Actinomycosis of the Gallbladder: Case Report and Review of the Literature

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Actinomycosis of the gallbladder is very rare. Herein, we report the case of a 50-year-old man who presented with acute right hypochondrial pain, fever and rigors associated with positive Murphy’s sign. Ultrasound showed that the gallbladder had multiple stones and an oedematous thick wall. The preoperative diagnosis was acute cholecystitis. The patient responded to conservative treatment with antibiotics. Laparoscopic cholecystectomy was performed 6 weeks later but was converted to open surgery because of dense adhesions to the duodenum and sealed duodenal perforation. Microscopic examination of the gallbladder showed moderate to severe inflammation with formation of microabscesses and numerous colonies of actinomycetes. We also review the literature on this rare disease. Although surgery is essential, prolonged postoperative antibiotic is required. [Asian J Surg 2005; 28(3):230–2]

Key Words: actinomycosis, acute cholecystitis, gallbladder

Introduction

Actinomycosis is a subacute to chronic bacterial infection caused by Gram-positive filamentous anaerobic to microaerophilic bacteria. The infection is characterized by contiguous spread of a supplicative and granulomatous inflammatory reaction that ignores the tissue planes and invades the surrounding tissues or organs. This ends with the formation of multiple abscesses and sinuses.1

The head and neck, thorax and abdomen are the most common regions involved in actinomycosis. Pelvic actinomycosis is common in females.2 Actinomycosis of the gallbladder is extremely rare. Herein, we report such a case and review the literature on this topic.

Case report

A 50-year-old Sudani male complained of severe right hypochondrial pain associated with fever and rigors of 1 week’s duration. He had had a similar attack 10 months earlier. The patient was known to be diabetic and hypertensive with no history of abdominal surgery. Ultrasound showed that the gallbladder wall was thick and oedematous. Multiple gallbladder stones were seen. Laboratory studies revealed normal serum electrolytes, liver function tests and serum amylase. Blood glucose was 309 mg/dL. Human immunodeficiency virus and hepatitis B serology were negative. The preoperative diagnosis was acute cholecystitis. The patient received analgesics and antibiotics and responded well to the conservative treatment. Six weeks later, he was readmitted for laparoscopic cholecystectomy. This revealed that the gallbladder was distended and contained multiple gallstones. The gallbladder wall was thick with severe dense adhesions to the duodenum and the surrounding structures. During the dissection, the gallbladder was perforated and thick milky bile leaked. Surgery was converted to open cholecystectomy. After dehiscence, duodenal perforation was seen and repaired with simple closure. A retrograde cholecystectomy was performed. Metro-
Actinomycosis is generally a polymicrobial infection. It is associated with other bacteria in 65% of patients. Establishment of disease in man may require the presence of companion bacteria, which participate in infection by releasing toxins or by inhibiting host defence. They act as co-pathogens that enhance the relatively low invasive power of actinomycetes. This may be responsible for the early manifestation of infection or for treatment failure if these bacteria are resistant to antibiotics.

Actinomycosis is one of the great imitators in clinical practice, particularly when it occurs in the abdominal cavity and pelvis, which account for 10–20% of reported cases. Pre-disposing factors for actinomycosis include diabetes mellitus, steroid therapy, neoplasm and previous surgery. The patient may have a history of recent or remote bowel surgery (e.g. perforated acute appendicitis) or ingestion of a foreign body (e.g. chicken or fish bone), during which actinomycetes are introduced into the deep tissues. The ileocaecal region is involved most frequently, and the disease presents classically as a slowly growing tumour. Involvement of any abdominal organ, including the abdominal wall, can occur by direct spread with eventual formation of sinuses discharging sulfur granules. Numerous nonspecific presentations make pre-operative diagnosis of actinomycosis difficult.

Gallbladder involvement has been reported in 17 cases. It may present as acute or chronic cholecystitis. In our case, the patient had acute cholecystitis 6 weeks preoperatively. A clinical diagnosis of acute cholecystitis was made because of the symptoms and the sonographic presence of gallstones and a thickened wall. Furthermore, the patient responded well to conservative treatment. Our policy is to perform cholecystectomy 6 weeks after the acute episode. We did not repeat

Discussion

Actinomycetes are Gram-positive filamentous bacteria that have previously been misdiagnosed as a fungus. The most commonly isolated species are Actinomyces israeli, A. gerencser and A. naeslundii.

The actinomycetes are more prominent among the normal flora of the oral cavity than the lower gastrointestinal tract. As these micro-organisms are not virulent, they require a break in the integrity of the mucous membranes and the presence of devitalized tissues to invade deeper tissues and cause disease.

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ultrasound before surgery because the patient was asymptomatic. A laparoscopic procedure was chosen initially because there was no preoperative suspicion of malignancy and it was not contraindicated. Retrograde spread of the actinomycetes from the duodenum through the common bile duct seems to have been the route of infection. Isolated actinomycosis of the common bile duct for without involvement of the liver or gallbladder has been reported.\textsuperscript{8} Lymphatic spread is uncommon because of the large filaments. Haematogenous spread to the liver has been documented and is a serious complication.\textsuperscript{9} Laboratory investigations may show anaemia, mild leucocytosis and an elevated erythrocyte sedimentation rate. The alkaline phosphatase level is frequently elevated in hepatic actinomycosis.\textsuperscript{10} Current serological tests have no role in the diagnosis of actinomycosis.\textsuperscript{1}

There are no specific radiological signs of gastrointestinal actinomycosis. Computed tomography usually reveals infiltrative focal areas of decreased attenuation that enhance with contrast. This infiltrative mass has a tendency to invade surrounding tissues. Lymphadenopathy is uncommon. Computed tomography or ultrasound-guided fine needle aspiration and/or biopsy are useful for diagnosis.\textsuperscript{1,10}

A high level of suspicion is required and definitive diagnosis is often not made until after histological examination or anaerobic cultures.\textsuperscript{11,12} Simultaneous occurrence of actinomycosis and adenocarcinoma of the gallbladder has been reported only once.\textsuperscript{13}

The vascularity and indurations that result from actinomycosis emphasize the need for lengthy high-dose antibiotic administration.\textsuperscript{14} Management has successfully been directed at excision (if possible) with the use of penicillin (the drug of choice), initially via the parenteral route followed by oral penicillin over a prolonged period. The risk of actinomycetes developing penicillin resistance appears to be minimal and usually indicates the presence of resistant companion bacteria.\textsuperscript{1}

**Conclusion**

Clinicians should be aware of actinomycosis infection presentation so that when it is suspected from the macroscopic appearance, appropriate anaerobic and microaerophilic cultures are taken and tissues carefully examined for actinomycosis.

**References**