



Tubo-ovarian Actinomycosis Complicated with Hepatic Abscess

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Actinomycosis is a chronic, suppurative, granulomatous diseases characterized by extensive necrosis and abscess formation. Both hepatic and pelvic actinomycosis are rare diseases. Tubo-ovarian actinomycosis complicated with hepatic abscess is rarely reported. We present a 47 year old woman with a history of an intrauterine device (IUD) implantation for about 18 years, who presented with epigastric pain for one month. A computed tomography (CT) scan of abdomen revealed a mass (13×10×9.6 cm) over the left lobe of the liver and a right-sided tubo-ovarian lesion (6.6×5.9 cm). Exploratory laparotomy confirmed liver and tubo-ovarian abscesses. Pathology of the liver and the tubo-ovarian lesions both revealed actinomycosis infection. The patient received a 4-week intravenous ampicillin treatment, followed by oral amoxicillin for 6 months. No recurrence was noted in the follow-up. Actinomycosis should be considered in concomitant liver and ovary abscesses. Detailed history taking, such as IUD implantation, along with radiological examinations and pathological findings are important for diagnosing actinomycosis infection.

Key words: disseminated actinomycosis, liver abscess, tubo-ovarian abscess

INTRODUCTION

Actinomycosis is a chronic disease caused by anaerobic or microaerophilic bacteria, primarily belonging to the genus *Actinomyces*. It is a normal flora and colonizes in the mouth, colon, and vagina. Any part of the body may be infected once the mucosa is disrupted. It is usually associated with an intrauterine device (IUD). There are three unique clinical presentations of actinomycosis: (1). chronicity and mass-like features, (2). development of a sinus tract and (3). relapsing infection after a short course of therapy. In 2010, not more than 70 cases of hepatic actinomycosis abscesses were documented in English language reports.¹ Here, we report a rare case of a 47-year-old woman with disseminated actinomycosis involving the liver and tubo-ovarian organs.

CASE REPORT

A 47-year-old Taiwanese woman admitted for persistent epigastric pain with a dull sensation for one month. She was robust in the past, except for an appendectomy 30 years ago. She also had an 18-year history of IUD implantation, which had been removed one year earlier. Body weight loss of about 3 Kg was noted for one month before admission.

Upon physical examination, the body temperature was 37.1 °C; heart rate 114 beats/min; blood pressure 131/91 mmHg. Low grade fever around 37.5 °C to 38.0 °C was noted during the first three days of hospitalization. There were two palpable masses: one mass was located over the right upper quadrant of the abdomen and another mass was located over the right lower quadrant. There was no local tenderness or rebounding pain. Laboratory data revealed the following: white blood cells 18980/ μ L; hemoglobin 6.8 g/dL; platelets 457×10³/ μ L; and C-reactive protein 14.69 mg/dL. A computed tomography (CT) scan of the abdomen (Fig. 1a) showed a well-defined mixed high- and low-density mass (13×10×9.6 cm) over the lateral segment of the left lobe of the liver. This mass showed ventral outward bulging with suggestive liver capsule disruption and surrounding omentum fatty stranding. The right side of the pelvis (Fig. 1b), showed a mixed solid and cystic lesion (6.6×5.9 cm)

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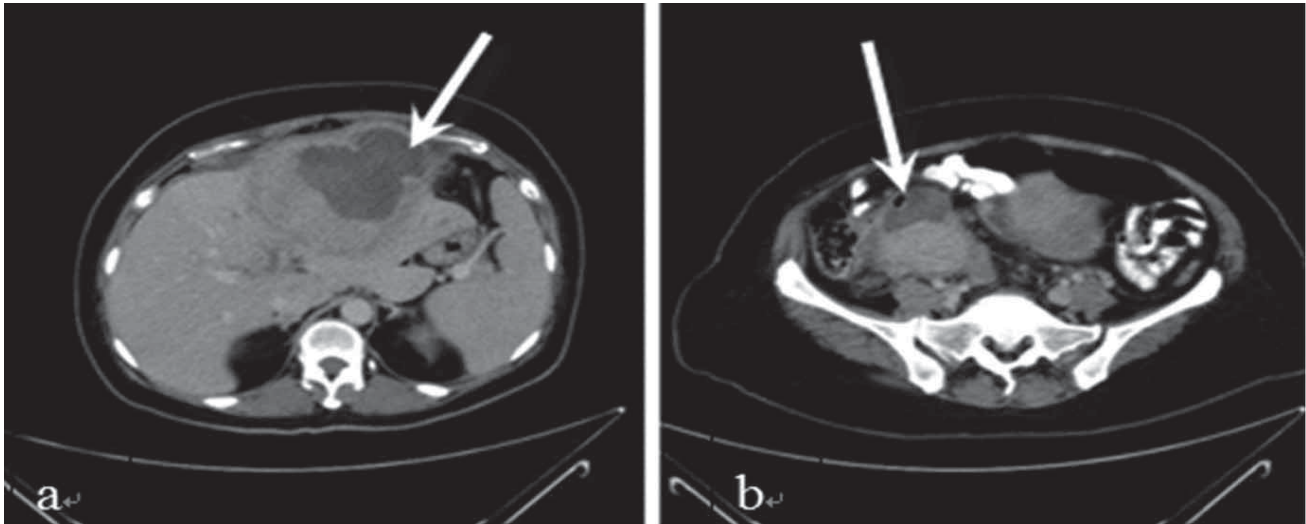


Fig. 1 Computed tomography (CT) scan of abdomen and pelvis: (a) A well defined heterogenous mass over the left lobe (arrow) of liver (b) mixed solid and cystic components in the right side pelvis with air-bubble (arrow).

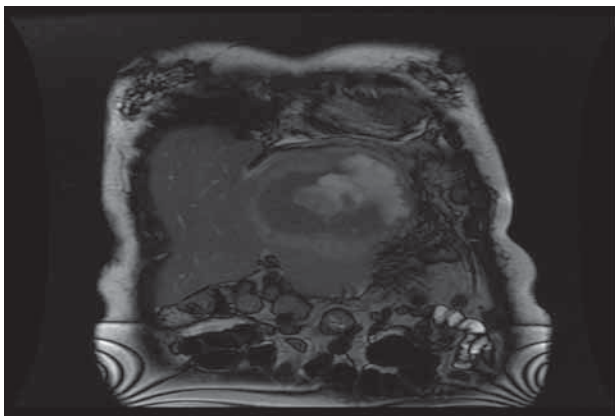


Fig. 2 Magnetic resonance imaging (MRI) of abdomen: the hepatic mass lesion showed low signal on T1WI and T2WI. The irregular band-like shadow encircling the mass showed low signal on T1WI and high signal on T2WI.

with an air bubble component. Liver and tubo-ovarian abscesses were highly suspected. Magnetic resonance imaging (MRI) of the abdomen (Fig. 2) demonstrated the hepatic mass lesion low signal on T1WI and T2WI. The irregular band-like shadow encircling the mass showed a low signal on T1WI and a high signal on T2WI.

The patient then received an exploratory laparotomy, which revealed a large liver abscess, about $15 \times 10 \times 10$ cm in size, and a right-sided tubo-ovarian abscess. A lobectomy of the left liver and a right-sided salpingo-oophorectomy were performed. About 150 mL of foul smelling, thick, yellowish purulent pus was collected



Fig. 3 Incision of liver abscess.

from the resected liver (Fig. 3).

The pathological findings of the liver abscess included mixed acute and chronic inflammatory cells infiltration and focal increasing of hypercellular, actin-positive spindle stromal cells, which were compatible with an inflammatory pseudotumor. Periodic acid Schiff stain (Fig. 4a) confirmed actinomycosis. Sections of the ovary and fallopian tube showed a tubo-ovarian abscess with dense neutrophil aggregation, and *Actinomyces* species were found in the specimen (Fig. 4b). A diagnosis of disseminated actinomycosis was established.

The patient received a 4-week intravenous ampicillin treatment, followed by oral amoxicillin for 6 months as a maintenance treatment. No recurrence was noted after discharge.

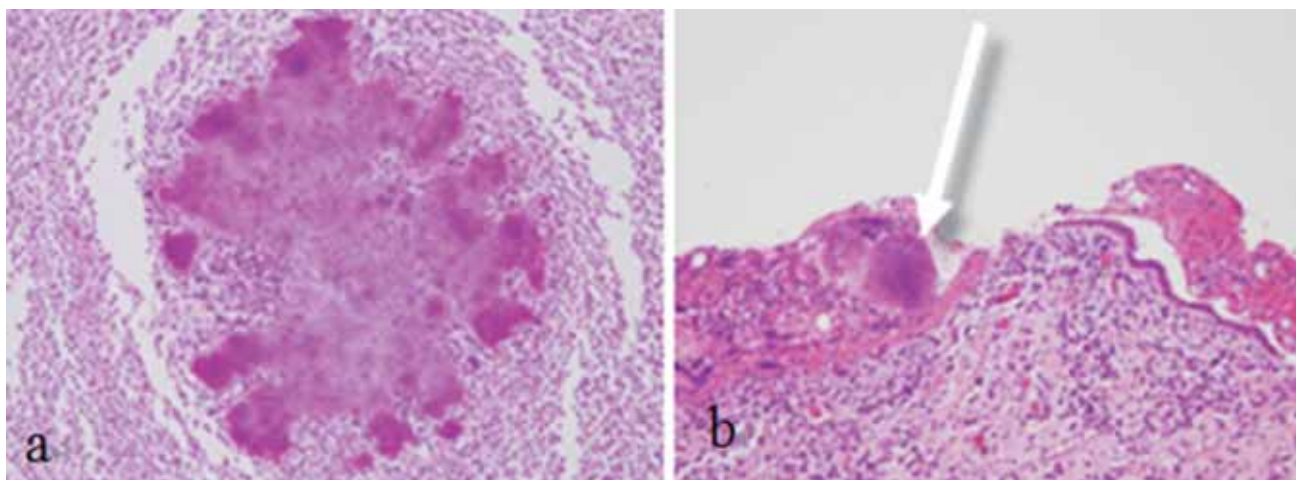


Fig. 4 Pathological findings: (a) liver, left (Hematoxylin and eosin stain $\times 200$) (b) ovary (Hematoxylin and eosin stain $\times 200$) with sulfur-granule (arrow) and dense neutrophil aggregation and actinomyces in the specimen

DISCUSSION

The most common sites of actinomycosis develop in the pelvis, thorax, and cervicofacial regions.² Although uncommon, *Actinomyces* are capable of hematogenous dissemination resulting in multiorgan involvement. They are also known to disregard anatomical boundaries, and have the ability to infect organs all over the body, including the liver.³

Abdominal actinomycosis is thought to result either from disruption of the mucosa or from bowel perforation.⁴ Liver abscess caused by *Actinomyces* is a very rare entity, representing only 5% of all cases of actinomycosis.⁵ It is difficult to diagnose without surgical intervention. Infected patients are typically immunocompetent, have a wide age range (4-86 years), and are predominantly male (70.2%). Infections are frequently cryptogenic (80.7%), accompanied by fever (83.3%), abdominal pain (74.5%), and weight loss (50.9%).⁶ The radiological image of hepatic actinomycosis usually manifests as a single abscess in two thirds of cases and multiple liver lesions in the remaining one third.¹ Extension to surrounding tissues occurs in 31.8% of the reported cases.

Actinomycosis of the female genital tract was thought to originate from an ascending infection of the bacteria. Curtis et. al reported the longer the IUD was in use, the greater risk for actinomycosis of the genital tract.⁷ Other risk factors include abdominal surgery, tubo-ovarian abscess, and ruptured appendicitis.^{8,9}

In most cases, actinomycosis is diagnosed after surgery. The presence of sulfur granules (colonies of or-

ganisms forming an amorphous center surrounded by a rosette of clubbed filaments) in the pus or in the surgical specimen is the most accurate diagnostic indicator of actinomycosis. However, a negative culture result can not exclude the diagnosis of actinomycosis,¹⁰ as is seen in the present case where the culture was negative. The negative culture may result from previous antibiotics usage, improper specimen collection and transport techniques, or insufficient incubation periods.¹¹

Actinomyces are capable of hematogenous dissemination resulting in multiorgan involvement. In this patient, actinomycosis originated from the genital tract, because the IUD was the only risk factor. There was no sinus tract or fistula linking the liver and the pelvis in this patient, and no other intra-abdominal etiology was identified. We presumed the spread was due to an ascending infection from the pelvis to the intra-abdominal region through the portal system.

The recommended treatment of actinomycotic infections is of high dosage and long duration. Eighteen to 24 million units of intravenous penicillin for 2-6 weeks, followed by an oral therapy with penicillin or amoxicillin for 6-12 months is suggested. During therapy, further ultrasounds or CT scans to monitor the resolution of the infection is recommended.

In conclusion, actinomycosis should be considered in concomitant liver and ovary abscesses. Detailed history taking, such as that of an IUD implantation, along with radiological exams and pathological findings are important for accurately diagnosing actinomycosis infection.

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