CLINICAL CASE
doi: 10.35366/118729

Cirujano General
July-September 2024
Vol. 46, no. 3 / p. 182-186

The great tumor imitator. Cecal *Actinomyces* diagnosed as a cecal tumor

El gran imitador de tumores; Actinomyces *cecal diagnosticado como tumor cecal*

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Keywords:
abdominal actinomycosis, differential diagnosis, acute abdominal pain, tumor, infection.

Palabras clave:
actinomicosis abdominal, diagnóstico diferencial, dolor abdominal agudo, tumor, infección.

ABSTRACT

Abdominal *actinomycosis* is a suppurative infection caused by *Actinomyces* species, commonly misdiagnosed as carcinomatous growth. The infection tends to infiltrate adjacent tissues and is rarely confined to a single organ. We present a case of a 66-year-old female with a history of diabetes and high blood pressure who came to the emergency department for abdominal pain in the right iliac fossa lasting more than six months, but that worsened a week ago with the presence of a palpable tumor in the right iliac fossa; the tomography reported a tumor vs. acute appendicitis. Right hemicolectomy was performed with oncologic principles, and the study of the specimen reported cecal invasive *Actinomyces*. Preoperative diagnosis is difficult to differentiate between benign pathologies, and inflammatory bowel diseases should be considered in the differential diagnosis.

RESUMEN

La actinomicosis *abdominal es una infección supurativa causada por especies de* Actinomyces*, comúnmente mal diagnosticadas como crecimiento carcinomatoso. La infección tiene la tendencia de infiltrar tejidos adyacentes y es raramente confinado a un solo órgano. Presentamos un caso de una femenina de 66 años con una historia de diabetes e hipertensión arterial, que acude al servicio de urgencias por dolor abdominal en fosa iliaca derecha de más de seis meses de evolución pero que se agudizó hacia una semana con presencia de una tumoración palpable en fosa iliaca derecha, la tomografía reporta tumor vs apendicitis aguda. Se le realizó hemicolectomía derecha con principios oncológicos y el estudio del espécimen reportó* Actinomyces *invasor cecal. El diagnóstico preoperatorio es difícil para diferenciar entre patología benigna se debería considerar enfermedades inflamatorias del intestino como diagnóstico diferencial.*

INTRODUCTION

Abdominal actinomycosis is a disease with low incidence and prevalence, with granulomatous inflammatory characteristics caused by the Gram-positive bacterium *Actinomyces israelii,* manifesting as an abdominal tumor. It is characterized by presenting as an inflammatory pseudotumor.[1] It is part of the normal flora of the gastrointestinal and genital tracts, which makes it especially difficult to diagnose preoperatively, aside from being a great simulator of tumors.[2] It is relatively rare in clinical practice, with an annual incidence of 1/300,000 and a mortality ranging between 0-28%; the infection caused by this microorganism can be divided into a facial type 50%, thoracic 15%, abdominopelvic 20%, and other sites 15%. The manifestation is silent and in general can start with the palpation of an abdominal tumor; its behavior is of invasive characteristics to neighboring tissues.[3] The most common anatomical sites of the digestive tract are the cecum, appendix, and transverse colon.[4] The treatment of choice should be medical; in some cases, surgery

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Received: 03/11/2024
Accepted: 09/24/2024

How to cite: Medina-López JL. The great tumor imitator. Cecal *Actinomyces* diagnosed as a cecal tumor. Cir Gen. 2024; 46 (3): 182-186. https://dx.doi.org/10.35366/118729

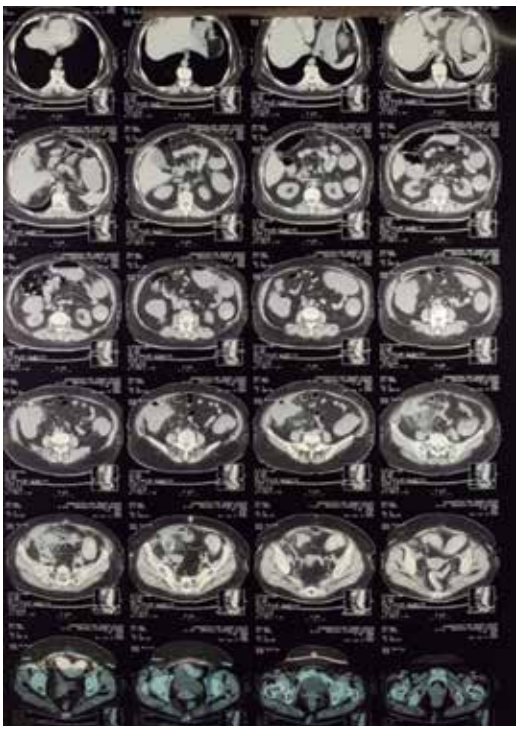

Figure 1:

Simple abdominal axial tomography (CT scan) showing a tumor mass in the cecum.

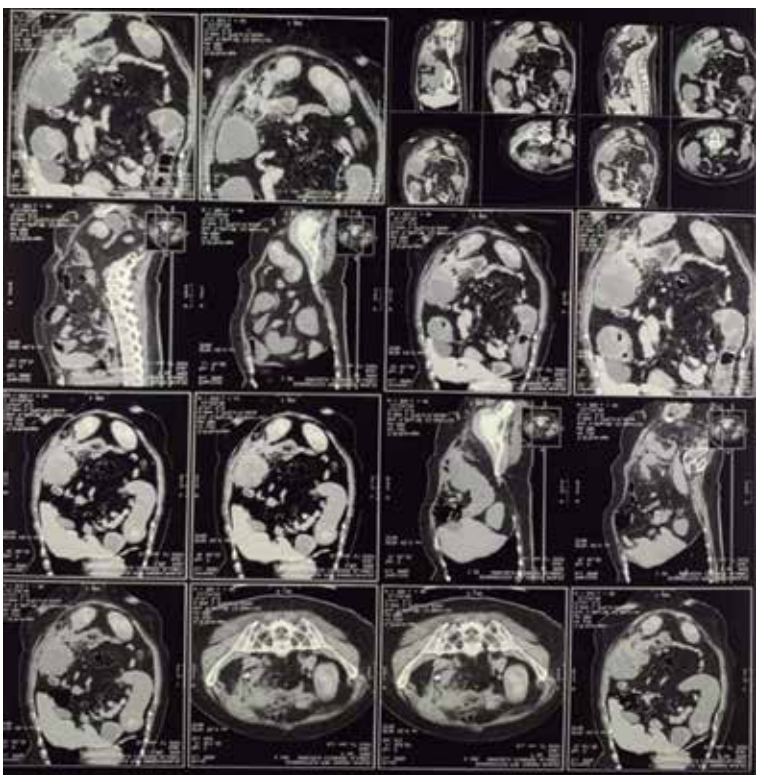

Figure 2: Abdominal CT scan showing a cecal tumor that could be confused with an abscess due to acute appendicitis.

is required in case of complications such as intestinal obstruction or perforation.[5] It is important to make a differential diagnosis with other diseases such as neoplasms, inflammatory bowel disease, tuberculosis, diverticulitis, and ovarian tube abscesses.[6] Cases of pancreatic infection have been described after instrumentation, either endoscopically or by pancreatic surgery, finding typical granulomatous lesions and data of fibrosis with insidious clinical signs that have imitated tumors with inadequate treatment.[7]

PRESENTATION OF THE CASE

A 66-year-old female patient with a history of type 2 diabetes of 40 years of evolution treated with insulin, and high blood pressure of 25 years of evolution treated with ACE inhibitors is presented; she had a history of an umbilical hernia repair 14 years ago, a cesarean section 34 years ago, and a clavicle fracture two years ago. She was admitted to the emergency department for presenting abdominal pain located in the right iliac fossa; the abdominal pain was chronic, with more than six months of evolution; it had been present but had subsided. The previous week, she began with abdominal pain located in the right iliac fossa, which subsided with medication. She also had symptoms of intestinal occlusion without being able to pass gases, and she did not present vomiting. Examination revealed tachycardia, peritoneal irritation in the right iliac fossa, a palpable measuring 7 × 10 cm in the right iliac fossa and significantly decreased peristalsis. An abdominal tomography was performed *(Figures 1 and 2)*, where a tumor was observed with probable perforation, which was mentioned as probable complicated appendicitis vs. tumor. It was decided to perform an exploratory laparotomy, finding a non-purulent inflammatory reaction liquid of approximately 100 ml; a tumor was observed emerging from on the cecum and invading the sigmoid colon, so it was decided to perform a right hemicolectomy with ileostomy and closure of the distal

end, and a 7 cm resection of the sigmoid colon. An end-to-end sigmoid anastomosis with manual technique with non-absorbable suture was performed. Closed drains were placed towards the right slider, and a closed drainage was placed on the pelvic space. Pathology pieces were taken and sent to pathology analysis. The surgical procedure was completed; she went to the recovery room and then to her hospital room. She was instructed to fast for 24 hours, and then an enteral diet was started. Seven days after surgery, the drains were removed without complications. She was referred to the Infectious Diseases Department, which gave her a course of antibiotics based on tetracyclines for six weeks. The pathology report showed a hemicolectomy region *(Figure 3)* without alterations of the lymphoid tissue in Peyer's patches, and fibrin pseudo membranes with neutrophils that were deposited in the serosa. The ileocecal valve and cecal ascending mucosa showed mixed inflammatory reaction with numerous pyocytes extending to the adipose tissue of the mesoappendix that harbors bacterial colonies of *Actinomyces* spp. that form branching filaments and radial crowns forming sulfur granules *(Figure 4)*. The cecal appendix demonstrated acute fibrinopurulent peri appendicitis, and the sigmoid tissue had pronounced edema in its walls. The diagnosis was a perforated cecal invasive *Actinomyces* with secondary acute fibrinopurulent peritonitis. The patient was discharged and seen in the general surgery outpatient department with favorable evolution. The infectious disease service recommended waiting at least six months free of inflammatory activity and medical treatment with antibiotics before intestinal reconnection was attempted.

DISCUSSION

Abdominal actinomycosis is a chronic infectious disease that causes pseudo-inflammatory tumor lesions with abscess formation. The evolution is slow and insidious and causes lesions to neighboring organs, as Eugen Tarcoveanu mentioned.[1] That said, it agrees with the evolution presented in this clinical case. Infection in patients older than 65 years usually presents in an indolent and silent manner; it is a nosologically entity of difficult diagnosis with a broad spectrum of differential diagnoses; the most associated risk factors are chronic diseases.[2] The clinical case presented here fulfilled the age of over 65 years and had a history of long-lasting diabetes. Actinomycosis is a disease relatively difficult to diagnose, and one of its characteristics is presenting as an abdominal tumor.[3] In this case, the patient initially showed an abdominal tumor and acute abdomen in agreement with

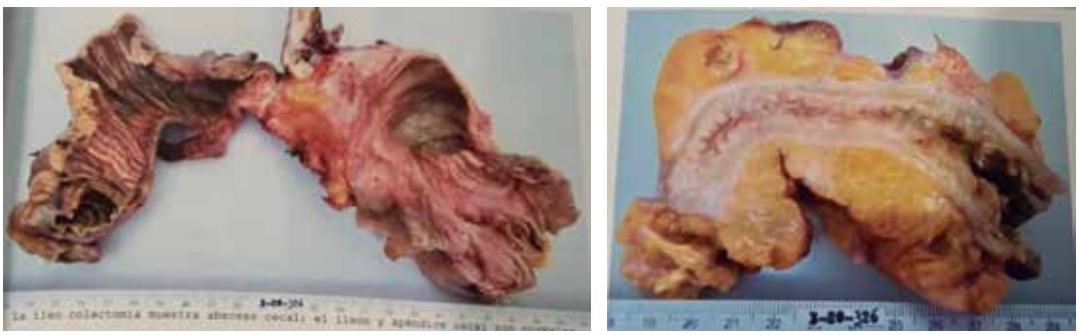

Figure 3: The first piece in the right hemicolectomy is observed in the serosa; it is deposited in the fibrin pseudo membranes with neutrophils. The ileocecal valve and cecal ascending mucosa demonstrate a mixed inflammatory reaction, with numerous myocytes extending into the adipose tissue of the mesoappendix, corresponding to *Actinomyces* colonies.

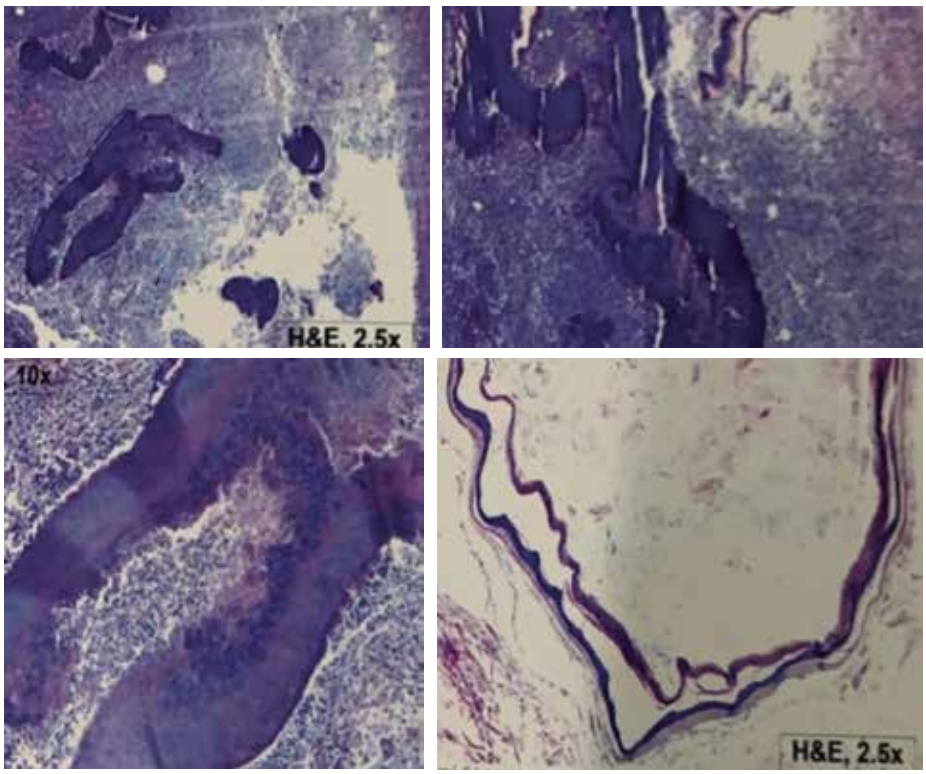

Figure 4: The ileocecal valve and cecal ascending mucosa demonstrate a mixed inflammatory reaction with numerous pyocytes extending into the adipose tissue of the mesoappendix harboring bacterial colonies of *Actinomyces spp.* that form branching filaments and radial crowns forming sulfur granules.

what has been published in the literature. Actinomycosis can not only simulate tumors but also other pathologies of the digestive tract, such as pelvic inflammatory disease, diverticulitis, appendicitis, and hollow viscera perforations.[4] The diagnostic method in this clinical case was computed axial tomography, which was reported as a probable appendicitis. *Actinomyces israelii* infection is an opportunistic infection that infects patients with a certain degree of immunosuppression, sometimes forming cystic masses and destroying neighboring organs.[5] The patient did not present cystic formations, but she had an invasion of neighboring organs, in this case the sigmoid colon which, being in contiguity, presented inflammation. In international literature, there are cases in which inflammation produces sites of intestinal intussusception.[5]

CONCLUSIONS

Abdominal actinomycosis is an underdiagnosed disease that can simulate a wide variety of diseases, including abdominal tumors, pelvic inflammatory diseases such as diverticulitis, appendicitis, intra-abdominal abscesses, and contiguous lesions. The general surgeon should have a high diagnostic suspicion in the presence of a history of chronic immunocompromise such as a history of poorly controlled diabetes and a chronic history of abdominal pain. It is difficult to diagnose before surgery, so it is important to have a high suspicion index and identify this infection promptly so radical and unnecessary surgical treatments can be avoided.

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