

# Abdominal tuberculosis: a surgical enigma

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## Editorial

Abdominal tuberculosis is one of the most complex abdominal infections involving many organ systems at the same time. With increasing population mobility across the globe, the disease has assumed epidemic proportions posing a challenge to both the developed and developing nations. Awareness of the etiopathogenesis, spread, diagnosis and management can only help in preventing a pandemic of this complex disease. Tuberculosis can involve any part of gastrointestinal tract from the mouth to anus. It also involves the peritoneum as well as solid organs within peritoneal cavity. The commonest strain causing infection is the human strain of mycobacterium tuberculosis. The organisms reach the gastrointestinal tract through various routes. Haematogenous spread from lungs with later reactivation is the commonest. This is followed by direct ingestion of bacilli in sputum from an active pulmonary focus or by direct spread from adjacent organs. Isolated affections of lymph node via lymphatic channel is commonly encountered. The ileocecal junction is the commonest to be affected.<sup>1</sup>

Various hypothesis has been put forward to explain the predilection for this site. Increased physiological stasis with an increased rate of fluid and electrolyte absorption followed by minimal digestive activity with abundance of lymphoid tissue at that site predisposes to tuberculous infections. Peritoneal involvement may be from lymph nodes, intestinal lesions or from tuberculous salpingitis in women. All three types of abdominal tuberculosis viz. abdominal lymph node involvement, peritoneal and intestinal can occur in a patient in a mutually exclusive pattern.<sup>2</sup> Tuberculous granulomas characterized typically by central caseation surrounded by a rim of Langhan's giant cells and epithelioid cells are pathognomonic. In the intestine the disease affects the lymphatic channels thereby leading to circumferential girdle ulcers which cicatrize leading to strictures. End arteritis is a common accompaniment of tuberculosis leading to ischemia and development of strictures by way of occlusion of vessels. The final outcome in the intestine is strictures of predominantly the terminal ileum. Based on morphology, bowel lesions can be classified into 3 types: Ulcerative seen in malnourished patients. Ulcerohyperplastic typically seen in ileocecal and chronic lesions. Hyperplastic variety which is seen in well-nourished adults.<sup>2</sup>

The ileocecal junction becomes grossly distorted and assumes an obtuse angle with involvement of either side of the ileocecal valve. The valve eventually becomes incompetent. Mesenteric lymph node involvement presents with large matted masses of lymph nodes exhibiting caseation. Peritoneal TB manifests with formation of hyperemic areas with loss of normal shiny luster. The surface is studded with multiple yellowish white tubercles. Omentum is commonly involved with thickening tubercle formation. Exudative fluid formation is a common accompaniment. Based on the volume of fluid formed, peritoneal lesions can be classified into wet or ascitic type; Encysted or loculated wherein collection is localized and a fibrotic type which manifests as an abdominal mass, mesenteric and abdominal thickening.<sup>2</sup>

The clinical presentation exhibits great variability due to the

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complexity of the pathological process.<sup>3</sup> The disease commonly affects younger age group with female preponderance. Lymph node involvement and peritoneal adhesions are commonly seen in pediatric population. Systemic symptoms of fever, weight loss, accompanied with abdominal pain, alteration in bowel habit and anemia are present in majority of patients. However in a few patients the symptoms may not always be classical thereby posing a diagnostic dilemma. As seen in all other organ systems tuberculosis is a common masquerader of many other diseases including cancer leading to misdiagnosis and mismanagement. Clinicians from the developing world are more aware of the clinical diversity. A symptom complex which does not fit into a classical picture of any other disease despite close resemblance in symptomatology should raise the suspicion of abdominal tuberculosis. Based on the severity of symptoms, the pattern of presentation may be classified as acute, acute on chronic and chronic.<sup>4,5</sup>

Acute presentations are usually associated with peritonitis due to perforation. Acute on chronic pattern may manifest with severe excruciating pain accompanied with systemic symptoms usually seen in lesions affecting the ileocecal junction. Severe mesenteric lymphadenitis with exuberant peritoneal reaction can also give rise to a sudden exacerbation of disease. Chronic pattern of presentation usually manifest with chronic symptoms of localized pain accompanied with constitutional symptoms. Lump in right iliac fossa may be a common accompaniment. Esophageal and gastro duodenal tuberculosis is extremely rare whereas rectal and anal tuberculosis has become quite common due to the upsurge in the incidence of HIV in homosexual population.<sup>6</sup>

Histological confirmation of diagnosis in tuberculosis is essential before commencing definitive treatment. A variety of investigations can provide diagnostic clues.<sup>7</sup> Chest X-ray will reveal either active tuberculosis or an old healed fibrotic lesion. Barium meal follow through still continues to be a promising investigation. However, enteroclysis followed by barium enema is the best way to evaluate intestinal tuberculosis. A wide range of findings are seen in barium studies the list of which is endless. However, alteration in the configuration of ileocecal junction, terminal ileum and distal small bowel is pathognomonic of tuberculosis. Ultrasonography may just reveal presence of free fluid, lymphadenopathy, bowel thickening or pseudo kidney sign due to a sub hepatic location of ileocecal junction. Contrast enhanced computerized tomography may be helpful in diagnosing bowel lesions.<sup>7</sup>

Symmetric circumferential thickening of the terminal ileum and caecum accompanied with alteration of ileocecal valve, thickening of valve, adherent loops, and mesenteric lymphadenopathy with central necrosis are common findings. Tuberculous ascitic fluid typically exhibits high attenuation due to higher protein content. With respect to mesenteric lymph nodes caseating lymph nodes typically exhibiting hypodense center with peripheral enhancement are diagnostic. Lymph nodes typically involved by tuberculosis are those situated at mesenteric root, celiac, porta hepatis and peripancreatic nodes reflecting lymph node groups typically draining the small intestine. Retroperitoneal lymph nodes are least involved in tuberculosis. Laparoscopy has emerged as a great adjunct for the diagnosis of abdominal tuberculosis.<sup>8-10</sup> Laparoscopy enables not only direct visualization of peritoneal tuberculosis and bowel thickening but enables one to obtain biopsy specimen from peritoneal surface as well as lymph nodes. Colonoscopy can also help in obtaining biopsies from submucosal lesions located in terminal ileum, ileocecal junction or ascending colon. Immunological and enzyme studies have their inherent limitations and therefore cannot be advocated as a routine.<sup>11-13</sup>

The onus therefore lies on the clinician to analyze every symptom and investigation report in order to decide the best diagnostic modality for confirmation of diagnosis. Having confirmed the diagnosis in a non-acute presentation, the mainstay of treatment is chemotherapy. Traditional 12month regimen continues to hold true and is the best solution in the current era taking into consideration emergence of drug resistant strains and HIV coinfections.<sup>14,15</sup> Four drug regimens for first 3 months followed by two drug regimen for remaining 9months is therapeutic.<sup>15</sup> However one should be cautious about the toxicity caused by anti-tuberculous chemotherapy. All patients on treatment should be closely monitored for objective and subjective assessment of the response to treatment and for side effects of chemotherapy in patients presenting with lump. Resolution of lump needs to be monitored. If patient still has persistent lump and symptoms then surgical intervention is indicated.

Surgical intervention in abdominal tuberculosis is an adjunct to chemotherapy.<sup>16,17</sup> Acute cases presenting with perforation, failure of resolution of the lump despite patient being on chemotherapy are the two main indication for surgical intervention.<sup>18,19</sup> In a scenario of perforation proximal to a stricture, suturing of the perforation is not advisable. Instead a resection anastomosis of the perforated dilated segment is the safest option. This obviates the possibility of anastomotic leakage in addition to resolution of the septic process. For patients presenting with unresolved ileocecal mass a right hemicolectomy is indicated. In cases of patients presenting with stricture, either a stricturoplasty or resection anastomosis can be done.<sup>20</sup> Isolated strictures situated at least 9 inches proximal to the ileocecal junction can be managed by stricturoplasty. However, if there are multiple strictures situated over a short segment of intestine then resection anastomosis is indicated.<sup>21</sup>

Variability in presentation of various forms of abdominal tuberculosis is a cause for concern due to which the incidence of misdiagnosis continues to be high. A high index of suspicion based on adequate knowledge of the disease process and experience are pivotal in early diagnosis. An ideal diagnostic investigation still continues to be an enigma for surgeons. Diagnostic laparoscopy accompanied with imaging has undoubtedly reduced the incidence of delayed diagnosis. Surgeons all across world need to be aware of this intricate and deceptive disease by sharing experiences. Enormous

number of studies come from the Asian subcontinent. Isolated case reports and case series with low numbers have now started coming from the developed countries. The presentation in these two groups is quite diverse. This diversity needs to be studied elaborately with meta-analysis of data coming from both the groups. This can only help in evolving a consensus or developing an algorithm for prompt diagnosis and optimum management of abdominal tuberculosis.

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## Conflict of interest

The author declares no conflict of interest.

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