Case Report

An Unusual Finding of Schaumann Bodies in the Intestine in Abdominal Tuberculosis: A Rare Case Report

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Abstract

Introduction: Granulomatous appendicitis is rare, with infectious etiologies such as tuberculosis being significant especially in endemic regions. Schaumann bodies are classically associated with sarcoidosis and occasionally Crohn's disease but rarely reported in gastrointestinal tuberculosis. The coexistence of tuberculous granulomatous appendicitis and Schaumann bodies without granulomas in the intestine is exceptionally unusual.

Case Report: A young male in his late thirties presented with acute appendicitis and incidental proximal ileal thickening. Histopathology of the appendix revealed non-caseating epithelioid granulomas and positive Ziehl-Neelsen staining, confirming tuberculosis. The patient commenced anti-tubercular therapy. Approximately 100 days later, he developed ileal stricture with perforation requiring resection and ileostomy. Histology of the ileal segment demonstrated distinctive Schaumann bodies within muscularis propria giant cells. However granulomas were not noted in the intestine. Typical histologic features of Crohn's disease as well as systemic features of sarcoidosis were absent.

Discussion: This case highlights a rare presentation of tuberculous granulomatous appendicitis with concomitant Schaumann bodies in the small intestine, expanding the pathological spectrum of abdominal tuberculosis. Recognition of such histological findings is essential for accurate diagnosis and management in tuberculosis-endemic areas.

Keywords: schaumann bodies; granulomatous appendicitis; tuberculosis

Introduction

Granulomatous appendicitis is an infrequent pathological entity, reported in approximately 0.3 to 2% of appendectomy specimens worldwide. It represents a heterogeneous group of conditions ranging from infectious etiologies such as tuberculosis, yersiniosis, and parasitic infections, to inflammatory disorders like Crohn's disease and sarcoidosis, as well as idiopathic granulomatous processes. [1, 2] Tuberculosis remains a significant cause of granulomatous inflammation in endemic regions, often involving the ileocecal region but less frequently the appendix. Distinguishing tubercular appendicitis from other causes is critical for guiding therapy and prognostication.

Schaumann bodies are concentrically laminated calcific inclusions found within multinucleated giant cells, classically associated with sarcoidosis but also described in Crohn's disease and rarely in other granulomatous diseases. [3, 4] Their occurrence in gastrointestinal tuberculosis is exceptional, with minimal documented cases. The simultaneous presence of granulomatous appendicitis with confirmed mycobacterial infection and Schaumann bodies in an intestinal stricture is a unique pathological finding, highlighting the complex immune responses in chronic granulomatous diseases.

This report details a young male whose clinical course evolved from tuberculous granulomatous appendicitis confirmed by Ziehl-Neelsen (ZN) positivity to ileal stricture and perforation, with histopathological demonstration of Schaumann bodies in the ileal muscularis propria.

Case Presentation

A young male, in his late thirties without any preexisting chronic illness or history of tuberculosis exposure, presented with acute onset right lower quadrant abdominal pain associated with vomiting. There were no systemic symptoms such as fever, weight loss, night sweats, or chronic diarrhea. Physical examination revealed localized tenderness and guarding in the right iliac fossa, without any palpable mass.

Laboratory investigations showed leukocytosis with neutrophil predominance and elevated C-reactive protein (90 mg/L). An abdominal ultrasound revealed an edematous, non-compressible appendix consistent with acute appendicitis.

The patient underwent open appendicectomy. The appendix was inflamed but intact, and no other gross abnormalities were noted intraoperatively. Postoperative recovery was uneventful initially.

Histopathological findings

Microscopic examination of the appendix demonstrated transmural granulomatous inflammation characterized by multiple well-formed epithelioid cell granulomas with Langhans-type multinucleated giant cells (Figure 1). Notably, there were no areas of caseous necrosis. Ziehl-Neelsen staining revealed positive acid-fast bacilli within the granulomas, confirming active mycobacterial infection. These findings established a diagnosis of tuberculous appendicitis.

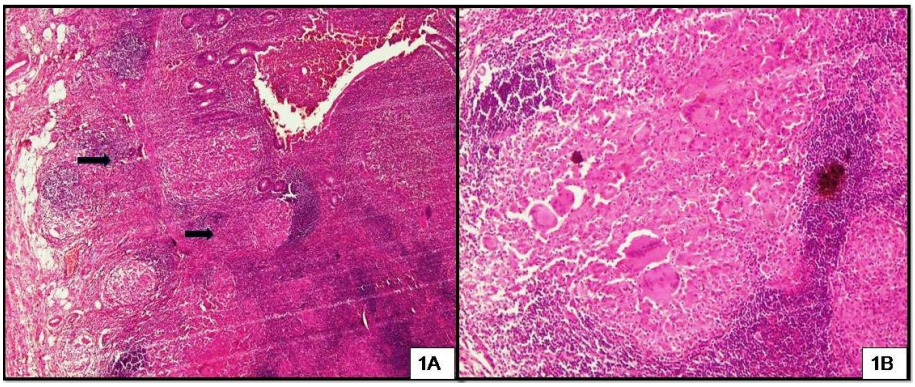

Figure 1: a. Appendix showing multiple epithelioid cell granulomas, H&E, 40x. b. Epithelioid cell granulomas with giant cells, H&E, 200x.

Accordingly, the patient was started on standard anti-tubercular therapy (Isoniazid 225 mg OD, Rifampicin 450 mg OD, Pyrazinamide 1200 mg OD and Ethambutol 825 mg OD). Clinical follow-up was planned for monitoring.

Clinical course and subsequent presentation

Approximately 100 days post-appendicectomy and ATT initiation, the patient presented urgently with severe abdominal pain, abdominal distension, vomiting, and signs of peritonitis. He was febrile (38.5°C), tachycardic, and hypotensive with a rigid abdomen.

Emergent exploratory laparotomy revealed approximately 1 litre purulent peritoneal & fecal fluid in peritoneal cavity. Approximately 160 cm from DJ flexure; stricture segment of 2 cm length was (Non Palpable) seen. Pinpoint perforation was present approx 2 cm proximal to stricture (Figure 2). A double-barrel ileostomy was done due to local contamination and edema. No other gross lesions were observed.

Sections of the resected ileal segment at the site of stricture demonstrated focal erosion of lining epithelium with pyloric metaplasia with presence of few dilated crypts and hypertrophic disorganised muscularis propria. Unlike the appendix, well-formed epithelioid cell granulomas were not seen. Importantly, within the muscularis propria, numerous multinucleated giant cells containing distinctive basophilic, concentric, laminated inclusions consistent with Schaumann bodies were seen (Figure 3, 4). These aggregates were scattered focally and often surrounded by an inflammatory response. ZN stain was negative within these lesions. Due to presence of numerous giant cells a diligent search for fungal and parasitic organisms was also made using PAS and GMS special stains. However no PAS or GMS positivity was observed.

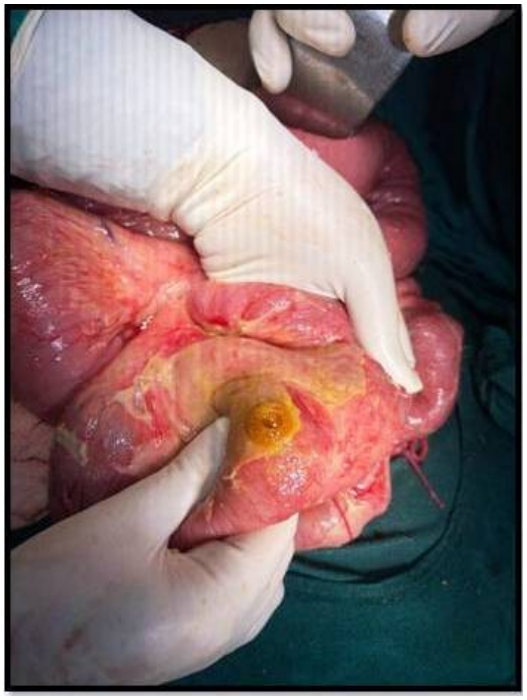

Figure 2: Intraoperative picture of ileum showing perforation surrounded by serositis.

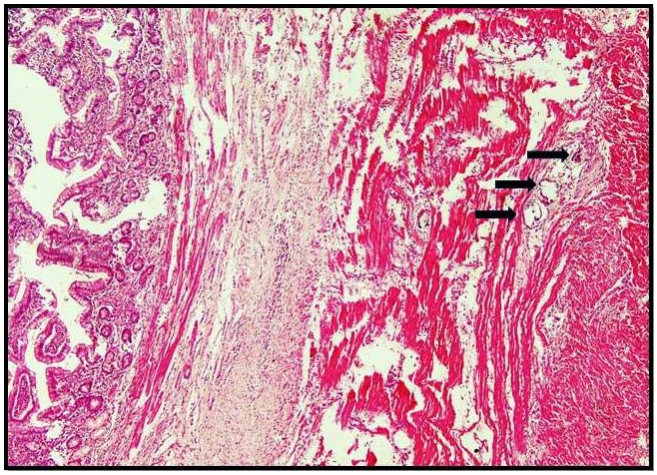

Figure 3: Ileum showing presence of many Schaumann bodies in muscularis propria, H&E, 40x.

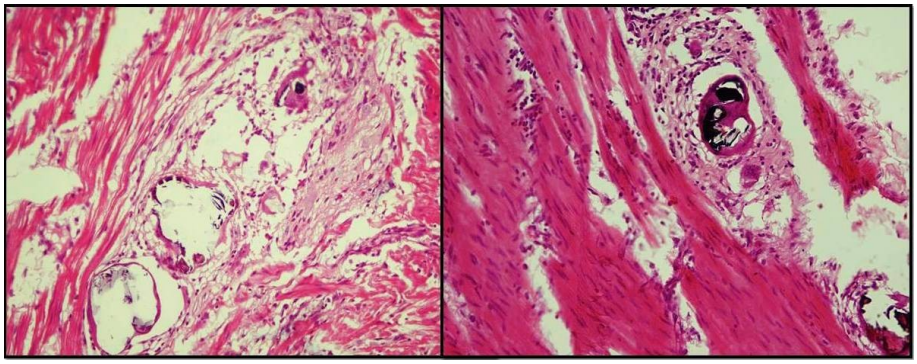

Figure 4: Schaumann bodies within giant cells in muscularis propria of ileum, H&E, 200x.

The patient was continued on ATT. Surgical treatment was in the form of laparotomy followed by ileal resection of the perforated segment and double barrel ileostomy.

Discussion

Granulomatous appendicitis secondary to tuberculosis is uncommon but well documented in tuberculosis-endemic regions. The appendix may be primarily involved or secondarily affected due to regional ileocecal disease. Confirmatory diagnosis

relies on histopathology and demonstration of acid-fast bacilli, as in this case. Positive ZN staining in the appendix strongly supports active tubercular infection rather than a non-infectious granulomatous etiology. [1, 5]

The patient's clinical sequence—initial appendiceal tuberculosis followed by delayed ileal stricture and perforation—mirrors the recognized natural history of intestinal tuberculosis, where fibrotic stricturing and perforation can complicate healing granulomatous inflammation. [6]

Schaumann bodies are laminated calcific concretions frequently reported in sarcoidosis but noted occasionally within Crohn's disease granulomas located near myenteric plexuses. [3] They have seldom been reported in intestinal tuberculosis. [3, 4, 7] These are composed of calcium carbonate crystals and concentric laminated conchoidal bodies. [8] Williams WJ found highest incidence of these bodies in sarcoidosis, followed by chronic berylliosis and least in tuberculosis. [8] He also explained their formation in which he suggested that calcium carbonate crystals act as nidus for deposition of conchoidal bodies composed of a protein matrix along with calcium, phosphate or iron salts. [8] Their etiology is linked to chronic antigenic stimulation, impaired phagolysosomal degradation of calcium and protein debris within multinucleated giant cells. This patient's ileal Schaumann bodies likely represent a chronic granulomatous milieu induced by host immune reaction to *Mycobacterium tuberculosis* antigens. While the ileal histology lacked overt granulomas and acid-fast bacilli, the possibility of immune-mediated response or post-treatment sequelae is plausible. ATT was started after diagnosing appendiceal tuberculosis. This led to degradation of active tubercle bacilli within the intestinal granulomas and initiated active metabolism within giant cells, forming non-specific residual products of lysosomal metabolism. These then served as a nidus for calcium deposition, leading to formation of Schaumann bodies. The presence of Schaumann bodies, thus, served as markers of healed granulomas. The finding of Schaumann bodies in the current case, although did not change the treatment or prognosis of the patient, but it signified the chronicity of the intestinal lesions. These can act as a reassurance for the clinicians that metabolically active proliferation of mycobacteria is absent in the tissue.

Differentiating Crohn's disease and intestinal tuberculosis in granulomatous ileitis remains challenging due to overlapping clinical and histological features. [2] However, typical Crohn's characteristics—cobblestone mucosa with serpiginous ulcers, crypt distortion, cryptitis, crypt abscess, transmural inflammation and fissures—were absent here. Also, the patient had no clinical or biochemical evidence of sarcoidosis. The positive ZN stain in the appendix firmly anchors tuberculosis as the causative agent. The Schaumann bodies in the present case acted as an indicator of intestinal tuberculosis and have rarely been reported in intestinal tuberculosis in the literature.

Conclusion

The following points can be concluded from the current case: Expand the histopathological paradigm: Schaumann bodies are not exclusive to sarcoidosis or Crohn's disease. Their presence in abdominal tuberculosis reflects the evolving spectrum of chronic granulomatous inflammation and should not exclude tuberculosis from the differential diagnosis.

Interpret morphology in biological context: Schaumann bodies indicate metabolically mature granulomas with absent or minimal active mycobacterial replication. Their detection should not prompt escalation, prolongation, or modification of standard antitubercular therapy.

Do not equate histologic chronicity with clinical quiescence: Despite appropriate ATT, intestinal tuberculosis can progress to fibrosis, stricturing, and perforation, necessitating surgical intervention.

Prioritize long-term surveillance and multidisciplinary care: Structured follow-up and close collaboration between pathologists, clinicians, radiologists, and surgeons are essential to anticipate complications and optimize patient outcomes.

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