



## PRIMARY APPENDICULAR TUBERCULOSIS: A REVIEW OF LITERATURE

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**ABSTRACT** Tuberculosis (TB) is an infectious disease with high morbidity and mortality. Its incidence is on rise since the incidence of human immunodeficiency virus infection has increased. Ileocaecal tuberculosis is the commonest form of the gastrointestinal TB. Primary appendicular TB is a rare pathology. It is essentially a histopathological surprise. Subjecting every appendix for biopsy should help the treating physician to establish the diagnosis. The literature on appendicular TB is limited to few case reports. This article is intended to provide the etiopathogenesis, clinical features, diagnosis and treatment of this rare entity after reviewing the available literature.

**KEYWORDS :** Appendix, tuberculosis, antitubercular treatment

**INTRODUCTION:**

Tuberculosis (TB) is an infectious disease affecting 13 million people worldwide [1]. Its occurs primarily in the developing countries. However, because of the coinfection with HIV its prevalence has been increasing in the developed world [2]. The patients with coinfection are resistant to the standard antitubercular therapy (ATT). Lungs are the most commonly involved organs [3]. Concomitant lung and abdominal infection is present in 15% of the cases [4]. Ileocaecal TB is the most common gastrointestinal TB [5]. Primary appendicular tuberculosis is a rare form of TB. It comprises of the 0.6% of the total cases [6]. These patients are usually diagnosed based on the histopathology report [7]. High index of suspicion in an endemic area is required for early diagnosis and treatment of this infection. Several reports of appendicular TB are available in literature. This article provides the insight into this rare variant of intestinal TB.

**ETIOPATHOGENESIS:**

Gastrointestinal system involvement occurs secondary to ingestion of the infected milk or sputum. It can also be involved secondary to haematogenous involvement of the gut. Contiguous spread from the infected foci and lymphatic involvement have also been proposed as the mechanisms of the gastrointestinal infections [5].

The gastrointestinal system is the sixth common system involved with the tubercular infection. Ileocaecal junction is the commonest segment. Abundance of the lymphoid tissue along with the slow transit of the contents are most commonly proposed mechanisms for this infection [4]. The tubercle bacilli once lodged in the intestinal mucosa leads to a granuloma and nodule formation in the mucosal layer. This then ulcerates and subsequently involve the deeper layers of the bowel leading to stricture and fistula formation [5].

Appendicular infection is usually secondary to the extension of the ileocaecal involvement [6]. The rarity of its involvement may be because of less degree of contact with the infected bolus [8]. Various mechanisms of appendicular involvement have been described in literature. Secondary involvement from ileocaecal infection (most common), haematogenous spread from other foci, serosal involvement in patients with peritoneal TB and retrograde involvement because of the lymphatic spread have been described in literature [6].

**CLINICAL FEATURES:**

The appendicular TB is seen between 2-60 years of age. There is no sex predilection [9]. Various presentations of appendicular TB have been reported in English literature. Right iliac fossa mass along with subacute intestinal obstruction, right iliac fossa pain, acute appendicular infection [10], latent infection, chronic infection are few clinical manifestations of this disease [6]. Few reports of gastrointestinal bleed [11] and tubercular appendicitis with caecal perforation [12] and enterocutaneous fistula secondary to rupture or surgery of tubercular appendicitis have also been reported [13]. The chronic form of appendicitis leads to generalised malaise and weight loss. The acute infection in chronic infection is mild and not as severe as pyogenic acute appendicitis [14]. The presentation of this entity is varied and high index of suspicion is required in the endemic areas for detection in these patients. Various causes of right iliac fossa pain and mass are reported in literature. The incidence of colonic malignancy and ileocaecal TB is far common than appendicular lumps. Acute

appendicular lump secondary to a pyogenic appendicular infection is more common than a tubercular abscess. The varied and nonspecific presentation of this pathology usually present a clinical surprise.

**Investigations.**

The haematological workup in these patients is nonspecific. Total leucocyte count and differential counts are normal in patients with chronic pain and infections. However, there may be rise in leucocytes and the band forms once the acute infection sets in. The rise however is nonspecific as it can also be seen in bacterial acute appendicitis [15].

Ultrasonogram is a routine investigation done in patients with right iliac fossa pain. Thick aperistaltic distended loop with wall edema signifies acute infection. Thickened mucosal folds of ileum along with mesenteric lymphadenopathy and mild ascites are the pointers towards tubercular etiology [7]. These markers can however be present in patients of colonic and ileal malignancy as well. In endemic area, a patient with ileocaecal thickening presenting as acute appendicitis tubercular appendicular infection should be considered as one of the differential diagnosis.

Contrast enhanced computerized tomography will show a thick dilated appendix. There may be presence of thick matted loops and momentum around this appendix giving the appearance of ileocaecal mass. The ileal loops may be thickened along with mesenteric thickening and lymphodal enlargement. There may be varied degree of loculated or generalised ascites in the abdominal cavity [15]. Lower lung zones may show the foci of tuberculosis in 10% of the cases [5]. These markers are however not specific of TB but can be present in any malignancy. Magnetic resonance imaging doesn't add any more information than a CECT abdomen.

The yield of fine needle aspiration in the diagnosis of gastrointestinal TB is very low. Suri et al [16] in their study could not detect TB on FNAC in patients with ileocaecal TB. Gastrointestinal endoscopy [15] in patients with chronic appendicular TB can give a clue to diagnosis. Presence of ulcers and nodules in the caecum and ileum can offer a chance of mucosal biopsy and histopathological diagnosis. But diagnosis of primary appendicular TB on endoscopy is impossible because of inaccessible appendicular mucosa.

Diagnostic laparoscopy offers a chance of peritoneal and omental biopsy [15]. The appendectomy can also be performed in the same sitting. The presence of whitish nodules on the peritoneum and momentum along with mesenteric lymphadenopathy and ascites signify tubercular infection. Appendectomy in acute appendicitis and ileocaecal resection or right hemicolectomy for some other ailment can help detect the primary isolated appendicular TB.

**Histology:**

The appendicular involvement is described classically in three forms. Military TB, ulcerative and hyperplastic forms have been reported [14]. Military involvement is secondary to a generalised tubercular infection. The hyperplastic variant shows a large thickened and congested appendix. The appendix on cut section shows a normal mucosa, submucosa may show the tubercles or nodules. The muscle layer is the most significant layer involved in the hyperplastic variant of TB. It shows the presence of inflammatory cells, giant cells along

with connective tissue deposition. The typical caseation is absent in the hyperplastic variant. This form of TB may mimic malignancy. The ulcerative variant is more common histology. Mucosa shows multiple ulcers which may be confluent with ulcers of terminal ileum and caecum. There is presence of the caseating necrosis involving the mucosa and submucosa. The transmural involvement may lead to perforation and sepsis [14].

Typical granulomatous inflammation may not be diagnostic of TB as other granulomatous diseases like Crohn's and foreign body granulomatous diseases are also possible [17]. Ziehl-Neelsen stain positivity can help diagnose this infection. The yield of acid fast stain is low even in endemic countries [18]. Polymerase chain reaction (PCR) can help establish the diagnosis in such cases [17].

#### **Treatment:**

Anti-tubercular therapy is the cornerstone of the treatment. As appendectomy has already been performed in most of the cases, ATT offers the only chance of cure. Isoniazid, rifampicin, pyrazinamide and ethambutol are given for 2 months as intensive phase and this is followed by rifampicin and isoniazid for 4 months. In intolerant and resistant cases second line therapy must be considered [19].

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