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Case Report

Abdominal tuberculosis: Diagnostic and therapeutic approach

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ABSTRACT

There occurred resurgence of extra pulmonary tuberculosis and hence, abdominal tuberculosis worldwide since 1980s due to HIV pandemic and primary resistance to first line drugs. Patients may be present with acute abdomen and acute TB peritonitis due to millitary phase of the disease, perforated intestinal disease or ruptured caseating mesenteric lymph node.

Keywords: Abdominal tuberculosis, perforated intestinal disease.

INTRODUCTION

Tuberculosis was recognized as early as 4th century BC. Hippocrates- 'it is a mortal disease and Phthysical persons die if diarrhoea sets in (Oxford textbook of clinical surgery, 2007). During the 19th and 20th centuries, tuberculosis was a major cause of strictures and bowel obstruction worldwide. The identification of mycobacterium tuberculosis as a causative agent in 1882 and the advent of antimicrobial therapy in 1946 resulted in dramatic decline in the incidence and prevalence of the disease in the mid 20th century in addition to the general improvement in hygiene and sanitation (Baloch et al., 2008).

However, there occurred resurgence of extra pulmonary tuberculosis and hence, abdominal tuberculosis worldwide since 1980s due to HIV pandemic and primary resistance to first line drugs. Not surprisingly, there is also an increase in the incidence of the percentage of patients with atypical presentation and atypical forms of extra pulmonary tuberculosis.

Abdominal tuberculosis is one of the most prevalent forms of extra pulmonary disease. GI involvement was reported to be 55 to 90% in patients with active pulmonary tuberculosis before the advent of specific anti-tuberculosis treatment but it was regressed to 25% after the development of specific drugs. The disease has an insidious course like any other chronic infectious disease without specific laboratory, radiologic or clinical findings (Oxford textbook of clinical surgery, 2007). Due to this non specificity, there are great difficulties in its diagnoses

despite the availability of gold standard methods even in the best set ups.

The lack of culture, histological evaluation, CT scan and barium studies in settings where the disease is prevalent only makes the clinical practice worse. As a result, abdominal tuberculosis is still a great diagnostic and therapeutic challenge presented to the general surgeon in particular and to the physician in general. In this mini review, we analyzed the clinical, laboratory, radiologic, histopathological and bacteriologic features of abdominal tuberculosis and outlined the current standard of care to the patient with abdominal tuberculosis.

DEFINITION AND CLASSIFICATION

Abdominal tuberculosis involves tuberculosis of the gastrointestinal tract, mesenteric lymph nodes, omentum, peritoneum, liver and spleen. Even though abdominal TB is rare in the industrial world, it is still a common problem in many parts of developing countries and is mostly seen during laparotomy when expecting something else (Maurice, 1990).

There are three main types of the disease commonly seen in endemic areas of tuberculosis; the ascitic, hyperplastic and glandular types in order of frequency in adults. The glandular type of abdominal tuberculosis is the most common form in children followed by ascetic and

Table 1: The different types of abdominal tuberculosis (Maurice, 1990).

S/No.	Types of abdominal tuberculosis
1	Peritoneal TB Wet or ascitic form Generalized Localized or loculated
2	Dry or fibrous type Adhesive type Plastic type TB of peritoneal folds and contents Mesenteric adenitis Mesenteric cyst Mesenteric abscess Bowel adhesion Rolled up omentum
3	Gastrointestinal tuberculosis Ulcerative type Hypertrophic or hyper plastic Sclerotic or fibrotic type Ulcerative type Hypertrophic or hyper plastic Sclerotic or fibrotic type
4	TB of solid organs Liver Spleen

hyperplastic types. Other less common forms of abdominal TB are tuberculosis stricture which can occur anywhere in the gut but most commonly in the caecum and distal ileum. Tubercular ulcers which are rare and Tuberculosis fistulae which often follow when abdominal operations are done for abdominal tuberculosis are present as acute abdomen. All these pathologies can present in so many ways making diagnosis difficult. Table 1 depicts the different types of abdominal tuberculosis (Norman, 1998; Emergency medicine, 2004; Surgery international, 2012).

AETIOLOGY AND EPIDEMIOLOGY

Tuberculosis is one of the ten (10) leading causes of death globally and mainly in developing countries. It infects a third of the world population and nearly 1% of the world's population is newly infected each year with about 3 million deaths per year globally. Almost all cases of abdominal tuberculosis in the west are caused by

mycobacterium tuberculosis. Mycobacterium bovis is eliminated by public health measures (Oxford textbook of clinical surgery, 2007). Mycobacterium tuberculosis is aerobic, non-motile and a non-spore forming acid fast bacilli. It can be cultured in solid-LJ medium which may take 4 to 6 weeks to get results. Liquid culture media provide faster results and are more sensitive.

PATHOGENESIS

Ingestion of contaminated food containing the bacteria may result in primary intestinal TB and in children swallowed sputum containing the pathogen are often incriminated in the pathogenesis of intestinal tuberculosis.

Hematogenous spread from bacteremic phase of primary pulmonary tuberculosis is the main mechanism in the pathogenesis of tuberculosis of the peritoneum, mesenteric lymph nodes and intestine. The organism can also get access to the abdomen contiguously from diseased

Table 2: Features of abdominal TB (Baloch et al., 2008; Surgery international, 2012; Khan et al., 2008).

Parameter	Features
Age: 30-50	Vomiting
Females=2x males	Diarrhoea
Insidious onset	Amenorrhoea
Abd pain-vague	Constipation
Fever	Hematochezia
Weight loss	Anorexia
Ascites	Vomiting

adjacent organs like the fallopian tubes.

The terminal ileum and ileocaecal junction are the most frequently involved sites of abdominal TB in most studies which is ascribed to the high lymphoid tissue in this region of the bowel. However, some studies found the peritoneum to be the commonest site of involvement in this disease.

CLINICAL MANIFESTATION

About 70% of abdominal TB is diagnosed in Africa where the disease is prevalent and general hygiene and socio-economic factors play a major role. Patient presentation varies according to the type of abdomen. Abdominal distension due to ascites with straw colored fluid occurs as a result of millitary tubercles in the peritoneum. During laparotomy one may find tubercles. Other patients may be present with acute abdomen and acute TB peritonitis which is extremely rarely present due to millitary phase of the disease, perforated intestinal disease or ruptured caseating mesenteric lymph node. Still, other group of patients may be present with chronic TB peritonitis which is more common and presents ascites and characteristic millitary nodules which may coalesce to form abd cocoon encasing the intestine (Oxford textbook of clinical surgery, 2007). Table 2 demonstrates the common presenting features of abdominal tuberculosis.

INVESTIGATIONS

The investigations involve:

1) Laboratory tests which include:

- ESR increased in 90% of cases of tuberculosis;
- Anaemia which may be associated with the chronic nature of the disease;
- Leucopenia with relative lymphocytosis;
- Liver and renal function tests.

2) Fluid analysis

The following findings from ascitic fluid are suggestive of

tuberculosis:

- Total white cell count of >500 which has a sensitivity of 81% and a specificity of 48% with diagnostic accuracy of 46%;
- ADA (adeninediaminase) test has a sensitivity and specificity of about 95%;
- AFB positivity is very low with only <5% of cases positive for AFB;
- Protein level is usually between 3 to 10 g.

3) Chest x-ray which looks for concomitant pulmonary tuberculosis.

4) Abdominal ultrasound

Ultrasound of the abdomen is safe, inexpensive, non-invasive and helpful to the physician in the diagnosis of abdominal tuberculosis (Charles, 1999). The typical findings include a peritoneum which is thickened, irregular and echo poor nodular appearance with ascitic fluid. It may also show alternating echogenic and echo free layers produced by bowel wall, serosa and adjacent bowel loop with interloop fluid called 'club sandwich' appearance and enlarged LNs.

5) Abdominal CT scan

CT scan of the abdomen has a better sensitivity than ultrasound scan. However, both CT and ultrasound scan are not pathognomonic for abdominal TB.

6) Open biopsy

Mini laparotomy under ultrasound scan guidance with local anaesthesia is safe option and also helps to diagnose cirrhosis, periportal fibrosis and hepatoma as a cause of ascites.

7) Endoscopy

Abdominal tuberculosis often mimics Crohn's disease which needs colonoscopy and biopsy.



Figure 1: Multiple small tubercles typical of abdominal tuberculosis.

8) Barium meal and follow through

Main evaluation tool for intestinal TB often shows thickened mucosa with distorted mucosal folds deep ulcers. Sinus tracts, enterocutaneous fistulas obliteration of ileocaecal angle can also be demonstrated.

9) Laparotomy

Figure 1 shows multiple small tubercles typical of abdominal tuberculosis. This picture is taken by the author while operating in a patient presented with acute abdomen and operated on emergency basis. Pathology confirmed tuberculosis. This includes:

- Thickened and inflamed bowel wall;
- Serosa studded with tubercles;
- Caseated regional LNs.

MANAGEMENT

Medical

Medical therapy is the mainstay of tuberculosis anywhere in the body with standard anti tubercular chemotherapy consisting of 3 drugs (RHZ) for 8 months and 4 drugs in areas of MDR TB.

Surgical

Surgery is limited to the management of complications which could be one of the following:

Intestinal obstruction: This is found in the ileocaecal area and may require right quarter colectomy (limited ileocaecal resection). It is an ileal disease which may need resection and anastomosis if strictures are in short segment. Strictureplasty is done in the presence of multiple strictures. Adhesiolysis biopsy may be all that is needed in some cases, while bypass procedures are done in obstructive duodenal disease.

Perforation: This involves primary resection and anastomosis was preferred.

Abscess should be drained.

Fistulas: This is managed with chemotherapy initially and the choice of surgical procedure depends on a variety of factors such as the site and the extent of the disease, status of the remaining gut, general condition of the patient, available expertise in emergency, preference of the individual surgeon and institutional protocols. Hence, standardization as well as, comparison of the surgical procedures undertaken by different researchers is difficult.

There is surgical intervention only if no closure in 8 to 10 weeks occurs. Baloch et al. (2008) performed stricturoplasty in 47.6% patients, while Khan et al. (2008) reported adhesiolysis/node biopsy as the most frequently performed procedure in their patients (26.41%). Malik et al. (2008) reported right hemicolectomy as the most commonly performed procedure (48.60%) in their series while Rajput et al. (2005) and Arif et al. (2008) reported resection and anastomosis in their 58.92 and 39.58% patients, respectively.

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