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Case Report
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Tuberculous Peritonitis Confused with Plastron Appendicitis

Plastron Apandisit ile Karışan Tüberküloz Peritoniti

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Abstract: Acute appendicitis is the most common surgical cause of abdominal pain in emergency departments. In children, it is often due to lymphoid hyperplasia, while in adults, fecaliths are the primary cause. Granulomatous appendicitis is rare, with an incidence of 0.1-2%, and may result from gastrointestinal tuberculosis. Tuberculosis remains a significant cause of death, particularly in developing countries, and accounts for 1-2% of abdominal tuberculosis cases. Due to its nonspecific symptoms, abdominal tuberculosis can mimic various diseases, complicating diagnosis. This study presents a case of a 31-year-old female initially diagnosed with plastron appendicitis. She had a 10-day history of abdominal pain and diarrhea. Physical examination revealed right lower quadrant tenderness, and laboratory tests showed elevated CRP and leukocyte levels. Abdominal CT findings suggested plastron appendicitis, leading to antibiotic therapy and observation. However, her symptoms persisted, and follow-up imaging indicated inflammatory bowel disease and intra-abdominal tuberculosis. The patient underwent right hemicolectomy and lymph node dissection. Postoperative tests confirmed intra-abdominal tuberculosis, and anti-tuberculosis treatment was initiated. Tuberculosis, caused by Mycobacterium tuberculosis complex, primarily affects the lungs but can also involve other organs. Isolated abdominal tuberculosis is uncommon, accounting for 15-20% of cases. In this patient, both *Mycobacterium tuberculosis* and *Mycobacterium bovis* were detected. Because of its nonspecific presentation, abdominal tuberculosis can resemble malignancies. Imaging techniques such as ultrasound, CT, and MRI aid in diagnosis. Early and accurate diagnosis is crucial for timely treatment, reducing morbidity and mortality.

Keywords: Plastron appendicitis, abdominal tuberculosis, mycobacterium tuberculosis complex

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Özet: Akut apandisit, karın ağrısı nedeniyle acil servise başvuran en yaygın cerrahi durumdur. Çocuklarda lenfoid hiperplazi, erişkinlerde ise fekalit en sık nedenlerdir. Ayrıca, Crohn hastalığı ve gastrointestinal tüberküloz da granülomatöz inflamasyona yol açabilir. Apendektomi örneklerinde granülomatöz apandisit görülme sıklığı %0.1 ile %2 arasındadır. Tüberküloz, özellikle gelişmekte olan ülkelerde önde gelen ölüm nedenlerindendir ve abdominal tüberküloz vakaların %1-2'sini oluşturur. Abdominal tüberküloz belirtileri spesifik olmadığından, birçok hastalıkla karışabilir. Bu çalışmada, plastron apandisit ön tanısıyla ameliyat edilen ve sonrasında intestinal tüberküloz tanısı alan bir vaka sunulmaktadır. 31 yaşında kadın hasta, 10 gündür süren karın ağrısı ve ishal şikayetiyle acil servise başvurdu. Fizik muayenede sağ alt kadranda hassasiyet tespit edildi. Yapılan laboratuvar testlerinde yüksek CRP ve lökosit seviyeleri belirlendi. Abdominal BT'de plastron apandisit bulguları üzerine hasta antibiyoterapi ve klinik takip amacıyla yatırıldı. Tedavi süresince karın ağrısı ve ishal belirtileri devam eden hastada, kontrol BT'de inflamatuar bağırsak hastalığı ve batın içi tüberküloz belirtileri tespit edildi. Operasyonla sağ hemikolektomi ve lenf nodu diseksiyonu yapıldı. Postoperatif takiplerde hastaya batın içi tüberküloz tanısı konuldu ve tüberküloz tedavisi başlatıldı.Tüberküloz, mycobacterium tuberculosis kompleksinin neden olduğu, akciğerleri ve diğer organları etkileyen bir enfeksiyon hastalığıdır. Abdominal tüberküloz daha az yaygın olup, izole vakaların %15-20'sinde görülür. Olgumuzda hem Mycobacterium tuberculosis hem de Mycobacterium bovis izole edilmiştir. Abdominal tüberküloz, non-spesifik semptomlar nedeniyle maligniteleri taklit edebilir. Ultrasonografi, BT ve MR gibi görüntüleme yöntemleri tanıya yardımcı olabilir. Olgumuzda plastron apandisit ön tanısı ile başlayan süreç, abdominal tüberküloz tanısıyla sonuçlanmıştır. Erken ve doğru tanı, tıbbi tedavinin hızlı başlamasına ve morbidite ile mortalitenin azaltılmasına yardımcı olur.

Anahtar Kelimeler: Plastron apandisit, abdominal tüberküloz, mikobakterium tüberkülozis kompleksi

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1. Introduction

Acute appendicitis is the most prevalent surgical cause of abdominal pain in emergency departments and represents one of the most frequently performed surgical procedures globally. In children, the leading etiology is lymphoid hyperplasia, whereas in adults, the primary cause is fecalith. Beyond these well-documented etiologies, less common but notable contributors to acute appendicitis include Crohn's disease and granulomatous inflammation secondary to gastrointestinal tuberculosis (1, 2). The reported prevalence of granulomatous appendicitis in appendectomy specimens ranges between 0.1% and 2% (3-5).

Tuberculosis, caused by Mycobacterium tuberculosis, remains a leading cause of mortality worldwide, particularly in developing countries, and ranks among the top ten global causes of death (6, 7). Abdominal tuberculosis constitutes 1–2% of all tuberculosis cases and is one of the most common forms of extrapulmonary tuberculosis. Owing to its nonspecific clinical presentation, abdominal tuberculosis is frequently misdiagnosed as other pathologies, such as Crohn's disease, plastron appendicitis, lymphoma, or malignancies (7, 8).

This report details the case of a patient initially diagnosed with plastron appendicitis in the emergency department who subsequently underwent surgical intervention for an intra-abdominal abscess. Histopathological evaluation ultimately confirmed the diagnosis of intestinal tuberculosis.

2. Case Report

A 31-year-old female presented to the emergency department with a 10-day history of abdominal pain and diarrhea. She had no known medical history or comorbid conditions. On physical examination, diffuse tenderness was observed across all abdominal quadrants, with the most pronounced tenderness localized to the right lower quadrant. Guarding and rebound tenderness were absent.

Laboratory tests showed hemoglobin at 12.2 g/dl, leukocytes at 11780 uL, C-reactive protein (CRP) at 118.3 mg/L, creatinine at 0.65 mg/dl, blood urea nitrogen at 8 mg/dl, alanine transaminase (ALT) at 64 u/L, and aspartate transaminase (AST) at 36 u/L. An abdominal computed tomography (CT) scan indicated findings consistent with plastron appendicitis, leading to a consultation with the general surgery department.

Upon reevaluation, the patient was admitted with a diagnosis of plastron appendicitis for antibiotic therapy and clinical observation. In collaboration with infectious diseases specialists, treatment with meropenem and metronidazole was initiated. The patient's oral intake was withheld, and daily blood tests and physical examinations were conducted. She continued to have 5 to 7 episodes of diarrhea per day, but her general condition and vital signs remained stable. On the fourth day, as her abdominal examination normalized, she was allowed to resume fluid intake, followed by gradual reintroduction of oral intake. Diarrhea frequency decreased to 2-3 times per day.

On the seventh day, due to increased abdominal pain and elevated CRP and leukocyte levels, a contrast-enhanced upper and lower abdominal CT was performed (Figure 1). This revealed diffuse edematous wall thickening, with the thickest parts measuring 12 mm in the cecum and ascending colon and 13 mm in the distal ileum. Additionally, the appendix showed an 8 mm thickened edematous wall. A mass measuring 65x45 mm with dense fluid content was observed medial to the ascending colon, suggestive of an intra-abdominal abscess or necrotic conglomerate lymphadenopathy. Numerous mesenteric lymph nodes, the largest being 21x14 mm, were also noted. Lymphadenopathy was evident in the paraaortic region, with the largest node measuring 20x7 mm. Clusters of lymph nodes were seen near the superior mesenteric artery, the largest being 20x13 mm, and smaller nodes near the celiac trunk. Additionally, lymphadenopathy, the largest measuring 39x16 mm, was noted at the portal hilum. Free fluid was more pronounced around the liver and pelvis, with bilateral paracolic regions, especially on the right side, showing widespread free fluid. The appendix had a 12 mm diameter with a

thickened and edematous wall and marked periapendiceal fat stranding.

Given the clinical findings, inflammatory bowel disease, intra-abdominal tuberculosis, and lymphoma were considered in the differential diagnosis. The patient was referred to interventional radiology, and a diagnostic laparotomy with drainage of the intra-abdominal abscess was planned due to clinical deterioration and acute abdomen findings precluding minimally invasive approaches.

After obtaining informed surgical consent, the patient underwent surgery. During exploration, massive adhesions were found in the right lower quadrant. Upon dissecting the adhesions, a significant amount of abscess content was released. Because of the presence of extensive abscess around the cecum, right colon, and posterior region, along with necrotic lymphadenopathy, a right hemicolectomy was performed. A standard right hemicolectomy and lymph node dissection were followed by ileotransversostomy. The abdominal cavity was thoroughly irrigated with saline, and a drain was placed in the right lower quadrant.

Postoperatively, the patient continued on antibiotics, gradually resumed oral intake, and was discharged in good health as infection parameters improved. Follow-up pathology revealed acid-fast bacilli (AFB) positive bacteria (Mycobacterium tuberculosis/bovis) associated with necrotizing granulomatous inflammation in the right hemicolectomy specimen. Granulomas were widespread in all intestinal layers, and Ziehl-Neelsen staining showed numerous bacteria in the abscess content and granulomas. Extensive necrotizing and non-necrotizing granulomatous inflammation was also observed in the excised lymph nodes. The patient was diagnosed with intra-abdominal tuberculosis and referred to infectious disease specialists for tuberculosis treatment.

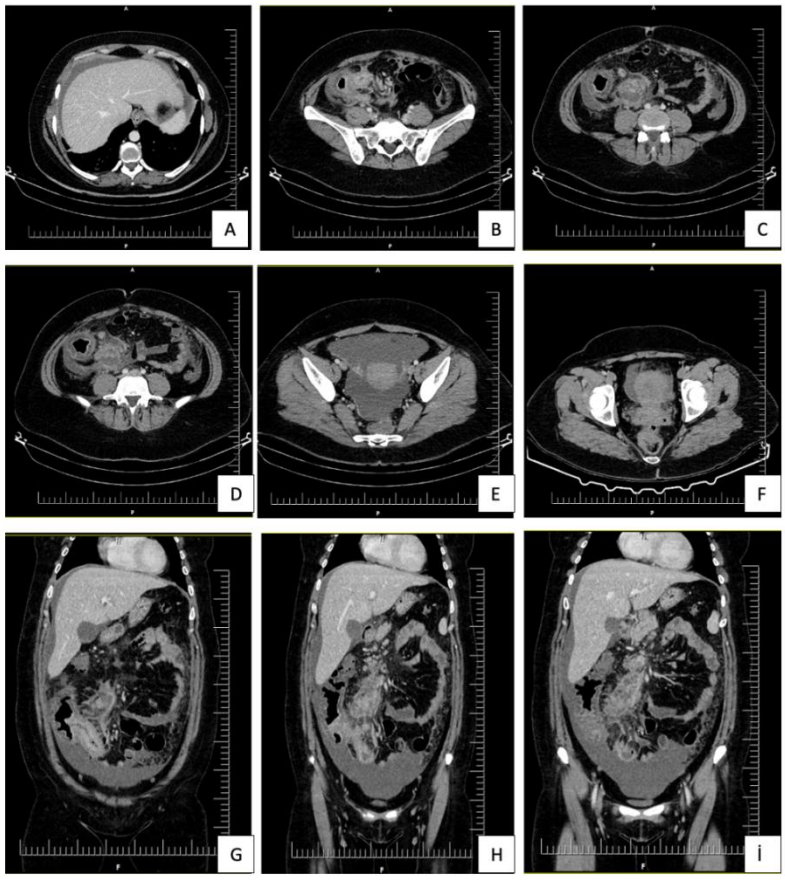

Figure.1 *Abdominal computed tomography images (A. Perihepatic free fluid, B. Wall thickening in the cecum and surrounding fat stranding, C. Extensive lymph nodes in the ileocecal mesentery, D. Necrotic conglomerate lymph node, E, F. Widespread pelvic fluid, G-İ. Lymphadenopathy near the portal hilum, paraaortic region, superior mesenteric artery, and celiac trunk; free fluid in the right paracolic gutter, perihepatic, and pelvic areas)*

3. Discussion

Tuberculosis is an infectious disease caused by the Mycobacterium tuberculosis complex (including Mycobacterium tuberculosis, bovis, microti, caprae, africanum), which typically affects the lungs but can involve various extra-pulmonary tissues and organs (9). Isolated abdominal tuberculosis is less common, occurring in only 15-20% of cases (10). In developing countries, abdominal tuberculosis is often transmitted through the consumption of contaminated milk and dairy products infected with Mycobacterium bovis, which can spread to other intra-abdominal tissues and organs through contiguity. Hematogenous dissemination from a primary pulmonary focus is also possible (11). In our case, both Mycobacterium tuberculosis and Mycobacterium bovis were isolated from the right hemicolectomy specimen. Mycobacterium bovis, a member of the Mycobacterium tuberculosis complex, has a wide host range, infecting both animals and humans. The most significant source of infection for humans is the consumption of contaminated and unpasteurized milk. Additionally, direct contact with infected animals or inhalation of infectious aerosols from diseased animals can also lead to transmission (12). Given the absence of a history of pulmonary tuberculosis in our patient, the case was considered isolated abdominal tuberculosis.

There are four forms of abdominal tuberculosis: nodal, peritoneal, luminal, and visceral involving solid organs. The luminal form of intra-abdominal tuberculosis, particularly affecting the ileocecal region, is the most common (13). Due to its non-specific symptoms, patients may present to the emergency department with complaints such as abdominal pain, abdominal distension, weight loss, fever, and night sweats (14, 15). In our case, the patient presented with abdominal pain and fever, and both luminal and nodal tuberculosis were observed.

Because of the clinical, radiological, and laboratory similarities, abdominal tuberculosis can mimic ovarian cancer and peritoneal carcinomatosis. Imaging modalities such as ultrasonography, computed tomography, and magnetic resonance imaging can aid in the differential diagnosis (9, 15). Xu et al. (16) described a case of intra-abdominal tuberculosis mimicking ovarian cancer, while Alrashed et al. (17) discussed a case initially suspected to be malignant but later diagnosed as peritoneal tuberculosis. In our patient, the initial diagnosis was plastron appendicitis, which was subsequently identified as abdominal tuberculosis.

Diagnosing intra-abdominal tuberculosis presents a significant challenge due to its nonspecific clinical features. In endemic regions, differentiating Crohn's disease from intestinal tuberculosis is particularly difficult because of overlapping clinical presentations, radiologic findings, endoscopic appearances, and histopathological features (18). Consequently, intra-abdominal tuberculosis should be considered as part of the differential diagnosis in patients presenting with ascites, intra-abdominal abscesses, or necrotic lymphadenopathy, as demonstrated in our case. Raising clinical awareness and ensuring early, accurate diagnosis are crucial for initiating timely medical therapy, which can substantially reduce morbidity and mortality.

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