Primary Hepatic Actinomycosis

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Key Words

Actinomycoses • Liver • Computed tomography

Abstract

Objectives: To present a case of primary hepatic actinomycosis. **Clinical Presentation:** A 40-year-old man was admitted to the general surgery clinic with a 1-month history of abdominal pain and weight loss. Liver transaminase, bilirubin levels and white blood cell counts were increased. Abdominal ultrasound and CT revealed cystic lesions with necrotic debris involving the posterior segment of the right lobe of the liver and the medial segment of the left lobe. **Intervention:** The patient underwent surgery under general anesthesia. On exploration, three cavities were found within the liver containing necrotic material. Surgical debridement and drainage was performed. Histopathological examination revealed actinomycotic colonies with a surrounding suppurative granulomatous reaction. The patient was treated with penicillin for 3 months. **Conclusion:** This case showed that histological examination of biopsy or surgical material or anaerobic cultures was needed for definitive diagnosis and that hepatic actinomycosis should be included in the differential diagnosis of solitary or multiple hypodense liver lesions.

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Introduction

Actinomycosis is a rare chronic suppurative granulomatous infection characterized by abscess formation, draining sinus tracts, and tissue fibrosis [1, 2]. It com-

monly manifests as a cervicofacial disease, followed by thoracic and abdominopelvic forms [3]. Hepatic involvement is usually secondary to abdominal actinomycosis infection. Primary hepatic actinomycosis is a very rare condition and it can be considered if there is no sign of primary involvement of the abdominal area or elsewhere in the body. It can mimic hepatic tumor [4]. We present a case of primary hepatic actinomycosis. Differential diagnoses of the images included hydatid cyst and tumor.

Case Report

A 40-year-old man was admitted to the general surgery clinic with a 1-month history of abdominal pain and weight loss. Previous medical history was unremarkable. On physical examination, the patient was febrile with a pulse rate of 96/min. Prominent abdominal tenderness and rebound were detected. Liver transaminase and bilirubin levels were markedly increased. White blood cell count was 30,000/mm³. Abdominal ultrasound revealed two large heterogeneous masses involving the posterior segment of the right lobe of the liver and one heterogeneous mass on the medial segment of the left lobe. Contrast-enhanced CT showed hypodense cystic lesions (4 × 4 × 3 cm and 15 × 10 × 7 cm in the right lobe and 6 × 5 × 4 cm in the left lobe) without prominent contrast enhancement. Some parts of the lesion extended to the subcapsular region of the liver (fig. 1, 2). A small amount of right pleural effusion was noted. Since hydatid cyst is endemic in our country, complicated or ruptured hydatid cyst was considered as a differential diagnosis. Primary or metastatic tumor was also considered.

The patient underwent surgery under general anesthesia. On exploration, peritoneal fluid was found which was drained and irrigated with saline. There were three cavities in the liver which were filled with necrotic material (fig. 3). Surgical debridement and drainage was performed. Histopathological examination revealed bacterial filamentous colonies of actinomycosis surrounded by a suppurative reaction with areas of necrosis (fig. 4). The

Fig. 1. Noncontrast (a) and contrast-enhanced (b) CT during the arterial phase shows hypodense cystic lesions on right and left lobes of the liver (arrows) without prominent contrast enhancement. Subcapsular fluid collection was noted on the posterior segment of the right liver lobe (arrowhead).

Fig. 2. Contrast-enhanced CT during the arterial phase obtained at a more cranial level of the liver shows some lesions (arrows) and a small amount of right pleural effusion (arrowhead).

patient was treated with penicillin (intravenous penicillin G, 24 million units per day for the first 4 weeks and oral penicillin V, 1.5 g per day during the following 2 months) and discharged when he was asymptomatic.

Discussion

Actinomyces species are Gram-positive anaerobic bacteria and exist as normal flora in the oral cavity, tonsillar crypts, and genitourinary tract [2, 5, 6]. Actinomycotic involvement of the liver is a rare condition and diagnosis is

difficult with imaging alone. Abdominopelvic actinomycosis accounts for 10–20% of reported actinomycosis cases [4, 6]. Hepatic actinomycosis has been reported in 15% of those with abdominal disease and represents 5% of all cases of actinomycosis [7]. It is usually seen in males (70–97% of cases) in the fourth and fifth decades [2, 5]. Predisposing factors for actinomycosis are poor oral hygiene, immune suppression, long-standing intrauterine contraceptive drug, intravenous drug abuse, alcoholism, peptic ulcer, biliary tract disease, and recent appendicitis [2, 5].

The pathogenesis of abdominopelvic actinomycosis is not well understood, but destruction of mucosal barrier

Color version available online

Fig. 3. Intraoperative photograph shows a large cavitory lesion (arrows) on the dome of the liver.

Color version available online

Fig. 4. Appearance of radially arranged actinomycosis organisms and actinomycotic abscess formation. HE. $\times 200$.

by trauma, visceral perforation, recent abdominal surgery, or long-term uses of an intrauterine contraceptive device are recognized as predisposing factors. Generally, patients have a history of recent bowel surgery or ingestion of foreign bodies [6]. However, liver involvement has also been documented without any disruption of tissue barriers [5]. In the present case, no predisposing factors such as surgery or trauma were noted. The infiltrative nature and rapid progression of actinomycosis – as well as its tendency to invade normal anatomic barriers, cross facial planes and invade multiple compartments – may be attributed to the proteolytic enzymes of *Actinomyces israelii* [6]. Draining sinuses and fistulas may develop in late stages of the disease [6].

Hepatic involvement is considered usually due to direct spread of organism from another intraabdominal focus or via the portal vein [2, 4]. If the source of infection cannot be identified or primary foci are not detected, isolated or primary hepatic actinomycosis is considered as in our case.

Patients with hepatic actinomycosis usually complain of fever, abdominal pain and weight loss, with a subacute to chronic course [2, 4, 8]. Our case presented with abdominal pain and prominent weight loss. Although most common forms of hepatic actinomycosis are solitary, multiple abscess formation in both lobes of the liver may also be seen [2, 4, 7, 8]. Hepatic actinomycosis may mimic neoplasm clinically or radiologically [4, 8, 9]. These lesions are called inflammatory pseudotumor and it is not

possible to differentiate them from malignant tumor with radiological examination only [4]. They may appear as a solid enhancing mass on CT [1, 2, 4, 5]. Considering the weight loss in the patient and also the images, a provisional diagnosis of malignancy was made [10]. Hydatid cyst of the liver was also considered due to multiple hypodense lesions and subcapsular extension. Definitive diagnosis is based on the demonstration of sulfur granules in the biopsy specimen or aspirated pus and Gram-stained smears and anaerobic cultures [2, 4].

Treatment of hepatic actinomycosis consists of prolonged antibiotics after surgical debridement and drainage [8] as in this case. Usually, high-dose penicillin G is used for 1–6 months as in our case. Alternatively, tetracycline, clindamycin or ciprofloxacin may be used alone or in combination with penicillin. Duration of therapy depends on follow-up imaging of the liver lesion [2]. Surgical resection for large abscess is reserved for failure of antibiotic and percutaneous aspiration therapies [10].

Conclusion

This case shows that histological examination of biopsy or surgical material or anaerobic cultures is needed for definitive diagnosis and that hepatic actinomycosis should be included in the differential diagnosis of solitary or multiple hypodense liver lesions.

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