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Case report

Abdominal actinomycosis presented as acute abdomen with intra-abdominal multiple tumors: A case report

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ABSTRACT

Introduction and importance: Actinomycosis, a rare infection caused by Actinomyces spp., typically presents as a chronic condition affecting various regions, particularly the cervicofacial, thoracic, and abdominal areas. Its diagnosis is often difficult due to symptom overlap with malignancies and other infections. This report details a case of abdominal actinomycosis mimicking multiple intra-abdominal tumors, complicating diagnosis and treatment.

Case presentation: A 67-year-old male with uncontrolled type 2 diabetes presented with generalized abdominal pain, nausea, vomiting, constipation, and significant weight loss. Physical examination revealed distention and severe abdominal tenderness. Laboratory tests showed leukocytosis and anemia. Diagnostic laparotomy revealed multiple intra-abdominal tumors. Histopathology confirmed actinomycosis without malignancy or tuberculosis. Intravenous amoxicillin was started; however, the patient discharged himself against medical advice after two days due to personal reasons unrelated to his treatment plan. He returned three months later with persistent abdominal pain and additional hepatic lesions. Extended antibiotic therapy for 12 months led to the resolution of symptoms during follow-up.

Clinical discussion: Abdominal actinomycosis is rare and often associated with conditions like diabetes. This case underscores the infection's potential to mimic malignancy and highlights the need for considering actinomycosis in differential diagnoses of acute abdomen, especially in immunocompromised patients. The patient's uncontrolled diabetes likely contributed to the infection's development and spread.

Conclusion: Abdominal actinomycosis can present acutely, mimicking neoplastic diseases with multiple intra-abdominal masses. Early recognition and prolonged antibiotic therapy are essential to prevent systemic spread, especially in immunocompromised individuals. Clinicians should consider actinomycosis in patients with poorly controlled diabetes and abdominal symptoms.

1. Introduction

Actinomycosis is an infection caused by Actinomyces, a chronic and sub-acute cause of human disease [1]. These gram-positive bacteria are classified as part of the natural human flora. These gram-positive bacteria are part of the natural human flora and require an anaerobic microenvironment for reproduction [2]. Actinomycosis is usually a mixed infection with other bacteria that can enhance its virulence and complicate treatment by producing β-lactamases and promoting antibiotic resistance. The mycelial masses of Actinomyces further protect these bacteria, making the infection more difficult to treat [2]. This bacterium resides primarily in some body regions, including the mouth, the digestive system, and the genital tract. Although typically localized, actinomycosis can spread to various organs and tissues of the human body [3]. The most common areas of the body affected by actinomycosis are the neck and face (50 %), abdomen (20 %), and chest (15 %) [4,5]. Actinomycosis spreads through mucosal barrier disruption due to dental sepsis, appendicitis, diverticulitis, trauma, or surgery, leading to cervicofacial and abdominal infections. Pelvic actinomycosis is associated with intra-uterine or intravaginal devices, while pulmonary actinomycosis results from aspiration of secretions, poor oral hygiene, and alcoholism. Rarely, it spreads via hematogenous or lymphatic routes [6].

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Diagnosing actinomycosis and choosing a treatment strategy is often difficult in patients because the symptoms of the disease mimic other diseases such as malignancy and tuberculosis, so abdominal actinomycosis is challenging to diagnose preoperatively, and few such cases have been reported [7]. This study introduces a patient with abdominal actinomycosis presented as multiple intra-abdominal tumors. This study has been reported in line with the SCARE criteria [8].

2. Case presentation

A 67-year-old man was referred to our hospital with generalized abdominal pain. Abdominal pain was severe, and the patient reported more than 20 kg of weight loss, fatigue, and loss of appetite from four months ago. The patient had nausea, vomiting, and constipation with a history of mild to moderate fever from two months ago, and the symptoms had worsened in the last three days. He had a 20-year history of type 2 diabetes (recent FBS = 217 mg/dl, HBA1C = 9.1 %). He had no history of abdominal surgery, trauma, foreign body, or poor oral hygiene. In primary evaluation, the patient's vital signs were normal and stable except for temperature, which was 38.9C. Abdominal distention was apparent. Generalized guarding with severe tenderness and rebound tenderness was significant in the abdominal examination. The pulmonary examination was unremarkable. Laboratory findings included Leukocytosis (16.6×10^9 cells/L) with 82 % neutrophil and anemia (Hemoglobin = 9.5 mg/l with normal platelet count (180×10^9 cells/L).

Given the acute presentation and clinical signs suggestive of an acute abdomen, a diagnostic laparotomy was deemed necessary. This decision was based on the urgency of the patient's signs and symptoms, including severe abdominal pain, fever, significant tenderness, signs of peritonitis, and laboratory findings that indicated a potentially life-threatening condition requiring immediate surgical exploration. Therefore, the patient was sent to the operating room with the most likely diagnosis of an acute abdomen. Differential diagnoses included acute appendicitis, perforated hollow viscus, abdominal malignancy, inflammatory bowel disease, and abdominal tuberculosis. The surgeon found several tumors varied in shape and size, ranging from 2 to 10 cm in diameter in the abdominal cavity during the surgery, including the peritoneum, stomach, and intestinal walls. The borders of the tumors were irregular and poorly defined, most had inflammatory adhesion. Also, there was moderate clear free fluid in the abdominal cavity. Several biopsies from tumors were taken. An abdominal CT scan was ordered post-surgery to further assess the extent of the disease and guide ongoing management. The CT scan revealed multiple intra-abdominal tumors with no liver involvement (Fig. 1). A chest X-ray was unremarkable. Histopathological assessment of the biopsies confirmed actinomycosis and ruled out malignancy and tuberculosis.

After the diagnosis, intravenous amoxicillin was initiated. However, the patient chose to be discharged against medical advice two days later, due to personal reasons that were not related to his treatment plan. Three months later, the patient was referred to the emergency ward with severe abdominal pain, fever, and hypotension. More patient evaluation was done after stabilizing the vital signs (starting the empiric therapy, and hydration). In the patient's second abdominal CT scan with three-month intervals, several tumors were seen in the peritoneal zone and liver parenchyma (Fig. 2). Biopsies from tumors of the liver showed actinomycosis, too. The patient was treated with intravenous (22 days) and oral amoxicillin for twelve months after discharge. During admission, the patient consulted with an endocrinologist for diabetes management. Six months after discharge, the patient's HbA1C improved to 7.7 %, indicating better control of diabetes. Improved glycemic control contributed to the resolution of the infection and overall recovery. After discharge, the patient had no complications in monthly visits for a year after treatment. However, the patient did not consent to additional imaging studies for ongoing evaluation, which limited the ability to monitor for potential recurrence of the infection.

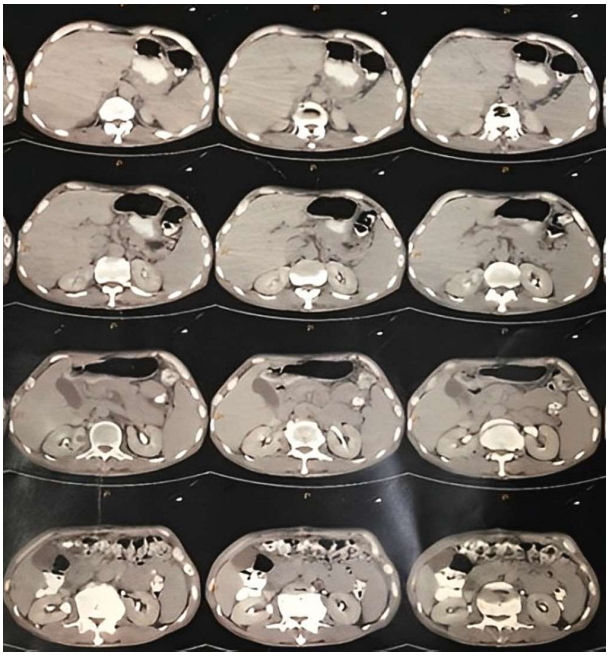

Fig. 1. Abdominal computed tomography scan showed multiple intra-abdominal tumors in patient with biopsy-proven actinomycosis.

3. Discussion

Actinomycosis can cause infection in different parts of the body, and the incidence of this disease is scarce and rare, which in previous studies was estimated to be about 1/300000; on the other hand, the diagnosis is difficult due to the similarity of Symptoms to other illnesses [9]. Actinomycosis infection is classified into four forms, cervicofacial, thoracic, abdominal, and pelvic, according to the anatomical location. The most critical risk factor for the infection is mucosal dysfunction [10]. The most common abdominal region involved is ileocecal region infection [11]. Most of the previous studies reported abdominal actinomycosis associated with trauma, abdominal surgery, long-term intrauterine devices (IUDs), diabetes, and inflammatory bowel disease (IBD) [12,13]. The presence of conditions that cause the immune system to be weak is one of the predisposing factors for actinomycosis [14]. Our patient has had uncontrolled type 2 diabetes for 20 years, which seems to be the most critical factor related to the occurrence of actinomycosis infection in this patient. Hyperglycemia in diabetes causes dysfunction of the immune response, making the immune system ineffective in inhibiting the spread of invading pathogens. Therefore, people with diabetes are more prone to infections [15].

The most common manifestations of abdominal actinomycosis are the intra-abdominal mass that has undergone surgery as a malignancy [16]. In various studies, actinomycosis has been reported as mimicking colon tumors, abdominal wall tumors, and omentum tumors. However, the initial manifestations of patients were chronic abdominal pain, nausea, vomiting, weight loss, and loss of appetite, usually without fever or presentation like the acute abdomen or septic shock [17]. In this context, our patient had the abovementioned symptoms: fever, severe abdominal pain, and abdominal examinations (generalized tenderness) suggestive of acute abdomen. Few cases of abdominal actinomycosis presenting with an acute abdomen have been reported [18]. Thoracoabdominal actinomycosis has been reported in previous studies that it usually follows previous surgery (gall bladder surgeries) or a long-lasting pulmonary infection that spreads to the abdomen [19,20]. Due to the patient's lack of consent for the treatment at the time of diagnosis

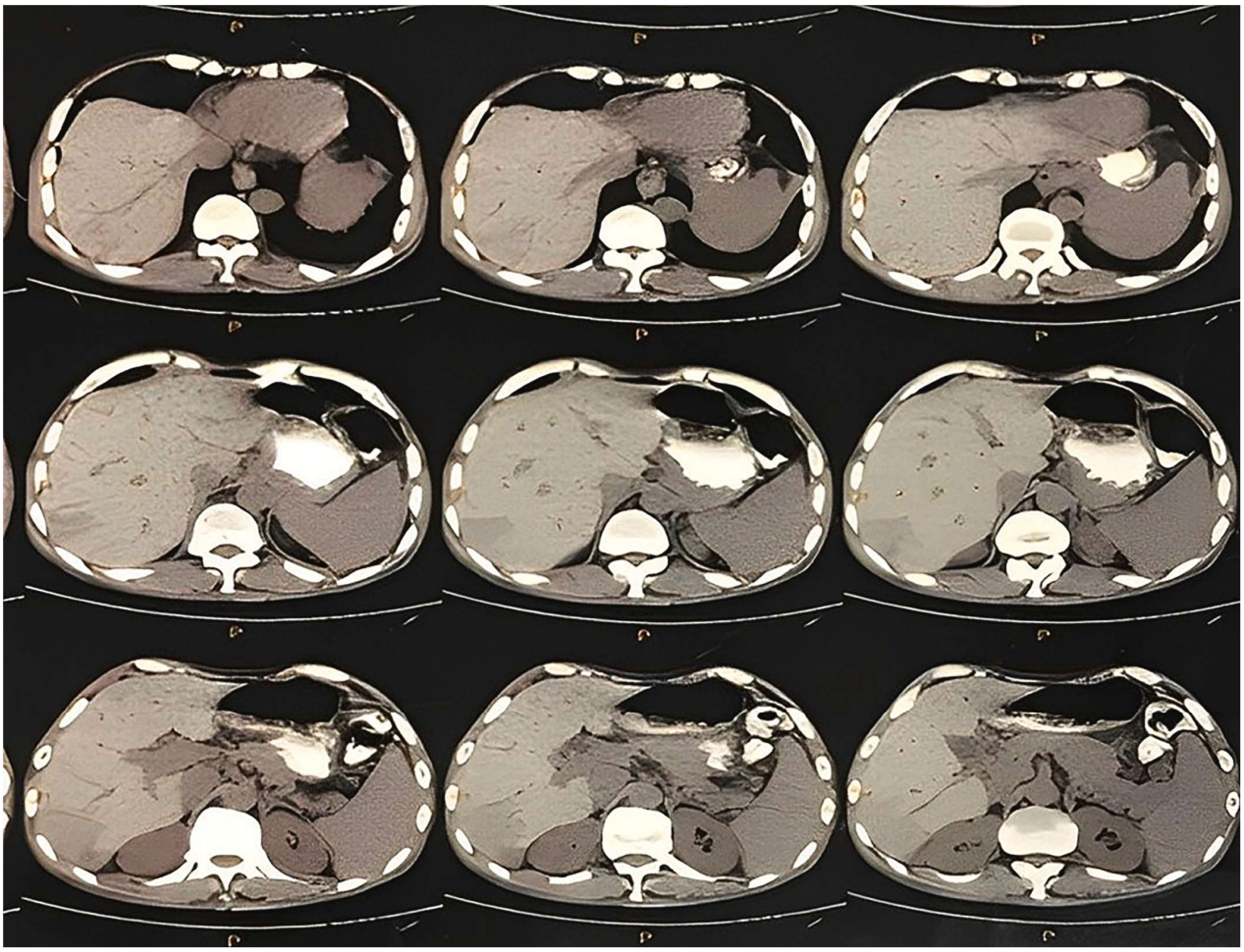

Fig. 2. Abdominal computed tomography scan showed multiple peritoneal and liver tumors in patient with biopsy-proven actinomycosis.

and the delay in the treatment along with the patient's uncontrolled diabetes, we witnessed the spread of infectious lesions to the liver three months apart that presented with abdominal pain.

4. Conclusion

In conclusion, abdominal actinomycosis can manifest with acute abdomen and free fluid plus multiple tumors in the abdominal cavity like neoplasm. If abdominal actinomycosis is not treated, it could spread to the liver. Actinomycosis should be included in the differential diagnosis in patients with weak immune systems, such as uncontrolled diabetes with abdominal pain, fever, and examinations suggesting acute abdomen.

Ethical approval

All the authors and the patient agreed to publish this article, and the ethics committee of Alborz University of Medical Science approved it (Project number: IR.ABZUMS.REC.1398005)-written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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Author contribution

M.M. and M.A. interpreted the patient data. P.CH. and J.K.R were significant contributors to writing the manuscript. All authors read and approved the final manuscript.

Guarantor

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Conflict of interest statement

None.

Availability of data and materials

All data generated or analyzed during this study are included in this published article (available).

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