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Abdominal Tuberculosis in Uttarakhand: A diagnostic Dilemma

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Abstract

Background: Abdominal tuberculosis has become one of the leading cause of morbidity and mortality. It can involve any part of gastrointestinal tract. It is a major public health problem in developing countries. Abdominal tuberculosis still presents a diagnostic challenge as clinical symptoms are nonspecific and mimic various gastrointestinal disorders.

Aim: To analyse role of various clinical, histopathological and microbiological findings in confirming the diagnosis of abdominal tuberculosis.

Materials and Method: A retrospective study was carried out in a tertiary teaching hospital in Uttarakhand and all cases diagnosed as abdominal tuberculosis were included in the study. All relevant data were collected from medical records. Histopathological examination along with Ziehl-Neelsen staining was done in all the cases to detect acid fast bacilli.

Results: Out of the 68 cases of abdominal tuberculosis, intestinal tuberculosis had highest incidence of 45.59%, out of which ileum was the most frequent site .This was followed by peritoneal tuberculosis (33.82%) and nodal tuberculosis (14.71%). Stricture was seen in 41.18% cases. It was seen that in intestinal tuberculosis caseating granuloma had 29.03% positivity for acid fast bacilli while non-caseating had a positivity of 12.90%. In lymph node tuberculosis acid fast positivity was 40% in caseating and 10% in non-caseating granuloma. Adenosine deaminase (ADA) level was raised in 100% cases of ascitic type peritoneal tuberculosis. Majority of the patients were in the age group of 21 to 40 years. Abdominal pain was the most common symptom observed in all cases (100%) of abdominal tuberculosis.

Conclusion: Significant variations are seen in the clinical presentation of abdominal tuberculosis. Symptoms are non-specific and diagnostic criterias are limited. Advanced tests are required to diagnose the disease accurately. However, in a low resource setting tissue biopsy is the ultimate tool for diagnosis of abdominal tuberculosis.

Keywords: Gastrointestinal, Histopathology, Epithelioid Granuloma, Acid Fast Bacilli.

Introduction

Tuberculosis is caused by Mycobacterium tuberculosis, an aerobic bacteria. WHO declared tuberculosis a global emergency due to its highly contagious nature.(1) Abdominal tuberculosis is ranked sixth amongst all cases of extra pulmonary tuberculosis. Any part of the gastrointestinal tract may be involved in abdominal tuberculosis, including pancreatobiliary system, peritoneum etc. Abdominal tuberculosis (TB) emerged as a major public health problem in developing countries and is associated with significant morbidity and mortality.(2) Poor socioeconomic conditions, low educational status and rising graph of disease like AIDS contribute towards poor outcome of disease in developing countries and remains the foremost cause of death.(3,4) Modes of infection are haematogenous , oral or direct via lymph nodes and fallopian tube.(5) The dissemination of abdominal tuberculosis may involve gastrointestinal tract, peritoneum, lymph nodes and solid viscera.

Intestinal tuberculosis is the most common abdominal tuberculosis. It exists in three morphological forms: ulcerative, hypertrophic and fibrotic stricture.(6) Most frequent complication encountered is obstruction of intestine in abdominal tuberculosis due to stricture and adhesions. In India, tuberculosis is responsible for 3% to 20% cases of bowel obstruction. Perforation is a life threatening complication of gastrointestinal tuberculosis; usually occurs single and proximal to stricture.

Tubercular peritonitis shows variable morphological pattern exhibited as loculated, ascitic, fibrous and purulent forms.(7) Caseation and calcification are common in lymph node of small bowel and mesentery.

Clinical presentation of Crohns disease, cancer of colon, or other ischemic enteritis, gastrointestinal infections strongly mimics a case of abdominal tuberculosis.

It is always difficult to pick up the disease in initial stage, as clinical features are always nonspecific. At present, none of the tests contribute to a definite diagnosis of abdominal tuberculosis. Thus, it remains a diagnostic dilemma.(8)

Our study emphasizes the role of histopathological examination and detection of acid fast bacilli in diagnosis of highly suspicious cases of abdominal tuberculosis.

Materials and Method

A retrospective study was conducted in the department of pathology in a tertiary teaching hospital in Garhwal region. Retrospective review of cases of abdominal tuberculosis diagnosed in six year duration in centre and few private laboratories was done. Clinical information was noted from the requisition forms and

medical records. Haematoxylin and eosin stain along with special stains like Ziehl Neelsen stain for acid fast bacilli and Periodic Acid Schiff (PAS) stain for fungal profiles were applied. A known positive control section was used for correct differentiation.

The criteria used for diagnosis of abdominal tuberculosis are as follows:-

1. Acid fast staining positivity for M. Tuberculosis in ascitic / biopsy specimens.
2. Identification of caseating granuloma in microscopic sections from the representative site.

HIV positive cases were excluded from the study.

Results

In our study a total of 68 cases were retrieved. The most common clinical presentation was abdominal pain seen in 100% cases (Table 1). Majority of patients were in the age group of 20 – 40 years (Fig. 1). Male to female ratio was 2:1. Two cases had co existent pulmonary tuberculosis. Prior history of tuberculosis was present in 12 cases.

Table 1: Clinical presentation in abdominal tuberculosis

Clinical presentation	Number of cases	Percentages
Abdominal pain	68	100%
Anorexia	47	69.12%
Fever	54	79.41%
Intestinal obstruction	24	35.29%
Perforation	18	26.47%
Ascitis	21	30.88%
Nausea/vomiting	56	82.35%
Abdominal mass	15	22.06%
Abdominal tenderness	16	23.53%
Diarrhea	21	30.88%
Constipation	42	61.76%

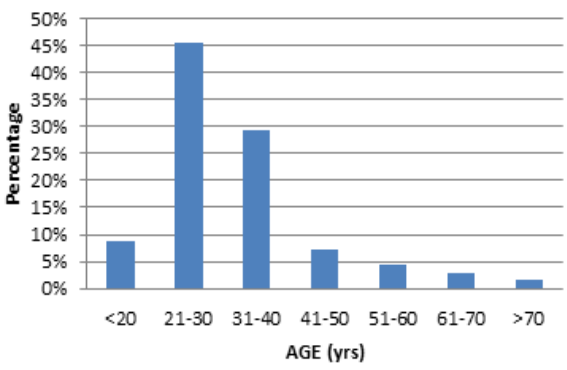

Fig. 1: Age wise distribution of abdominal tuberculosis

Macroscopic: Out of 68 cases of abdominal tuberculosis, 31(45.59%) were of intestinal tuberculosis, 23(33.82%) of peritoneal tuberculosis, 10 cases (14.71%) of nodal tuberculosis. The remaining two cases each (2.941%) were of solid visceral tuberculosis and fistula-in-ano. (Fig. 2)

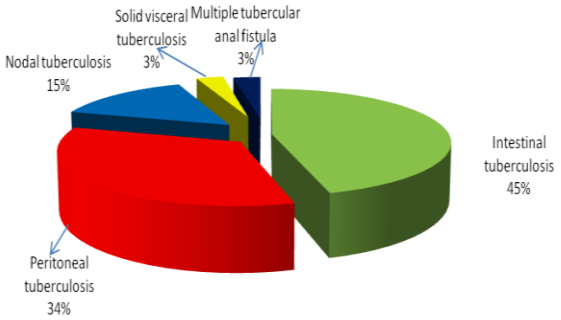

Fig. 2: Site wise distribution of abdominal tuberculosis

On gross examination of intestine, tubercular enteritis was seen in 31(45.59%) cases, of which ileum was the most common site to be affected. Perforation was seen in 18(26.47%) cases. Strictures were seen in 28(41.18%) cases associated with multiple transverse and superficial ulcers. The serosa exhibited necrotic exudates. The most frequent morphologic presentation was ulcerative followed by ulcero-hypertrophic lesion. Enlarged lymphnodes were present in 10 cases (14.71%). Omental thickening was present in 8 cases (11.76%). (Table 2)

Table 2: Laboratory findings in abdominal tuberculosis

Types	Number	Percentages
Terminal ileal perforation	18	26.47%
Enlarged lymph node	10	14.71%
Stricture	28	41.18%
Diffuse involvement	31	45.59%
Omental thickening	08	11.76%

Microscopic: In cases of intestinal tuberculosis (n=31), epithelioid granulomas were seen in all (100%) cases in submucosa and serosa. Caseating necrosis was seen in 22 (70.96%) cases (Fig. 3). Superficial ulceration and grossly recognised serositis was present in cases with perforation. It was seen that in intestinal tuberculosis caseating granuloma had 29.03% positivity for acid fast bacilli while noncaseating had a positivity of 12.90%.

In lymphnode (n=10), caseating granuloma was seen in 7 cases (70%). Caseating granuloma was also found in two cases of fistula- in- ano. In lymph node tuberculosis acid fast positivity was 40% in caseating and 10% in non caseating granuloma. (Table 3)

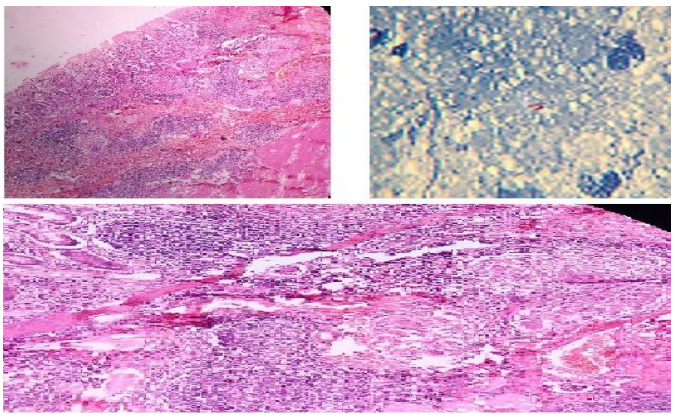

Fig. 3: Photomicrograph showing numerous epithelioid granuloma with giant cell and caseation a) 10x b) 40x

Table 3: Acid fast bacilli in granuloma in different sites of abdominal tuberculosis

Granuloma	Intestine (n=31)		Lymph node(n=10)		Solid viscera(n=2)		Fistula in Ano(n=2)	
	+Ve	-Ve	+Ve	-Ve	+Ve	-Ve	+Ve	-Ve
Caseating	09	13	04	03	0	1	2	0
Noncaseating	04	05	01	02	1	0	0	0

Peritoneal tuberculosis (n=23) was mainly of wet ascitic type seen in 21(91.30%) cases. All the cases presented with fluid collection in peritoneum were characterized by increased level of Adenosine Deaminase activity for mycobacterium in fluid sample. Fluid cytology was strongly suggestive of tuberculosis. AFB positivity was present in 8 cases (34.78%). AFB negative cases were 15(65.22%) and responded to anti-tubercular treatment.

Discussion

Abdominal tuberculosis remains a widely prevalent disease in developing countries such as India. Uttarakhand including hills and plains has a large number of people affected with tuberculosis.[9] Deepender et al. in their study found increasing trend of extrapulmonary tuberculosis cases in this area.[10] Gastrointestinal tract is affected by the tuberculosis infection in various ways.[11,12] Till the present day no clinical investigation either radiological, pathological or bacteriological (microbiological) can render definite diagnosis hence no investigation can be claimed to be a gold standard to diagnose abdominal tuberculosis. The diagnosis of abdominal tuberculosis in its initial stage is usually difficult due to its non-specific symptoms, with patient presenting with complications such as intestinal obstruction and bowel perforation with peritonitis.[13]

It is a disease of middle age and hence, compromises the productivity of the person.[14] The modal age group was 21 to 30 years in Chalya et al study. Khan et al in their study found mean age was 33+-15 years. Majority of patients in present study were in age group from 21 to 40 years. The findings of our study are in concordance with Chalya et al and Khan et al study.

The most commonly involved lymph nodes are the mesenteric and omental nodes. Matted lymph nodes are the frequently encountered clinical presentation.[15] Nodal tuberculosis was 3.9% and 4% in Chalya et al and Kkan et al. study respectively. In our study, 14.71% cases had tuberculosis of abdominal lymph nodes. It may due to high prevelance of extrapulmonary tuberculosis in this region. Delayed diagnosis and poor socioeconomic status are contributory factors.[10]

Chow et al. in their study found ascitis (93%), abdominal pain (73%) and fever (58%). Tuberculour peritonitis with fibro-adhesive form associated with doughy abdomen is rarely seen.[16] In our study, the commonest type of peritoneal tuberculosis was wet ascitic type (91.30%) cases followed by fibrous and loculated type seen in single case each. Adenosine deaminase activity for mycobacterium was raised in all (100%) fluid cases. The findings of our study are consistent with other studies.[17,18]

In our study solid visceral tuberculosis was seen in 2 (2.94%) cases. Co-existent Pulmonary involvement was observed in two cases only. According to Tirumani et al, Isolated involvement of abdominal solid organ in abdominal tuberculosis is uncommon and presents in 15 to 20% cases while associated pulmonary tuberculosis is seen in 15% of patients.[19,20]

Ileocecal location is the most common affected site followed by jejunum and colon. The oesophagus, stomach and duodenum are rarely involved. The oesophageal involvement in gastrointestinal tuberculosis is extremely rare in immunocompetent patients (0.2-1%), but common in immunocompromised person.[20,21] Histopathological examination gives the confirmatory diagnosis in comparison to the radiological investigation, where features are nonspecific.[22] Primary involvement of the stomach is rare (0.4%-2%) in which ulcerative lesion along the lesser curvature and pylorus are the most common site affected.[23,24] Duodenal

tuberculosis is seen in 2-2.5% of all gastrointestinal cases.[25,26] In our study, we did not get a single case of oesophageal, gastric or duodenal tuberculosis.

Ileocecal region is the most frequent site of involvement in gastrointestinal tract. It accounts for 64% of cases of gastrointestinal tuberculosis.[27] However terminal ileum is often involved due to various contributing factors like stasis, presence of abundant lymphoid tissue, increased rate of absorption at this site and close contact of bacilli with the mucosa.[28] Ileocecal tuberculosis was seen in 27(87.10%) cases in our study. Perforation secondary to abdominal tuberculosis accounts for 5-9% of all small intestinal perforation cases in India.[29]

In the present study, colorectal tuberculosis was seen in 4(12.90%) cases. Isolated involvement of colon is 10.8%.[30] Mukewar et al in their study found, ascending colon was the most common site to be affected followed by transverse colon and descending colon in the colorectal tuberculosis.[31]

Fistulae of tubercular origin are characteristically multiple and recurrent.[32] In our study, fistula-in-ano was reported in only 2(2.941%) cases and all of them were multiple. Our findings are comparable to the study conducted by Chalya et al. which reported fistula- in-ano in 2.3% and all were multiple.

Antitubercular treatment is vital to prevent unnecessary surgical intervention as abdominal tuberculosis responds well to the therapy.[33] Alvares et al in their study demonstrated well-formed granuloma in 23 patients (54%). Out of these caseation was seen in 14 cases only. Acid fast bacilli were seen in 5% cases. Histopathology was the main tool of diagnosis in our study and consistent with the previous study.[28] Ultrasound guided fine needle aspiration cytology and Image guided lymph node biopsy are successful tool in establishing the diagnosis of tuberculosis.[34,35] In recent trends, latest investigation polymerase chain reaction has proved to be very sensitive, but is not cost effective in resource poor setting. Various modern investigations include immunological technique like immunofluorescence (IF) and molecular methods that include nucleic acid amplication testing and line probe assay are increasingly used for rapid diagnosis in suspected cases of abdominal tuberculosis.[15,30]

Conclusion

The clinical presentations of abdominal tuberculosis are very non-specific and vague. The diagnostic criteria are very limited. Hence the diagnosis has to be supported by additional tests. Tissue biopsy is the ultimate tool for proper diagnosis and management of abdominal tuberculosis in the setup of poor resources.

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