed diagnosis is the rule rather than the exception. *Actinomyces* is considered to be a saprophyte in the oral cavity, gastrointestinal tract and the female genital tract. Some surgical triggers such as mechanical wounds due to tooth pick or fish bones, operation, placement of intrauterine contraceptive device and teeth extraction may act to destroy the mucosal barrier function, resulting in facilitation of invasion of the pathogen into deeper tissue from its original habitat [4].

The lack of a nuclear membrane, absence of chitin from cell walls, reproduction by fission and, most importantly, inhibition of growth by penicillin and insensitivity to amphotericin B classify these as bacteria and not fungi [5]. These organisms produce a characteristic granulomatous inflammatory response, with pus production and abscess formation, followed by necrosis and reactive fibrosis. With such atypical symptoms they are often misinterpreted as a malignant disease; the correct diagnosis only being achieved at the time of operation.

The described main clinical types are cervicofacial, thoracic, abdominal and advanced type with systemic dissemination of pathogen; the last having a fatal outcome. In the abdominal form of actinomycosis, the most commonly affected organs are the appendix and caecum; other reported sites being colon, stomach, liver, gallbladder, pancreas, small bowel, anorectal region, pelvis, abdominal wall and urinary tract. Retroperitoneal involvement by actinomycosis has rarely been reported [6].

Diagnosis is made preoperatively in less than 10% of cases. The differential diagnosis includes malignancies (such as sarcoma and cholangiocarcinoma), amoeboma, inflammatory

Fig. 2 Mesenteric panniculitis with actinomycotic colonies

bowel diseases (such as diverticular disease, Crohn's disease) and pathological status within the abdominal muscles [7]. A firm mass with presence of small and multiple suppurative areas with sinus tracts is highly suspicious of abdominal actinomycosis. The well-recognized sulphur granules obtained from the pus, which can often be seen with naked eye, are found in only 50% of cases and are not pathognomonic because other organisms such as *Nocardia* and *Streptomyces* may aggregate and resemble the sulphur granules found in actinomycetes infections [5]. The cure rate has increased from 5 to 90% with the use of penicillin. The role of the surgeon is limited to excision of necrotic tissue, drainage of purulent material, removal of persistent fistulas and retrieval of tissue for biopsy [8].

Abdominal actinomycosis is an unusual disease and should be considered in the differential diagnosis of all intra-abdominal masses. Medical therapy may be ineffective for these lesions with persistent abscesses, intractable sinuses or features of intestinal obstruction. In such cases, surgery is almost always the treatment of choice.

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