Epidemiology of surgical diseases has undergone a remarkable change over the last few decades and older diseases have been replaced by others. However, tuberculosis of GIT remains an important infection requiring surgical intervention. The gravity of this disease can be judged by the fact that annually, it results in the death of 3 million people globally. Under the existing conditions and at present working pace of the TB control program, an estimated one billion people will be infected by 2020, and 35 million will die from TB.\(^1\) Its control remains elusive due to the myriad clinical manifestation involving every part of body and capability to thrive in poverty, complacence, ignorance and coexistence with emergent diseases like AIDS. Gastrointestinal TB is a major health problem in many underdeveloped countries. Recently, a marked rise is seen in developed countries also, especially in association with HIV infection. Autopsies of patients with pulmonary TB before the era of effective treatment demonstrated intestinal involvement in 55-90% of fatal cases. The previously noted association between pulmonary and intestinal TB no longer prevails, however, recent reports reveal 20-25% of patients with GI TB have concomitant pulmonary TB.\(^2\)

GIT is the sixth most frequent extrapulmonary site of tuberculosis infection. Both the incidence and severity of abdominal tuberculosis are expected to increase with the spread of HIV infection and inappropriate therapy leading to multidrug-resistant strains. Mycobacterium reaches the gastrointestinal tract via haematogenous route, swallowing infected sputum, or direct spread from infected contiguous lymph nodes and viscera. The gross pathology of abdominal tuberculosis is characterized by transverse ulcers, fibrosis, mural thickening, strictureing, perforation of the bowel wall, fistulization, enlarged and matted mesenteric lymph nodes, omental thickening, and peritoneal tubercles. This wide-ranging morphology thus resembles any disease including ulcer, carcinoma, intestinal obstruction, peritonitis, abdominal pain, and abdominal mass or even obstructive jaundice in case of involvement of hepatobiliary system.

The most common site of involvement in the gastrointestinal tract is the ileocaecal region, possibly because of the increased physiological stasis, increased rate of fluid and electrolyte absorption, minimal digestive activity and an abundance of lymphoid tissue at this site. It has been shown that the M cells associated with Pyers patches can phagocytose the bacillus.\(^3\)

Two-thirds of all patients suffering from abdominal tuberculosis belong to 2\(^{nd}\) and 4\(^{th}\) decade of age, with equal gender distribution, although some studies have suggested a slight female predominance.\(^4\) The spectrum of disease in children is different from adults, in whom adhesive peritoneal and lymph nodal involvement is more common than abdominal organ involvement. Abdominal tuberculosis may present in acute, chronic or acute and chronic forms. Most patients have generalized symptoms of fever (40-70%), abdominal pain (80-95%), diarrhea (11-20%), constipation, alternating constipation and diarrhea, weight loss (40-90%), loss of appetite and malaise. Pain can be either colicky due to intestinal obstruction or dull when the mesenteric lymph nodes or omentum is involved.

Esophageal tuberculosis is a rare entity, constituting only 0.2 per cent of cases of abdominal tuberculosis and usually occurs mainly by extension of disease from adjacent lymph nodes. Common radiological features include deep ulceration, intramural dissection, and fistula formation, especially in patients with AIDS. The ulceration can mimic esophageal malignancy with nodularity of the mucosa on barium examination. Mass and fistulous tract formation can be better appreciated by using CT scanning.

Abdominal Tuberculosis: Continuation of Surgical Scourge

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Stomach and duodenal tuberculosis, each constitute around one per cent of all cases of abdominal tuberculosis. Gastro-duodenal tuberculosis may mimic peptic ulcer disease but has a shorter duration of history, not responding to anti-secretory therapy. It may also simulate gastric carcinoma. Scarring from ulcers leads to diffuse antral narrowing resulting in gastric outlet obstruction. The stomach may be diffusely involved and show irregular contour simulating limitsplastic. Duodenal involvement is seen with diffuse mucosal fold thickening, ulcers, or stricture formation.

Patients with ileocaecal TB present with similar non-specific symptoms as elsewhere. Abdominal examination may reveal no abnormality or a doughy feeling. A well-defined, usually mobile mass, is often palpable in the right iliac fossa. Progression of disease may lead to small bowel obstruction due to narrowing of the lumen by hyper plastic tissue or by strictures of the small intestine, which are commonly multiple. Patients may present as acute, chronic or acute and chronic intestinal obstruction.

Pneumoperitoneum may be detected on radiographs in only half of the cases where perforation is seen on laparotomy. Tubercular perforations are usually single and proximal to a stricture. Acute tubercular peritonitis without intestinal perforation is usually an acute presentation of peritoneal disease.

Colonic form of tuberculosis constitutes 9.2% of all cases of abdominal tuberculosis. It commonly involves the sigmoid, ascending and transverse colon presenting as large bowel obstruction, abdominal pain or mass in abdomen. Fever, anorexia, minor or massive bleeding per rectum is also its clinical manifestation. Multi focal involvement is seen in one-third (28 - 44%) of patients with colonic tuberculosis.

Clinical manifestation of rectal and anal TB include bleeding per rectum along with constitutional symptoms are also common. Haematochezia is the most common symptom (88%) followed by constitutional symptoms (75%) and constipation (37%). The stricture caused by the fibrosis is usually tight and located approximately 10 cm from the anal verge. Overall rectal tuberculosis is rare and may occur in the absence of other lesions in the chest and small or large bowel.

Anal tuberculosis is less uncommon and presents as multiple and recurrent fistulce. These may occur in isolation and without constitutional symptoms.

Paustian in 1964 stated one or more of the following four criteria must be fulfilled to diagnose abdominal tuberculosis: (i) histological evidence of tubercles with caseation necrosis; (ii) a good typical gross description of operative findings with biopsy of mesenteric nodes showing histological evidence of tuberculosis; (iii) animal inoculation or culture of suspected tissue resulting in growth of M. tuberculosis; and (iv) histological demonstration of acid fast bacilli in a lesion.

In our set-up, treatment is usually started on criteria (i) and (ii) based on histopathological examination when the operation has been undertaken or the biopsy has been done.

Early changes on barium examination reveal nodular thickening of mucosal folds, with loss of symmetry in the fold pattern. As with Crohn's disease, deep fissures, sinus tracts, enterocutaneous fistulce, and perforation can occur, although less commonly. Ulceration may be demonstrated on double-contrast examinations, typically perpendicular to the long axis of the bowel; these heal with the formation of short annular strictures. Because of persistent irritability from inflammation in the terminal ileum, rapid emptying of that segment may occur (Stierlin sign). The ileocecal angle is obliterated with a widely patent ileocecal valve.

Characteristic ultrasonographic (US) features that indicate early changes of TB have been described. These include mesenteric thickness of 15 mm or more and an increase in the mesenteric echogenicity (from fat deposition) combined with mesenteric lymph adenopathy. Same may also be seen on sonograms in patients with Crohn’s disease. Radiologic features of intestinal TB in HIV-infected patients are similar to other patients. The ileocecal region is the most common site of involvement, with thickening of the ileocecal valve, adjacent ileum, and the colonic wall. CT scan shows mesenteric lymphadenopathy with a hypodensumating centre suggestive of necrosis.

Abdominal lymphadenopathy with intestinal TB may be demonstrated with ultrasound or CT scanning. The distribution of lymphadenopathy is sometimes difficult to differentiate from lymphoma. Contrast-enhanced CT may be useful in this regard.

Laparoscopy provides the opportunity to inspect the abdominal organs, take biopsy and collect ascitic fluid sample for cytology, histopathology and bacterial examination. Bhargava et al. studied 87 patients with high protein ascites, of whom 38 were diagnosed as having tuberculosis. They found visual appearances to be more helpful (95% accurate) than histology, culture
or guinea pig inoculation (82.3% and 37.5% sensitivity respectively).10 Caseating granulomas may be found in 85-90% of the biopsies. Laparoscopy may also be used to relieve a few intestinal adhesions.

In general, polymerase chain reaction (PCR) testing has been advocated for fluid analysis, since contamination with stool, sputum, and other tissues make false-positive PCR results more likely. It can, however, be useful for both tuberculous peritonitis and meningitis.

All patients diagnosed with tuberculosis of abdomen should receive conventional anti-tubercular therapy for at least 6 months including initial 2 months of rifampicin, isoniazid, pyrazinamide and ethambutol. A randomized comparison of 6 months short course chemotherapy with a 12 months course of ethambutol and isoniazid (supplemented with streptomycin for the initial 2 weeks) was conducted by Balasubramaniam et al. at Tuberculosis Research Centre, Chennai, in 193 adult patients. Cure rate was 99 and 94% in patients given short-course and the 12-month regimen respectively. However, many physicians extend the treatment duration to 12-18 months.

The surgical treatment of intestinal tuberculosis has gone through three phases.11 Bypassing the stenosed segment by enterointerostomy or by ileotransverse colostomy was practiced when effective anti-tubercular drugs were unavailable, as any resectional surgery was considered hazardous in the presence of active disease. This practice led to blind loop syndrome, fistulae and recurrent obstruction, in the remaining segments. With the advent of antituberculous drugs, more radical procedures became popular in an attempt to eradicate the disease locally. These included right hemicolectomy with or without extensive removal of the draining lymph nodes and wide bowel resections. These procedures were often not tolerated well by the malnourished patient. Moreover, the lesions are widely spaced and not suitable for resection. Conservative surgical procedures are recommended today. However, in situations where fibrosis has compromised luminal integrity, extensive procedure may be justifiable. Pre-operative drug therapy duration is controversial. Strictures which reduce the lumen by half or more and which cause proximal hypertrophy or dilation are treated by strictureplasty.12 This involves a 5-6 cm long incision along the antimesenteric side, which is closed transversely in two layers. A segment of bowel bearing multiple strictures or a single long tubular stricture may merit resection. Resection is segmental with a 5 cm margin.

Tubercular perforations are usually ileal and are associated with distal strictures. Resection and anastomosis is preferred as simple closure of the lesions is associated with a high incidence of leak and fistula formation. In some cases, presenting late with contamination of peritoneum, ileostomy may be justified to restore the continuity at later date after three months of anti-tubercular treatment and nutritional rehabilitation.

Two reports suggest that obstructing intestinal lesions may be relieved with antitubercular drugs alone without surgery. Anand et al. reported clinical and radiological resolution of tuberculosis strictures with drug therapy even in patients with sub acute intestinal obstruction. They treated 39 patients with obstructive symptoms using medical therapy. At the end of one year, 91 per cent showed clinical improvement, 70 per cent had complete radiological resolution and surgery was needed in only 3 cases (8%).5 Predictors of need for surgery were long strictures (>12 cm) and multiple areas of involvement. Similar observations were made by Balasubramaniam et al.12 The mean time required for the relief of obstructive symptoms was 6 months.5,12

Abdominal tuberculosis is considered a common condition, but it remains a diagnostic dilemma despite tremendous development in diagnostic methods. No single method depending on detection of clinical signs, radiological and endoscopic procedures or bacteriological examinations provide a gold standard of diagnosis. However, an algorithm leads to considerably higher precision in identifying the disease and its managements.

REFERENCES


