Three decades of gastroenterology in Soweto South Africa: from descriptive to scientific observations
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Chapter 10

Pitfalls in the Diagnosis of Gastrointestinal Tuberculosis

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Summary
Gastrointestinal tuberculosis is difficult to diagnose since it mimics many other abdominal conditions and has protean manifestations. The disease can present as an abdominal mass, bowel perforation, Crohn's disease and dysentery. These presentations are discussed with representative cases to illustrate the diagnostic difficulties. It is emphasized that to obviate the diagnostic pitfalls, tuberculosis should always be considered in the differential diagnosis of unusual gastrointestinal presentations particularly because radiological and laboratory tests may be noncontributory.

Introduction
At the turn of the century, Walsh observed that it was impossible to diagnose abdominal tuberculosis with any degree of certainty, since the disease mimics many other abdominal conditions and histological confirmation may be equivocal. Symptoms are vague, signs nonspecific and investigations not pathognomonic. The protean manifestations of gastrointestinal tuberculosis include presentation as an abdominal mass, bowel perforation, Crohn's disease and dysentery. These presentations and diagnostic difficulties are considered further below.

Presentation as abdominal masses with unusual radiological features: Atypical radiological manifestations are illustrated by Cases 1 and 2 (Table 1). The first patient presented with epigastric pain, vomiting and weight loss. An 8 x 8 cm. irregular nodular mass was palpated in the umbilical region. A barium meal showed a filling defect in the lower border of the third part of the duodenum (Fig. 1). The associated mucosa, however, was intact. The appearances were consistent with an extrinsic mass causing pressure on the duodenum. Operative findings were characteristic of tuberculosis, subserosal tubercles being present over the entire small bowel. Antituberculous therapy was administered. A barium meal repeated three months later was completely normal (Fig. 2).

The second patient presented with generalized abdominal pain, weight loss and an abdominal mass extending from the epigastrium to the left umbilical region. A barium contrast study of the upper gastrointestinal tract revealed marked irregularity of the gastric antrum along its greater curve aspect (Fig. 3). There was, in addition, attenuation and loss of distensibility of the first part of the duodenum, with the duodenal loop draped around an extrinsic mass. There
appeared to be a fistulous tract extending inferiorly from the greater curve of the antrum. Endoscopy, however, revealed a normal stomach and duodenum. Biopsy of a cervical gland was diagnostic of tuberculosis. Following 10 weeks of antituberculosis therapy, a repeat barium contrast study was considered normal with the gastric antrum and duodenum normally distensible and restored to the normal anatomical configuration (Fig. 4).

*Presentation as bowel perforations:* Three patients (Cases 3, 4, 5 - Table I) presented with the uncommon complication of multiple perforations of the bowel. In Case 3, the perforations of the ileum were sutured and antituberculosis therapy was administered. The patient died one week after laparotomy. Multiple perforations of the ileum and caecum were present in Case 4. A modified right hemicolectomy (removal of 45 cm. of the terminal ileum, cecum and proximal half of the ascending colon) was carried out, together with suture of the remaining perforations in the small bowel. The patient died two days after surgery. The third patient presented with peritonitis and extensive chest tuberculosis. Hyperalimentation and antituberculosis therapy were instituted. The patient's condition deteriorated and he died four days after admission.

Diagnosis of bowel perforation is difficult and is rarely made clinically, the majority of cases having been found at autopsy. Peritonitis, occurring in a patient with a chest x-ray indicative of tuberculosis, should lead one to suspect a perforated tuberculosis ulcer. In many cases, however, the radiological appearances of the chest are normal. Treatment is difficult because the patient has acute generalized peritonitis and is depleted by chronic disease. Immediate operative intervention should be undertaken. The surgical treatment is controversial, some preferring simple suture with drainage of the abdomen and others advocating resection of the diseased bowel and a by-pass procedure.

It is evident that the prognosis of tuberculosis perforation is very poor and that mortality following emergency surgery is considerable. The two patients in our series treated operatively by suture died and it appears that the treatment advocated by Sweetman and Wise, i.e. primary resection of the perforated bowel with immediate ileotransverse colostomy and later resection of the remaining ileum and right colon, is a logical and safer procedure.
Fig. 1: Case 1: Barium meal showing a filling defect in the lower border of the third part of the duodenum (see arrow).

Fig. 2: Case 1: Normal barium meal after three months treatment.

Fig. 3: Case 2: Barium meal demonstrating marked irregularity of the gastric antrum along greater curve aspect: attenuation and loss of destensibility of first part of duodenum with the duodenal loop draped around an extrinsic mass (see arrow).

Fig 4: Case 2. Normal barium meal after ten weeks therapy.
Presentation as Crohn's disease. Crohn's disease and intestinal tuberculosis may mimic each other in their clinical, radiological and histologic manifestations and differentiation between the two diseases may be extremely difficult. This is illustrated in Case 6 (Table I). The patient presented with a one-month history of watery diarrhea and weight loss. Clinical signs were erythema nodosum on the lower limbs, erythema multiforme on the upper limbs and mucous membrane of the mouth, arthritis of the ankles, knees, wrist and elbow joints and peritonitis. Radiological signs were those usually associated with Crohn's disease, i.e. rosethorn ulceration of the ileum, the string sign indicating a narrow, rigid spastic segment of the small bowel and the characteristic "cobblestone" appearance of the small intestine. The Tine test was negative and x-ray of the chest was normal. The presumptive diagnosis was Crohn's disease but because of the prevalence of pulmonary tuberculosis at Baragwanath Hospital, she was treated with anti-tuberculosis therapy. Recovery was dramatic and a repeat barium meal after six months therapy was normal.

The importance of histologic examination of the mesenteric lymph nodes in order to differentiate tuberculosis and regional enteritis has been stressed. Anand, in an histologic analysis of 50 cases of ileocecal tuberculosis, found caseation necrosis in the bowel wall in 66%. This change, however, was present in the mesenteric lymph nodes of all cases. An exception to this is shown in Case 7 (Table 1). A 49-year old male presented with a five-day history of pain in the right iliac fossa and right lumbar region. Rectal examination revealed tenderness in the right pararectal area. Acute retrocecal appendicitis was diagnosed. Laparotomy was performed. The cecum and ileum were found to be fixed to the peritoneum and posterior abdominal wall. The adhesions were freed and appendix removed. A mesenteric lymph node was biopsied.

Investigations:- The Tine test was negative. Chest x-ray showed a right upper lobe cavity and bilateral nodular disseminated opacities suggestive of tuberculosis. The sputum was positive for tuberculosis on two occasions. Histologic examination of the appendix showed no evidence of acute appendicitis but the mucosa contained numbers of epithelioid cell granulomata with Langhans giant cells. There was no evidence of caseation or necrosis. Similar granulomata were seen in the lymph node. The histologic features were very suggestive of Crohn's disease. Because of the positive sputa, therapy for tuberculosis was instituted and resulted in complete recovery, with no recurrence in a two year follow-up.
<table>
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<tr>
<th>Case</th>
<th>Age</th>
<th>Sex</th>
<th>Symptoms</th>
<th>Signs</th>
<th>Radiology</th>
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<tr>
<td>3</td>
<td>30</td>
<td>F</td>
<td>Abdominal pain, weight loss, and watery diarrhea – 6 months</td>
<td>Emaciated, pallor and peritonitis.</td>
<td>X-ray chest normal x-ray abdomen-air under left diaphragm.</td>
<td>ESR, 60 mm/hr.; hemoglobin, 8.5 gm/dl.; albumin, 1.8 gm/100 ml.</td>
<td>Surgery - generalized fecal peritonitis. Multiple small bowel adhesions. Multiple small bowel fistulas.</td>
<td>Serosa and peritoneum tuberculosis.</td>
<td>Died 6 days after surgery.</td>
</tr>
<tr>
<td>4</td>
<td>23</td>
<td>F</td>
<td>Cough – 1 month severe lower abdominal pain and vomiting – 2 days</td>
<td>Peritonitis.</td>
<td>X-ray chest-right lower lobe cavity. X-ray abdomen air under left diaphragm</td>
<td>Hemoglobin 8 gm/dl.; urea, 128 gm/dl.; K, 3.3 mEq/l.; Na, 136 mEq/l.</td>
<td>Surgery multiple perforations. Numerous tubercles in serosa of small bowel.</td>
<td>Liver biopsy gross fatty change. Ileum cecum and mesenteric lymph nodes tuberculosis.</td>
<td>Died 1 day after surgery.</td>
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Table 1 (continued): Clinical, radiological, and laboratory features of patients with intestinal tuberculosis.

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<tr>
<th>Case</th>
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Presentation as dysentry:- In the absence of ileocecal tuberculosis, colonic tuberculosis occurs infrequently. It is exceedingly difficult to diagnose and seldom considered in the differential diagnosis of large bowel lesions simulating malignancy. In Case 8 (Table 1) the diagnostic difficulties were compounded by the patient presenting with bloody diarrhea—a rare symptom in tuberculosis.

Details of the patient are as follows: A 51-year old woman presented with a two-year history of intermittent diarrhea, malaise, anorexia and a one-week history of severe bloody diarrhea. Acute renal failure due to dehydration was present. In addition, peritonitis, uveitis and decubitus ulcers were observed. Conservative therapy including hyperalimentation was instituted and renal failure improved.

Investigations:- Hemoglobin was 7.6 gm./dl.; serum creatinine, 3.6 mg./dl., serum potassium, 3.7 mEq./l.; sodium, 128 mEq./l. Laboratory tests for the following diseases were negative; amoebiasis, Y. enterocolitis, stools for microscopy, culture and parasites. The Tine test, x-ray chest, barium meal, and small bowel meal were normal. Barium enema demonstrated strictures in the sigmoid, descending and transverse colon (Fig. 5). Antituberculosis therapy was instituted and the patient's condition improved. A repeat barium enema performed six
months later showed disappearance of the strictures except for that in the descending colon where minimal stricturing was still present. The patient has been followed up for one year and is completely well.

Confirmation of the diagnosis of abdominal tuberculosis requires at least one of the following criteria: 1. animal inoculation or culture of suspected tissue resulting in growth of the tubercle bacillus; 2. the histologic demonstration of *Mycobacterium tuberculosis* in the lesion; 3. the histologic evidence of tubercles with caseation necrosis; 4. a good typical gross description of operative findings with a biopsy of a mesenteric node showing histologic evidence of tuberculosis; 5. response to chemotherapy without recurrence of disease. Our experience has shown that, except for bowel perforations, the response to therapy is dramatic, marked improvement taking place within six weeks.

It is thus evident that in order to obviate the diagnostic pitfalls, tuberculosis should always be considered in the differential diagnosis of unusual clinical gastrointestinal presentations, particularly in view of the fact that radiological and laboratory tests may be noncontributory.

**References**
