



Abdominal Actinomycosis with Abscesses and Splenic Perforation: Case Report

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Abstract

Actinomycosis is a long-lasting, granulomatous infection caused by anaerobic, Gram-positive bacteria belonging to the genus *Actinomyces*, with *Actinomyces israelii* being the most prevalent. This condition is marked by a gradual and progressive infiltration of tissues, resulting in the development of abscesses and fistulas that can cross anatomical boundaries.

Keywords: Actinomycosis; Granulomatous infection; Gram-positive bacteria

Introduction

Actinomycosis is a long-lasting, granulomatous infection caused by anaerobic, Gram-positive bacteria belonging to the genus *Actinomyces*, with *Actinomyces israelii* being the most prevalent. This condition is marked by a gradual and progressive infiltration of tissues, resulting in the development of abscesses and fistulas that can cross anatomical boundaries. The abdominal variant represents 10% to 20% of all instances and usually impacts the cecum, appendix, and ileocecal area. Although it is rare for the infection to spread to the peritoneum and spleen, perforation of the spleen is an extremely rare but potentially life-threatening complication [1].

Case Presentation

A 32-year-old female patient was brought to the emergency surgical department with complaints of sudden sharp abdominal pain, nausea, fatigue, and astheno-adyndamia [2,3]. She was in a compromised general condition. Afebrile. Tachycardic at 115 beats per minute, with a blood pressure of 100/60. Her skin appeared pale and sweaty. A FAST ultrasound revealed signs of free fluid in the abdomen and pelvis, as well as splenic hematoma. Laboratory tests indicated an anemic syndrome with hemoglobin at 77 g/l; significant leukocytosis with a white blood cell count of 30.9; and elevated inflammatory markers with a CRP level of 322.95 [4]. A CT scan with intravenous contrast showed a tumor formation of ovarian origin, a metastatic lesion in the sixth segment of the liver, peritoneal metastases, a ruptured subcapsular hematoma of the spleen with blood-equivalent inclusions; and an abscess collection in the left lateral channel and sublingually. A contraceptive 'spiral' was placed in the uterus Figure 1.

Intraoperatively observed

Approximately 700 ml of blood and clots. Two-stage rupture of the spleen with a formed

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Figure 1: CT with splenic rupture and haematoma.



Figure 2: CT with formation of ovarian origin.

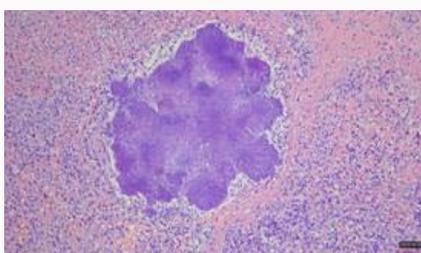


Figure 3: Sulfur granules.

perisplenic abscess. Significant adhesions between the momentum, small intestine Figure 2, anterior abdominal wall, and pelvis. Tumor formation in the pelvis likely originating from the ovary. Peritoneal lesions characterized as secondary. Ascites in the pelvis and between the loops of the small intestine. Due to signs of hemodynamic instability and the inability to remove the adnexal formation, a splenectomy, partial omentectomy, evacuation of abscess collections, and biopsy of the peritoneal lesion were performed. A challenging postoperative period with a stay in the intensive care unit. Gradual stabilization of the overall condition with a decrease in inflammatory markers. Drains were removed on the 5th and 6th postoperative days. Discharged on the 8th postoperative day.

Histology

Soft tissues exhibiting purulent-abscessing inflammation, characteristic of actinomycosis likely originating from the tubo-ovarian region. Spleen showing purulent-abscessing inflammation - actinomycosis. Omentum with fibrinous-purulent inflammation. The patient was prescribed a course of Doxycycline following hospitalization due to an allergy to Amoxicillin. An intrauterine contraceptive device was removed immediately after discharge. A follow-up CT scan with intravenous contrast was performed two months post-discharge, revealing a reduction in the described formation in the adnexa measuring 10mm. No evidence of residual abscess collections. No signs of hepatic lesions Figure 3 and 4.

Discussion

Actinomyces israelii is the primary causative agent, although other species like *A. naeslundii* and *A. odontolyticus* can also lead to the disease. These bacteria usually inhabit the oral cavity, gastrointestinal tract, and genital areas. When the mucosal barrier is compromised due to conditions such as appendicitis, diverticulitis,



Figure 4: Sulfur granules.

surgical procedures, or the presence of a foreign object the pathogen penetrates the tissues. This results in chronic granulomatous inflammation, which is often accompanied by fibrosis and a tendency to develop abscesses and fistulas [5]. A notable characteristic of the infection is its capacity to cross anatomical boundaries without consideration for fascial or organ structures. If the spleen is affected, a purulent-inflammatory process can occur, potentially resulting in abscess formation and subsequent perforation.

Clinical Picture

Abdominal actinomycosis manifests with long-lasting symptoms that frequently mimic neoplasia. The common symptoms consist of:

- Ongoing abdominal discomfort, typically dull, with a gradual increase in severity.
- Episodes of fever and night sweats.
- Loss of weight and lack of appetite.
- Noticeable abdominal masses, often mistaken for tumors.

The emergence of abscesses is marked by signs of localized fluctuation and irritation of the peritoneum. When the spleen perforates, it results in sudden, severe pain in the left upper abdomen, along with hemodynamic instability, which includes rapid heart rate, low blood pressure, pallor, and signs of internal bleeding in the abdominal cavity. In instances of chronic progression, there may be the development of fistulas connecting to the intestines, skin, or nearby organs.

The diagnosis of abdominal actinomycosis often presents significant challenges due to its nonspecific clinical symptoms.

The main diagnostic methods include

Laboratory tests

leukocytosis, Chronic Disease-Related Anemia, and Increased Inflammatory Markers (CRP, ESR) are commonly detected.

Imaging diagnostics

Ultrasound may show hypoechoic abscess formations, while Computed Tomography (CT) offers comprehensive details about infiltrative masses, multiple abscesses, and possible splenic perforation. Contrast-enhanced CT can reveal active bleeding in the abdominal cavity [6].

Microbiology and histology

Isolating *Actinomyces* from cultures of abscess material is difficult because of the bacterium's anaerobic characteristics and slow growth rate. Histological analysis reveals the distinctive 'sulfur granules' - yellowish clusters encircled by an inflammatory response.

Treatment

The treatment of abdominal actinomycosis requires a combination of antibiotics and surgical procedures when complications arise.

Antibiotic therapy

The primary treatment involves administering high-dose penicillin G (18-24 million IU/day) intravenously for 4-6 weeks, followed by a course of oral penicillin V or amoxicillin lasting 6-12 months.

For patients with a penicillin allergy: alternatives include doxycycline, clindamycin, or erythromycin.

Surgical treatment

Surgery is indicated for large abscesses, insufficient response to antibiotic therapy, and severe complications such as splenic perforation.

In the event of splenic perforation, a splenectomy is necessary, along with drainage of the abscess and sanitation of the abdominal cavity.

Interventional methods

In certain cases, percutaneous drainage of localized abscesses can be performed under ultrasound or CT guidance.

Prognosis: With prompt and suitable treatment, the outlook for abdominal actinomycosis is positive. Nevertheless, a late diagnosis can lead to considerable mortality, especially in instances of large abscesses and splenic perforation. Long-term antibiotic treatment is essential to prevent recurrences. Possible complications include recurrent abscesses, peritonitis, and sepsis [7,8].

Conclusion

Abdominal actinomycosis is a rare infection that often resembles malignant or inflammatory conditions. Splenic perforation is an extremely rare complication that requires urgent surgical intervention. A combined strategy long-term antibiotic therapy along with timely surgical treatment is vital for achieving favorable outcomes and improving survival rates for patients.

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