International Journal of Medical Science and Clinical Inventions 4(4): 2870-2874, 2017
DOI:10.18535/ijmsci/v4i4.13 **ICV 2015: 52.82**
e-ISSN:2348-991X, p-ISSN: 2454-9576

Research Article

Role of Pan-Endoscopy in Diagnosis of Abdominal Tuberculosis in Hiv Negative Adult Patients: A Hospital Based Study From North Eastern India

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ABSTRACT:

Aim – To evaluate the role of pan-endoscopy in the diagnosis of abdominal tuberculosis in HIV negative adult.

Materials and Methods – This is a Prospective observational study carried out in a Tertiary care hospital over a period of one year. All adults' patients with suspected abdominal tuberculosis were evaluated with detailed clinical examination, relevant laboratory tests, trans-abdominal ultrasonography and ascitic fluid analysis. Upper gastrointestinal endoscopy and colonoscopy was done wherever feasible and biopsy samples were collected for crush smears for Z-N staining and histopathological examination. Patients who are found positive in HIV screening were excluded from the study.

Result – A total of 50 patients (26 females and 24 males) were studied over a period of 1 year. The mean age of patients was 28.7 (±9.31) years. The presenting features in isolation or in combinations were abdominal pain, abdominal lump, ascites, chronic diarrhea, weight loss, fever and cough. Upper gastrointestinal endoscopy was done in 43 patients and suspected finding noted in 9 (21%) and Colonoscopy was done in 40 patients and ulcerations were found in 32 patients. Pan-endoscopy was done in 39 patients; endoscopic abnormality noted in 32 (82%) and diagnosis of luminal tuberculosis was made in 26 (81%) and AFB demonstrated in 11 (34%). %). All patients received standard anti-tuberculous treatment, with the exception of one death, all improved on follow up.

Conclusion – Pan-endoscopy help in diagnosis of abdominal tuberculosis in HIV negative patients

Key Words: Tuberculosis; Gastric; Colon; Mycobacterium Tuberculosis.

INTRODUCTION:

Tuberculosis is still one of the major infectious diseases that cause death in the developing world. India accounts for one fourth of the global TB burden. In 2015, an estimated 28 lakh cases occurred and 4.8 lakh people died due to TB. [1,2] In immune competent individuals the main site of involvement is pulmonary and extra-pulmonary tuberculosis occurs only in 15 to 20% cases. Abdominal tuberculosis is the sixth most common extra-pulmonary site and reported to be 3% of all cases of tuberculosis.[3] Increasing number of extra-pulmonary and disseminated disease is found in patients with acquired immune deficiency syndrome, where it is reported in up to 50% of patients. [3] High human immune deficiency virus (HIV) sero-prevalence is also reported in patients with abdominal tuberculosis. In a study from Mumbai HIV sero-prevalence was found to be 16.6% in patients with abdominal tuberculosis compared to 1.4% in voluntary donors[4]. In endemic areas in developing countries tuberculosis in general and as well as of abdomen is still high even in immune competent individuals.

Abdominal tuberculosis has varied presentation. It depends on the organs involved like the gut, lymphnodes, peritoneum or other intra-abdominal organs in isolation or in various combinations. Diagnostic criteria previously described still holds true [5] but for animal inoculation, which is difficult in clinical practice. Definite diagnosis depends on demonstration of *Mycobacterium tuberculosis* in pathological specimens by Zeihl-Neelsen (Z-N) staining and growing the bacteria in culture media. As there has been low yield of *Mycobacterium tuberculosis* in various specimens, the definite diagnosis of abdominal tuberculosis is not always possible. Culture of specimens from suspected lesions of tuberculosis increases the possibility of bacterial confirmation, but takes a long time. Typical cytological or histopathological features in specimens collected from the pathological lesions are also taken as diagnostic of abdominal tuberculosis by previous workers.[6,7]

Therapeutic trial with anti-tuberculous medication although questioned by some [8] still holds good in appropriate clinical setting.[7,9,10]

After availability of flexible endoscopes, specimen collection from upper gastrointestinal tract as well as colon and terminal ileum has become easy and luminal tuberculosis could be diagnosed with greater precision. Upper gastrointestinal tuberculosis is uncommon and still reported as case reports.[11,12] Upper gastrointestinal endoscopy (UGIE) helps in identifying the lesions but biopsy collected during endoscopy has been reported to give poor diagnostic yield.[13] Colonoscopic evaluation and biopsy contribute a lot to the diagnosis with a sensitivity of 30% to 80%. Granulomas and epitheloid cells in colonoscopic biopsy are reported in more than 70% but acid fast bacilli (AFB) positivity from colonic biopsy has been low ranging from 0 to 17%. The role of pan-endoscopy in luminal tuberculosis has not been studied properly. We prospectively evaluated the role of pan-endoscopy and biopsy collected during endoscopy for the diagnosis of abdominal tuberculosis.

Aim and objective- To study the role of pan endoscopy in diagnosis of abdominal tuberculosis in HIV negative adult patients.

Material and method- This is a Prospective observational study carried out in a Tertiary care hospital over a period of one year. All adults' patients with suspected abdominal tuberculosis were evaluated with detailed clinical examination, relevant laboratory tests, trans-abdominal ultrasonography and chest radiogram. All the patients were screened for HIV after obtaining consent and negative cases were included in this study. In patients with ascites, analysis was done for serum ascitic albumin gradient (SAAG), total and differential leucocyte count. Ultrasound guided fine needle aspiration cytology (FNAC) collected from lymph nodes in patients with abdominal lymphadenopathy. The slides were examined for features of tuberculosis and also stained (Z-N staining) for AFB. Pan-endoscopy (UGIE and Colonoscopy) was done where feasible at the time of initial evaluation. While undergoing endoscopy, findings are noted and multiple biopsies were taken from suspected lesions. Biopsy specimens were subjected for histology and also crush smears made for AFB staining. For any extra abdominal lymph nodes, FNAC was done and slides stained for AFB and examined for any suggestive features of tuberculosis. Echocardiography was done in patients where pericardial involvement was suspected. The diagnosis of tuberculosis of abdomen was based on demonstration of AFB in smears of FNAC and/or crush smears of biopsy specimens from suspected lesions during UGIE and Colonoscopy or if FNAC from abdominal lymphnodes and/or histology of biopsy collected during endoscopy showed typical caseating granuloma, epitheloid cells and langhan's giant cells in patients where AFB was negative. In patients with ascites only, diagnosis of tuberculosisis is done if there is low *SAAG* (<1.1) ascites with lymphocyte predominance and absence of other etiology and therapeutic response to anti-tuberculous treatment. The Percentage of patients with endoscopic findings, AFB positivity and suggestive histology were calculated.

Results- A total of 51 patients were diagnosed to be suffering from abdominal tuberculosis over a period of one year. One HIV positive patient was excluded from the study. The mean age of the remaining 50 (24 males and 26 females) patients was 28.7 (±9.31) years. Abdominal pain was the most common presenting feature seen in 47 patients (94%), abdomen lump in 12 patients (24%), chronic diarrhea in 13 patients (26%) and clinically detectable ascites in 21patients (42%). General symptoms like weight loss were reported in 49 patients (98%), fever in 21 patients (42%) and cough in 28 patients (56%). Two patients had recurrent postprandial non-bilious vomiting suggestive of gastric outlet obstruction. One patient had features of intestinal obstruction. (Table).

Trans-abdominal ultrasound revealed abdominal lymphadenopathy in 42 patients(84%), with involement of single groups of lymphnodes in 17 patients(mesenteric 6; retro-peritoneal 5; peri-portal 2 ; para-umbilical 4) and multiple groups involvement with various combination in 25 patients. 21 patients had ascites, of which 15 had in combinations with abdominal lymphadenopathy. In 19 patients where ascitic fluid could be tapped, showed low SAAG with lymphocyte predominant cellularity.

Ultrasound guided FNAC from abdominal lymphnodes could be done in 40 patients. In all 40 (100 %) patients, diagnosis of tuberculosis was made on the basis of cytological features and in addition AFB was positive in 25 patients. Of the remaining l0 patients, 5 were diagnosed on the basis of endoscopic biopsy (suggestive histology 5 with additional AFB positivity in 2 patients). The remaining 5 patients were diagnosed on the basis of low SAAG ascites with cervical lymphnode FNAC suggestive of tuberculosis in 2 patients; minimal ascites and abdominal lymphnodes (failed FNAC) in 2 patients; ileo-cecal ulcerations with negative histology and AFB but chest radiogram suggestive of tuberculosis in one patient. All of them improved with standard drug anti-tuberculous treatment in follow up.

Upper gastrointestinal endoscopy was done in 43 patients and in 9 (21%) patients, abnormal findings were noted. The commonest lesions found were ulcerations in second part of duodenum in 5 patients(figure 1and 2), followed by both gastric and duodenal ulcerations in 2 patients, gastric ulcer with pyloric obstruction in 1 patient and duodenal ulceration and pyloric obstruction in 1 patient. Out of 9 patients with suspected gastro-duodenal tuberculosis diagnosis was made on the basis of histology in 7 (77%) patients with additional AFB positivity in 3 (33%) patients. Both the patients with gastric outlet obstruction were initially treated with endoscopic balloon dilatation followed by standard drug therapy. Both the patients responded and did not require surgery.

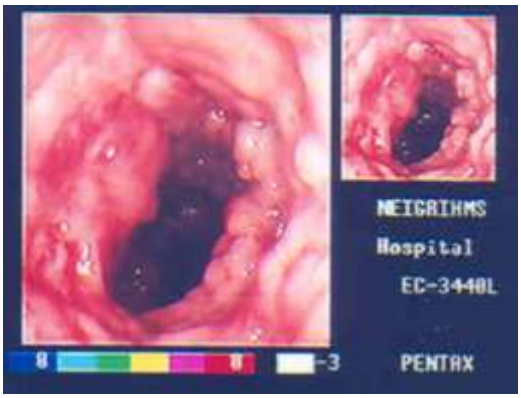

Figure 1 Duodenal ulcer

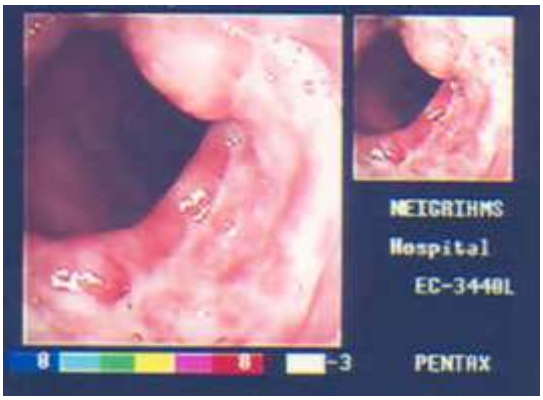

Figure 2 Duodenal ulcer

Colonoscopy was done in 40 patients and in 38 patients terminal ileum could be examined. Ulcerations either discrete or confluent were found in 32 (80%) patients. Ulcerations were noted in terminal ileum and colon in 12 patients (isolated terminal ileal ulcers in 3 patients); ileo-cecal area in 22 patients; ascending colon in 13 patients; transverse colon in 3 patients and descending colon in 3 patients. One patient had ascending colon stricture along with ulcerations (figure 3). Four patients had skip lesions in colon.

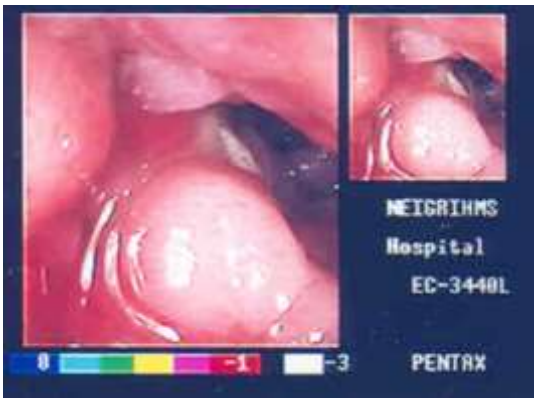

Figure 3 Colonic strictures along with ulcerations

Biopsy for histopathological examination and crush smear was collected from 32 patients at colonoscopy. Histopathological features suggestive of tuberculosis were found in 24 (75%) patients. Crush smears of 9(28%) patients were found to be AFB positive. Pan-endoscopy could be done in 39 patients and in 32(82%) patients, lesions suggestive of luminal tuberculosis were found. Endoscopic biopsy specimen was collected from 32 patients; in 9 patients from both upper and lower gastro-intestinal lesions and in 23 patients from lower gastrointestinal lesions only. The diagnosis of tuberculosis was made in 26 (81%) patients on the basis of histology and in addition AFB positivity found in crush smears of 11 (34.3%) patients. In two patients only gastro-duodenal biopsy showed positive result (AFB positive 1; suggestive histology 1). Endoscopic examination could not be done in 3 very sick patients since they were not fit for the procedure at the time of initial evaluation and rest of the patients did not give consent for the procedure.

Associated chest radiogram abnormality found in 29(58%) patients (pleural effusion 7; infiltrative shadows 18; military lung lesions 2; consolidation 2); Sputum AFB was positive in 5 (10%) patients. Echocardiogram was done in 38 patients and abnormality was noted in 11 (pericardial effusion 8 and constrictive pericarditis 3). Peripheral lymph nodes were found in 5 (10%) patients (cervical 3; cervical and axillary 2). One patient had intestinal obstruction and required surgery. During post operative period he died due to multi organ failure. Rest of the patients received only standard drug therapy and improved in follow up.

Discussion - Abdominal tuberculosis was highly prevalent in this part of the country. We diagnosed 51 cases in one year. The presentation of the disease was similar to already reported series of abdominal tuberculosis.[14,17]

The overall positive diagnosis of abdominal tuberculosis could be made in 90% of cases with either trans-abdominal FNAC of lymphnodes or biopsy collected from suspected lesions during pan-endoscopy. The overall microbial confirmation only by staining method was positive in 54%. Recently in a series of abdominal tuberculosis histological confirmation was reported in 60%, microbial confirmation in 16% and in the rest diagnosis was made by therapeutic response to standard drugs.[7]

We found high percentage (84%) abdominal lymphnodal involvement in our series. Ultrasound guided FNAC helps in making diagnosis of abdominal tuberculosis. Previous series showed FNAC from abdominal lymphnodes and other lesions to be positive for AFB in 29 to 45 % of patients.[18,19] We found AFB positivity from FNAC of abdominal lymph nodes in 62.5 % in HIV sero-negative individuals. Such high AFB positivity in fine needle cytology is reported only in HIV positive individuals[20]. Chest radiograph having suggestive features of concomitant tuberculosis was reported to be 25 % to 39 % [21-23]. We found high percentage (58%) of abnormality in chest radiograph suggestive of pleuro-pulmonory tuberculosis. This shows the more disseminated nature of the disease and this may be due to poor nutritional and socioeconomic status of the people in this area.

Gastro-duodenal tuberculosis is rare. In one series reported from a tertiary center in India described 23 cases in 15 years [13], whereas we found 7 (16%) cases of gastro-duodenal

tuberculosis in one year. Upper gastrointestinal endoscopy was very useful in identifying and confirming the diagnosis of gastro-duodenal tuberculosis. Biopsy collected during endoscopy confirmed the diagnosis of tuberculosis in 78% of patients. It is also useful for non surgical treatment of structural lesion like gastric outlet obstruction. Surgery could be avoided in two of our patients by endoscopic balloon dilatation.

Colonoscopic findings like strictures, ulcers, nodular and polypoidal lesions are reported to be typical of tuberculosis.[6,9] The histopathological findings of granulomas have been reported in 8% to 48% and caseation reported in 33% to 38% of cases where histology gives positive features in colonic biopsies[39]. Bacteriological examination with staining for *Mycobacterium tuberculosis* and culture of the organism adds to the diagnosis of colonic tuberculosis. Bacteriological confirmation in colonic biopsies reported to be from 0% to 40% [14,15]. When both histological features and bacteriological methods were combined, positive diagnosis of colonic tuberculosis increased up to 60%[17]. In our study ileo-colonic abnormalities were found in 80% cases, histological confirmation of tuberculosis could be made in 75% cases (24 out of 32 patients). Microbial confirmation could be achieved in 28% by staining for AFB only (9 out of 32 patients).

Pan-endoscopy increases the possibility of detecting luminal tuberculosis. We found that pan endoscopy helped in identifying suggestive luminal lesions in 32 (82%) patients out of total of 39 patients where pan-endoscopy could be done. Histological confirmation of luminal tuberculosis was made in 81% (26 out of 32). Demonstration of AFB in crush smears was possible in 34% of cases from all luminal lesions.

In this study we found high prevalence of abdominal tuberculosis in HIV negative patients in north-eastern part of India. Pan-endoscopy with tissue collected for histopathological examination and crush smear staining for AFB increases the possibility of confirming the diagnosis of abdominal tuberculosis and should be regularly done in suspected cases.

Presenting features	Number of patients	Percentage
Abdominal Pain	47	94
Ascites	21	42
Clinically apparent abdominal lump.	12	24
Chronic diarrhea	13	26
Fever	21	42
Cough	28	56
Weigh loss	49	98
Gastric outlet obstruction	2	4
Intestinal obstruction	1	2

Table: Showing presenting features of patients with abdominal tuberculosis (n = 50

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