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Case Report

Omental actinomycosis mimicking a foreign body infection☆

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ABSTRACT

Actinomycosis is a chronic suppurative granulomatous disease caused by *Actinomyces* species. Abdominal actinomycosis is a rare condition and difficult to diagnose before surgery. Here, we report a case of omental actinomycosis mimicking a foreign body infection on computed tomography (CT). A 47-year-old man presenting with abdominal pain had a heterogeneous area comprising a 2-cm long linear radiopaque material with surrounding enhancing soft tissue density lesions and fat infiltrates, measuring 9 × 8 cm in the omentum of the right upper quadrant on CT. We assumed that the linear radiopaque material was a foreign body, such as a fish bone. Laparoscopy-assisted right hemicolectomy and partial omentectomy were performed under radiological suspicion of foreign body infection. Histological examination revealed the omental lesion to be actinomycosis. The patient was treated with antibiotics for 10 weeks, and he recovered well without any complication. Omental actinomycosis mimicking a foreign body infection is rare. The experience and knowledge regarding the variable CT findings of abdominal actinomycosis are useful because it should be differentiated from malignancy and other inflammatory conditions.

Introduction

Actinomycosis is a chronic suppurative granulomatous disease caused by *Actinomyces* species [1]. Abdominal actinomycosis is frequently misdiagnosed clinically and radiologically as a malignancy or other inflammatory disease [2]. Primary omental actinomycosis is a rare condition that is even rarer to mimic a foreign body infection. Here, we report a case of omental actinomycosis that appeared as an omental mass containing linear calcification that resembled a fish bone.

Case report

A 47-year-old man presented to our hospital with 3 days history of abdominal pain. The patient stated that there was no pain when lying down and that a slight movement of the body caused severe pain. He had diabetes, hypertension, and dyslipidemia. He had never undergone surgery. On physical examination, the abdomen was found to be generally soft, but only the right upper quadrant showed tenderness and rebound tenderness. Laboratory examinations showed mildly elevated inflammatory markers (white blood cells, 9.98 × 10^3/uL [reference range; 4-10 × 10^3/uL]; segmented neutrophils, 83.1% [reference range; 50.0-75.0 %]; serum C-reactive protein, 10 mg/dL [reference range; 0-0.3 mg/dL]) and

☆ Declaration of Interest: None.

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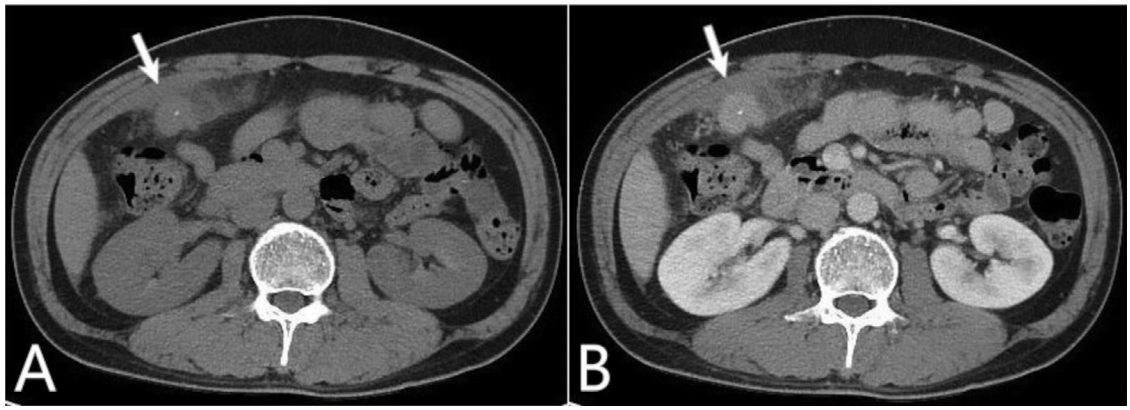

Fig. 1 – Axial computed tomography scans show a bright dot-like material with surrounding enhancing soft tissue density lesions and fat infiltrates in the omentum located in the right upper quadrant (A, B, arrow).

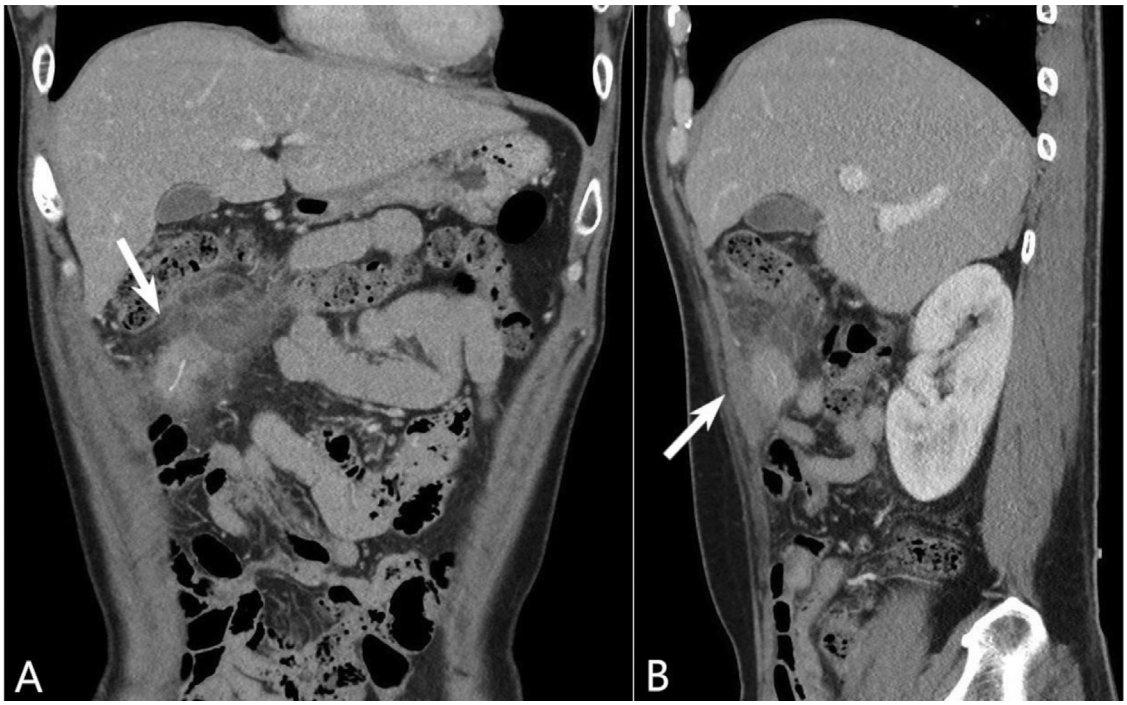

Fig. 2 – Coronal and sagittal computed tomography scans show a heterogenous area in the omentum in the right upper quadrant. A 2-cm long linear radiopaque material within the enhancing soft tissue density lesion is observed (A). The lesion is in contact with the posterior aspect of the right transversus abdominis muscle, and the muscle is swollen (B, arrow). The lesion also contacts the proximal transverse colon; however, there is no evidence of bowel wall thickening (A).

glucose level (216 mg/dL [reference range; 70-110 mg/dL]). The patient underwent a computed tomography (CT) examination. On axial CT scans, a bright dot-like material with surrounding enhancing soft tissue density lesions and fat infiltrates were observed in the omentum located in the right upper quadrant (Figs. 1A and B). On coronal and sagittal CT scans, a 2-cm long linear radiopaque material within the enhancing soft tissue density lesion was observed (Fig. 2A). The lesion was in contact with the posterior aspect of the right transversus abdominis muscle, and the muscle was swollen (Figs. 2A and B). The lesion also contacted the proximal transverse colon; however, there was no evidence of bowel wall thickening (Fig. 2A). We suspected that the linear radiopaque material was a foreign body such as a fish bone; therefore, we considered the lesion to be a foreign body infection. The patient stated that he had eaten Pollock fish 3 weeks prior, but at that time, he had no symptoms of bowel perforation. Surgery was performed under radiological suspicion of foreign body infection. On laparoscopy, a large, firm mass with severe adhesion to the hepatic flexure of the colon was observed. Since it was impossible to separate the mass and colon, right hemicolectomy and partial omentectomy were performed. The specimen showed

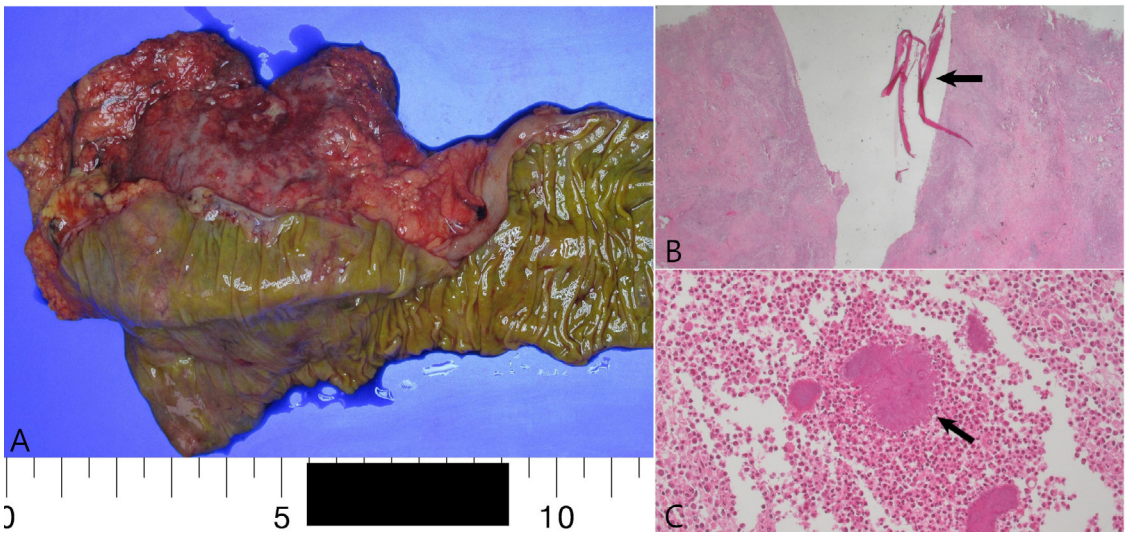

Fig. 3 – (A) Gross specimen shows a white-yellow mass-like lesion on the serosal surface of the colon. It is ill-defined and measures approximately 9 cm × 8 cm. There is no evidence of mucosal destruction of the attached colon. (B) Microscopic examination reveals a tract with calcified material (hematoxylin and eosin [H&E] stain, × 10, arrow). (C) Histologic examination reveals characteristic sulfur granules (arrow) and inflammatory reaction (hematoxylin and eosin [H&E] stain, × 200).

a white-yellow mass-like lesion on the serosal surface of the colon. It measured approximately 9 cm × 8 cm (Fig. 3A). Microscopic examination revealed a tract with calcified material (Fig. 3B, arrow). It was estimated to have been calcified after a long time due to an unidentified cause; therefore, the linear radiopaque material was not a fish bone. Histological examination revealed filamentous organisms consisting of sulfur granules, confirming the diagnosis of actinomycosis (Fig. 3C). The patient was treated with intravenous antibiotics for 2 weeks, followed by oral amoxicillin and clavulanate for 2 months. He recovered well without any complication.

Discussion

Actinomyces are filamentous, Gram-positive, anaerobic bacteria that are commensal inhabitants of the oral cavity, upper respiratory, gastrointestinal, and genital tracts [2,3] Actinomycosis is a chronic, slowly progressive, and uncommon bacterial infection characterized by suppurative and granulomatous inflammation, and contiguous spread [2,4]. In humans, the most common pathogen is *Actinomyces israelii* [5] Actinomycosis primarily occurs in the cervicofacial area (55%), followed by the abdominopelvic (20%) and thoracic (15%) areas [6].

The incidence of actinomycosis has decreased with the widespread use of broad-spectrum antibiotics and good hygiene [6]. However, the incidence of abdominopelvic actinomycosis has increased. This is predominantly related to the condition of mucosal injury, such as surgery, endoscopic manipulation, intrauterine device (IUD), trauma, or foreign bodies [6,7].

The most common site of the abdominal actinomycosis is the ileocecal region [2–4]. Appendicitis is the most common triggering event, and it is mostly responsible for 65% of abdominal actinomycosis cases [3,4,8]. This may be explained by the ruptured appendix stimulating the pathologic growth of microorganisms [1,4]. Long-term use of IUD is also associated with abdominopelvic actinomycosis. It has been reported that the incidence of actinomycosis among women using IUD is related to the duration of use and type of IUD. It has been determined that 85% of patients with pelvic actinomycosis have used IUD for more than 3 years [8].

The clinical presentation of actinomycosis may depend on the tissues involved. However, most patients with abdominal actinomycosis present with nonspecific symptoms, such as abdominal pain, palpable mass, fever, fatigue, anorexia, diarrhea, and weight loss.

Computed tomography (CT) is the most useful imaging modality for abdominal actinomycosis. Preoperatively, CT scans revealed the site, extent of the disease, and content of the lesion. This was useful for planning surgery. Postoperatively, CT imaging was used to radiologically monitor the treatment response. Unfortunately, there are no typical CT findings for abdominal actinomycosis. In addition, a mass-like lesion, contiguous spread, and locally aggressive nature can be misdiagnosed as malignancy. In our case, we misdiagnosed omental actinomycosis as a foreign body infection since it appeared as an omental mass containing linear calcification that resembled a fish bone. To the best of our knowledge, such a CT finding in omental actinomycosis is very rare.

The definitive diagnosis of actinomycosis can be made only by pathologic confirmation based on either the histopathological identification of sulfur granules or Gram-positive filamentous organisms, or the isolation of *Actinomyces* species in microbiological culture from specimens.

Surgical resection is frequently performed prior to antimicrobial therapy since actinomycosis is uncommonly diag-

nosed preoperatively, as in our case. Therefore, the treatment of abdominal actinomycosis consists of surgical resection of the lesion, followed by medical therapy with a high dose of penicillin G or amoxicillin.

Conclusion

Omental actinomycosis mimicking a foreign body infection is rare. The experience and knowledge regarding the variable CT findings of abdominal actinomycosis are useful because it should be differentiated from malignancy and other inflammatory conditions.

Patient consent statement

Consent for publication has been obtained.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.radcr.2022.06.035.

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