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Case Report

Laparoscopic management of necrotizing granulomatous appendicitis: a diagnostic challenge

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ABSTRACT

We present a case report of necrotizing granulomatous appendicitis, a rare condition that poses significant diagnostic challenges due to its atypical presentation, often mimicking more common conditions like acute appendicitis or inflammatory bowel disease. A 29-year-old female was admitted with a one-month history of abdominal pain, diarrhea, vomiting, and recent urinary symptoms. Laboratory tests revealed leukocytosis, elevated C-reactive protein, and anemia. A CT scan indicated an inflamed appendix, prompting a laparoscopic appendectomy. Intraoperatively, findings raised the suspicion of inflammatory bowel disease; however, histopathological analysis confirmed necrotizing granulomatous appendicitis. Further microbiological testing excluded bacterial and fungal infections, while the IGRA test was positive for tuberculosis. This case emphasizes the dual role of laparoscopic surgery in both diagnosing and treating necrotizing granulomatous appendicitis. It highlights the importance of considering rare etiologies, such as tuberculosis, especially in patients presenting with atypical symptoms. Early recognition and appropriate management are crucial for improving patient outcomes.

Keywords: Necrotizing granulomatous, Appendicitis, Tuberculosis, Laparoscopy

INTRODUCTION

Appendicitis is one of the most common causes of acute abdominal pain; however, certain rare forms, like necrotizing granulomatous appendicitis, can mimic other pathologies such as Crohn's disease or tuberculosis, leading to diagnostic uncertainty. Necrotizing granulomatous appendicitis is an uncommon diagnosis that should be considered when histopathological examination reveals granulomatous inflammation.[1]The rarity of this condition presents a challenge in clinical practice, as symptoms and imaging findings are often indistinguishable from more common forms of appendicitis or inflammatory bowel disease.[2] This case report discusses the diagnostic and therapeutic challenges in managing necrotizing granulomatous appendicitis, with a focus on the use of laparoscopy and histopathological analysis. It also highlights the importance of considering tuberculosis as an underlying cause, even in countries where the disease is less prevalent.[3]

CASE REPORT

A 29-year-old female presented to the emergency department with a one-month history of diffuse, colicky abdominal pain, diarrhea, and vomiting. She also reported dysuria, chills, myalgias, and minor rectal bleeding for the past two weeks. Despite several consultations at her primary care center, her symptoms persisted. The patient's medical history included obesity and herpes simplex infection. Upon physical examination, she had a temperature of 37.8 ºC and diffuse abdominal tenderness without peritoneal signs.

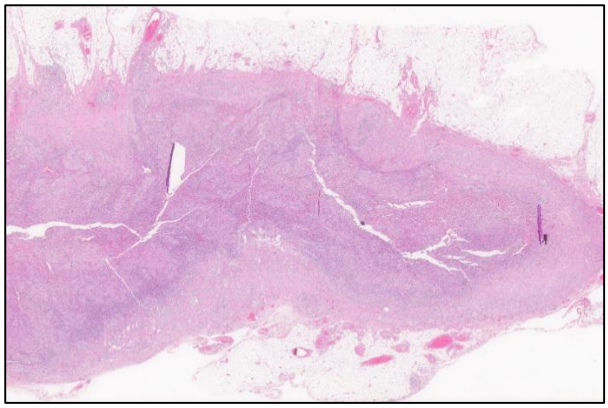

Figure 1: Histological section of the appendix (H&E stain) showing extensive inflammation and necrosis, consistent with necrotizing granulomatous appendicitis.

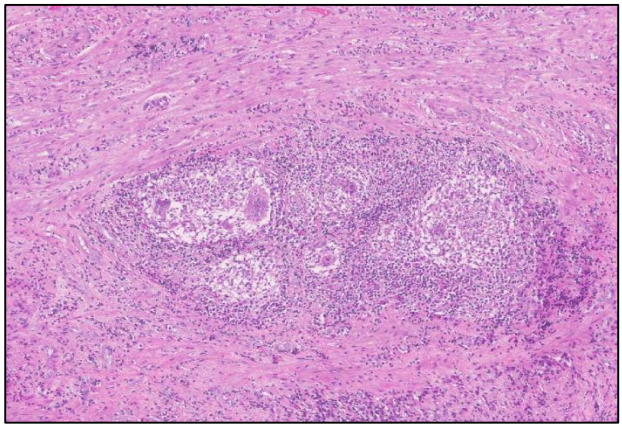

Figure 2: High magnification showing granulomas with central necrosis, characteristic of an infectious process like tuberculosis.

Figure 3: Abdominal CT scan showing an inflamed appendix with surrounding fat stranding, consistent with acute appendicitis.

Laboratory tests revealed leukocytosis (16,800/mm³) with neutrophilia (80%), anemia (Hb 10.9 g/dl), and elevated C-reactive protein (5.7 mg/dl). A urinalysis showed leukocyturia but was negative for nitrites. An abdominal X-ray was unremarkable except for fecal loading. A contrast-enhanced CT scan of the abdomen and pelvis revealed an inflamed appendix with surrounding fat stranding, consistent with appendicitis.[4] The patient underwent a laparoscopic appendectomy. Intraoperatively, the appendix and terminal ileum appeared thickened, raising suspicion of underlying inflammatory bowel disease. The procedure was completed without complications, and the patient was discharged on the second postoperative day.

Fifteen days later, the patient returned with recurrent abdominal pain and nausea. Laboratory tests and a repeat CT scan ruled out postoperative complications. Conservative management with analgesics and anti-inflammatory medications was initiated. The final histopathological analysis revealed necrotizing granulomatous appendicitis. Special stains for microorganisms, including Ziehl-Neelsen, Grocott, and PAS, were negative.[5] However, an interferon-gamma release assay (IGRA) test for tuberculosis was positive, and the patient was referred to internal medicine for anti-tuberculosis therapy.[6]

DISCUSSION

Necrotizing granulomatous appendicitis is an unusual diagnosis that requires careful histopathological assessment.[7] In most cases, the clinical presentation closely mimics that of acute appendicitis or inflammatory bowel disease, as observed in this patient. The intraoperative finding of thickened bowel walls raised the suspicion of Crohn's disease, a common cause of granulomatous inflammation in the gastrointestinal tracts.[8] However, histopathology is essential to distinguish between various granulomatous diseases, as tuberculosis can also present with similar findings.[2]

Tuberculous appendicitis is rare and typically results from hematogenous dissemination or direct extension from adjacent intestinal tuberculosis, usually involving the ileocecal region.[9] Although rare in developed countries, tuberculosis remains prevalent in areas with high rates of infection, and it can present as a primary appendiceal disease, as in this case.[3]

Minimally invasive surgery, particularly laparoscopy, offers both diagnostic and therapeutic advantages.[10] It allows for a thorough visual inspection of the abdominal cavity and facilitates the collection of tissue for biopsy. In this case, laparoscopic appendectomy not only resolved the acute appendicitis but also provided tissue samples that led to the diagnosis of necrotizing granulomatous appendicitis caused by tuberculosis.

The prognosis for patients with tuberculous appendicitis is generally favorable, provided that the disease is recognized and treated early.[11] Anti-tuberculosis therapy is effective in preventing complications and ensuring recovery.[6] This case underscores the importance of

considering tuberculosis in the differential diagnosis of granulomatous appendicitis, particularly in patients with atypical presentations or a history of exposure to tuberculosis.[12]

CONCLUSION

This case highlights the challenges in diagnosing necrotizing granulomatous appendicitis, particularly in atypical presentations that mimic more common conditions. Laparoscopic surgery serves as an effective approach for both diagnosis and treatment, emphasizing the importance of histopathological evaluation. Early recognition of underlying causes, such as tuberculosis, is crucial for optimal patient outcomes.

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