

A Study of Prevalence of Abdominal Tuberculosis in patients with chronic abdominal pain

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Abstract

Chronic and recurrent abdominal pain is a common problem faced by the medical specialist. It leads to physical and psychological disability in a person. Chronic abdominal pain is a major cause of surgical dilemma. Patients with chronic abdominal pain usually undergo a battery of investigations without yielding much in diagnosis. Tuberculosis (TB) is prevalent all over the world especially in under-developed countries. Because of its diverse manifestations, difficult diagnosis, widespread complications, prolonged morbidity and increased mortality the study of this disease becomes even more important. We aim to study the prevalence of abdominal tuberculosis in patients with chronic abdominal pain. A Cross-sectional observational Study was carried out at Dr BRAM hospital Raipur between January - December 2019. All patients presenting with chronic abdominal pain >18 year of age admitted to department of surgery were included. A total of 30 patients were included out of which 6 patients were diagnosed as abdominal tuberculosis as per diagnostic algorithm. Prevalence of abdominal tuberculosis among chronic abdominal pain was 20%.

Keywords: -Chronic abdominal pain, Abdominal tuberculosis, cross-sectional study

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I. Introduction

Chronic abdominal pain is, regarded as intermittent or continuous pain lasting for more than twelve weeks. Abdominal tuberculosis poses a complex diagnostic

challenge for clinicians as presentation is often subtle. Symptoms may even be absent in some patients. Therefore, it can be easily overlooked with an often delay in early diagnosis. It is essential to recognize that a combination of different diagnostic tests is used in order to arrive at the diagnosis of abdominal tuberculosis.

II. Patients and Methods

A cross-sectional observational study was conducted in Pt JNM medical college, Raipur (C.G.) in Department of Surgery among the patients of chronic abdominal pain. The sample size was number of patients admitted with chronic abdominal pain. On admission the detail profile of patient was noted including detailed clinical history and patients examined thoroughly.

Patients were specially enquired about history of pulmonary tuberculosis in past or history of exposure among family members.

Patients who presented with acute symptoms and signs with history of chronic abdominal pain including cases of peritonitis and acute intestinal obstruction were resuscitated primarily and emergency laparotomy was done.

In cases presenting with sub-acute obstruction, initial wait and watch policy was observed and patients who did not improve were operated selectively.

In all the cases explored, intra operative findings were noted and biopsy was taken for histopathological study.

Patients who presented with lump abdomen, ascites, and other acute or chronic abdominal complaints were exhaustively investigated further with X-ray abdomen, ultrasound of abdomen, CT scan, ascitic fluid examination and nucleic acid amplification test.

In all patients suspected of abdominal tuberculosis, supportive investigations like complete blood count, ESR, chest X-ray and HIV serology was done and recorded.

A definite diagnosis of abdominal TB was made by either of,

- Identification of Mycobacterium tuberculosis on the sputum/smear from tissue and/or fluid
 - CBNAAT
 - Demonstrating caseating granulomas at histopathology.
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- Since abdominal TB is paucibacillary, the yield of organisms is low therefore the characteristic histologic changes were taken as diagnostic wherever tissue sample was possible.
- Typical description on per-operative finding/diagnostic laparoscopy:
- Laparoscopic findings consistent with TB for a presumptive diagnosis were the presence of tubercles, fibro adhesive peritonitis.

III. Results

In our study, a total of 30 patients of chronic abdominal pain were admitted, of which majority of patients belonged to 26–35-year age group with 13(43.33%)of total cases and 20% cases in 36–45-year age group while 2 cases were in age group 15-25 and >65-year age group each.30 patients of chronic abdominal pain admitted, of which 18 were male and 12 were female (Male: female:3:2).

TABLE 1- Age distribution

Age in years	Freq.	Percent
15-25 years	2	6.67
26-35 years	13	43.33
36-45 years	6	20
46-55 years	5	16.67
56-65 years	2	6.67
> 65 years	2	6.67
Total	30	100

Along with abdominal pain, 60 % of patients had associated weight loss, fever in 18% of patients, cough (20%), vomiting (43%) and loose stools (23%) and 20% had history of tuberculosis present.

TABLE 2- associated Clinical presentation

symptoms	No.	%
Weight loss	18	60
vomiting	13	43
fever	10	33
Loose stool	07	23
cough	06	20
Past history	06	20

On physical examination, 17(57%) had abdominal tenderness on while 04(13%) had localised guarding whereas 03(10%) has abdominal distension and 06(20%) presented with lump abdomen.

In our study, 06 patients (20%) had presented with palpable abdominal lump. Out of six (06), 03 patient had right iliac fossa mass while 01 patient had right lumbar region lump, epigastric lump (01), and right inguinal region mass.

the X-ray findings of study subjects, 20% cases had air fluid level in abdomen and 3 case had chest findings i.e.,B/L reticular nodes, opacity in RT chest,opacity in chest and 2 cases showed Free gas under Diaphragm, and 70% had no evidence on X-ray study.

TABLE 3- X ray findings

X ray finding	no	percent
Pulmonary changes(opacity)	3	10%
Free gas under diaphragm	2	6.6%
Air fluid level	6	20%

Out of 30 cases,18(60%) cases were submitted for AFB staining of peritoneal fluid /ascitic fluid . All 18 cases stained negatively for AFB.

Out of 30 cases,CBNAAT study for 18(60%) cases ,out of which 3 (16.6%)) showed positive results and was negative in rest 15 (83.33%) cases.

Biopsy was possible in 22 cases out of 30 subjects by either laparotomy or laparoscopy.

TABLE 4-diagnostic modalities

modality	No	Supportive evidence	
AFB staining	18	nil	
CBNAAT detection	18	03	
Tissue diagnosis	22	Caseating granuloma	01
		Non-specific inflammation	08
Intra-operative	24	05	

8 (26.67%) showed features of inflammation, not specific for any pathology.

Laparotomy was performed in 14(46.66%) cases, out of 14,9 were emergency laparotomy and 5 were elective type.

TABLE 5- surgical interventions

mode	no	percentage
Routine laparotomy	05	16
Emergency laparotomy	09	30
laparoscopy	10	33

6 cases (20%) were diagnosed to be abdominal tuberculosis on the basis of proposed diagnostic algorithm. No diagnosis could be established in 3 cases.

Out of 6, 3 (50%) were detected positive in CBNAAT. (p-value=0.163)

Out of 6, 5 patient had characteristic intra-operative features supporting diagnosis of abdominal tuberculosis (diffuse bowel adhesion/cocoon pattern/disseminated peritoneal nodule).

1 patient diagnosed as genito-urinary tuberculosis (GUT TB) based on biopsy findings and was not included in definition of abdominal tuberculosis.

Out of 6 cases, male:female ratio of 5:1 and 5 case belonging to 25-35 years and 1 case belonging to 35-45-year age group.

TABLE 6 & 7-diagnosed cases profile

variables	Out of 6 cases
M:F	5:1
(25-35) years	5 cases
(35-45) years	1 cases
Average pain duration	4 months
Air-fluid level	3 case
Free gas under diaphragm	1 case

Out of 6 abdominal TB cases all cases had negative AFB stain findings. Out of 6 abdominal TB cases 3 had positive CBNAAT findings and 3 had negative CBNAAT findings. Out of 6 abdominal TB cases biopsy was done in 4 cases of that 3 had Non-specific inflammation findings and 1 had Sclerosing peritonitis findings. Out of 6 abdominal TB cases Laparotomy was done for 4 cases of that 3 had Cucoon formation, and 1 case had ileal perforation with disseminated peritoneal nodules findings. (p-value=0.345).

Out of 30 cases in 3 cases, no definite diagnosis could be established. 1 case was lost to follow-up. Of rest 26 cases, 6 (23.08%) had abdominal tuberculosis. Whereas if we calculate the prevalence of abdomen TB in 30 cases it is 20%.

AFB stain	nil
CBNAAT detection	3
Histopathological examination	Non-specific inflammation-3
	Sclerosing peritonitis-1
Intra-operative finding	Gross adhesion/cocoon formation-4
	Ileal perforation with disseminated tubercle-1

IV. Discussion: -

Abdomen is truly called Pandora's box. Even after an extensive work up in some patients, no pathological condition is found by non-invasive investigation and the pain is often attributed to unsubstantiated diagnosis.

In our study, maximum number 13(43.33%) of patients belong to age group 25-35 years with age ranging from 18 to 70 years.

In study by Prasad Set al^[1], 36% cases were in age group 20-30 years.

In a study by Chaphekar et al^[2], showed 26.6 % patient to be in age group of 26-35 years with average age being 34 years.

In present study, showed slight male preponderance with M: F of 3:2. Which is consistent with Prasad S et al which showed similar distribution among sex (M=56%, F= 44%) while in study by Chaphekar et al, female (56%) predominance is seen. Other studies have showed that chronic abdominal pain is commoner in females.

Abdominal TB can affect any age group. In a study conducted by Sharma MP et al³ most affected patients were between 21-40 years of age.

In our study, Of the 6 patients diagnosed as abdominal tuberculosis, 5 patients were in age group 26-35-year age group and 1 patient in 36-45-year age group with M: F of 5:1.

In study by S rai et al^[13], mean age of patient was 43 year with M:F::2:1, whereas In study by Awasthi et al^[4], mean age of presentation was 27.4 years with M:F::1.4:1. Miah et al^[5] stated average age as 30+11.7 and

M:F::33:20. Similarly in study by Wei et al^[6] It was 37.3 years and M:F::56:29. The male female ratio is highly variable from equal in the series reported by Ramesh et al to marked male predominance reported in Abdelaal A et al and to a marked female predominance in the study by SafarporFaizollah et al.^[7-9] 2 out of 6 case(33.3%) had previous history of pulmonary tuberculosis and associated cough. Miah et al showed past history in 18.86 % of patient^[5] Awasthi et al showed 9 cases (19%) had the past history of pulmonary tuberculosis^[4] .4 out of 6 case of abdominal tuberculosis (66.7%) had associated symptoms of fever, vomiting and weight loss. Mukewar et al^[9] demonstrated association of fever, weight loss and loose stool in 40.3%, 74.6%, and 16.4% respectively which is consistent with our study. Makharia et al demonstrated association of fever, weight loss and loose stool in 41.3%,83% and 37.7% respectively.^[11] Another study by Miah et al showed association of weight loss, fever and loose stool in 69.8%,84.9% and 37.74% of patients respectively. In our study, 17(57%) presented with abdominal tenderness which is similar to results in a study by Sanai et al.^[12] In our study, 4 cases out 6 cases of abdominal tuberculosis showed changes in X-ray, with 3 cases showing air-fluid level and 1 case showing free gas under diaphragm with lung opacity. In another study, Chest radiography showed lesions compatible with active pulmonary tuberculosis like patchy opacities, cavitation, pleural effusion or lymphadenopathy in 15 (28.3%) cases. Plain X-ray abdomen revealed evidences of sub-acute or acute intestinal obstruction in 5 (9.43%) patients^[5]

In another study by Kiran et al^[20], on x-ray study showed that most common finding was dilated bowel loop, observed in 12 cases (30%), suggestive of subacute obstruction, followed by gas under diaphragm suggesting perforation in 7 cases (17.5%) and air fluid levels were seen in 3 cases (7.5%), suggestive of bowel obstruction.

In our study, 28 patients were evaluated under USG and 15 patients further evaluated under CT scan. USG and Abdominal CT scans displayed varying degrees of non-specific inflammatory as well as neoplastic changes with lymph node enlargement. In study by Kiran et al ,18 patients underwent ultrasound evaluation of abdomen for evaluation and findings suggestive of tuberculosis were found in 7 cases (38.8%). Bowel wall thickening, mesenteric lymphadenopathy, free peritoneal fluid or loculated collections on USG were considered suggestive of tuberculosis. Other studies have found that any positive findings on cross-sectional imaging were non-specific and inconclusive^[13]. In current study,all 18 cases stained negatively for AFB which is consistent with study results by Miah et al^[5] where AFB staining was possible in 14 (26.41%) but none showed AFB positive result.Mamo et al^[14], in their study documented smear for AFB to be extremely insensitive, with only one (5.9%) being positive. Also, they concluded that Nucleic acid amplification tests were insensitive and did not aid the initial management.

Out of 30 cases,CBNAAT study for 18(60%) cases, out of which 3 (16.6%) showed positive results and was negative in rest 15 (83.33%) cases. In another study by Tirpude BH et al, among 30 patients, 10 were positive (33.33%) for tuberculosis gene and 20 (66.33%) were negative in CBNAAT. The study also stated peritoneal aspirate to be least sensitive specimen (40%) for detection of abdominal tuberculosis.^[15]

In our study, Biopsy was possible in 22 cases out of 30 subjects by either laparotomy or laparoscopy Out of 22 biopsy studies, 8 (26.67%) showed features of non-specific inflammation. 1 case showed signs of granulomatous pyelonephritis and caseousnecrosis.^[16-18]Higher percentage of non- specific inflammation may be due to sampling error,unsatisfactory biopsy, or a smaller number of biopsy specimen.

No definite diagnosis could be established in 3(10%) cases. Similarly in another study by Tirpude BH et al,13 patients (34.21%) who are tuberculosis negative and had no other alternative diagnosis. 12 of them had non-specific chronic inflammation (31.57%) and one had no pathology (2.6%).^[15] Al-Mulhim et al had 19% non-specific chronic inflammation, Nafeh et al had 3% of their patients with non-specific chronic inflammation and 7% with unsatisfactory biopsy while Islam J et al had 18% nonspecific chronic inflammation.^[16-18]

V. Conclusion: -

The prevalence of abdominal tuberculosis was estimated as 20% commonly among 20–40-year age group with male preponderance.Other study has shown around 22% and 43.3% of patients diagnosed with abdominal tuberculosis in patients evaluated for chronic abdominal pain^[1,2]. Whereas a review of previous Indian studies on abdominal tuberculosis has reported that abdominal tuberculosis accounted for 0.8% of hospital admissions and 0.7% of surgical admissions^[19]like other studies which concluded a 0.5% among surgical admissions.^[20]

Abdominal tuberculosis poses a complex diagnostic challenge as presentation is often subtle. It may mimic most of abdominal pathology. Therefore, it can be easily overlooked with an often delay in early diagnosis. There is no gold standard for the diagnosis and high clinical suspicion is required. AFB staining from peritoneal aspirate or ascitic fluid has a very low yield as it stained negative in all cases. NAAT test from peritoneal aspirate or ascitic fluid is better but has shown poor results as compared to sputum and can be expensive in some patients of developing countries. The invasive diagnostic tools have the very real advantage of examining the lesion itself either macroscopically or microscopically. However even these methods have

their own drawbacks in clinical practice owing to number and quality of biopsy taken and history of multiple antibiotic consumption. Laparoscopic pattern and biopsies obtained from the peritoneum have been reported to be more helpful and that this finding could be used even for treating patients with abdominal TB without any histopathologic or bacteriologic confirmation.

Neither clinical signs, laboratory, radiological and endoscopic methods nor bacteriological and histopathological findings provide a gold standard by themselves in the diagnosis of abdominal TB. However, an algorithm of these diagnostic methods leads to considerably higher precision in the diagnosis of this insidious disease which primarily necessitate a clinical awareness of this serious health problem.

References: -

- [1]. Prasad S, Jain S, Prakash A, Gautam A, Gadodia M, Gupta A, Somani K. Evaluation Of Efficacy Of Laparoscopy In Patients With Chronic Abdominal Pain. *International Surgery Journal*. 2017 May 24;4(6):1856-60.
- [2]. Chaphekar AP, Vankipuram S, Nawalkar PR, Sutar SA, Devlekar SM. Does Laparoscopy Have A Role In Chronic Abdominal Pain. *Int J Contemp Med Res*. 2016;3(3):2582-5.
- [3]. Sharma MP, Bhatia V. Abdominal Tuberculosis. *Indian Journal Of Medical Research*. 2004 Oct 1;120:305-15.
- [4]. Awasthi S, Saxena M, Ahmad F, Kumar A, Dutta S. Abdominal Tuberculosis: A Diagnostic Dilemma. *Journal Of Clinical And Diagnostic Research: JCDR*. 2015 May;9(5):EC01.
- [5]. Miah AR, Sharma YR, Rahman MT, Raihan A, Roy PK, Hasan M. Clinicopathological Profile Of Patients With Abdominal Tuberculosis. *Journal Of Nepal Health Research Council*. 2011 Dec 18.
- [6]. Cheng W, Zhang S, Li Y, Wang J, Li J. Intestinal Tuberculosis: Clinico- Pathological Profile And The Importance Of A High Degree Of Suspicion. *Tropical Medicine & International Health*. 2019 Jan;24(1):81-90.
- [7]. Ramesh J, Banait GS, Ormerod LP. Abdominal Tuberculosis In A District General Hospital: A Retrospective Review Of 86 Cases. *QJM: An International Journal Of Medicine*. 2008 Mar 1;101(3):189-95.
- [8]. Abdelaal A, Alfkey R, Abdelaziem S, Abunada M, Alfaky A, Ibrahim WH, Toro A, Di Carlo I. Role Of Laparoscopic Peritoneal Biopsy In The Diagnosis Of Peritoneal Tuberculosis. A Seven-Year Experience. *Chirurgia(Bucur)*. 2014 May 1;109(3):330-4.
- [9]. Faizollah S, Menochehr A, Kohsari Mohammad Reza R, Saba H, Ali S, Delaram S. Role Of Laparoscopy In The Diagnosis Of Abdominal Tuberculosis. *Saudi Cij*. 2007;13(3):133-5.
- [10]. Mukewar S, Mukewar S, Ravi R, Prasad A, Dua KS. Colon Tuberculosis: Endoscopic Features And Prospective Endoscopic Follow-Up After Anti-Tuberculosis Treatment. *Clinical And Translational Gastroenterology*. 2012 Oct;3(10):E24.
- [11]. Makharia GK, Srivastava S, Das P, Goswami P, Singh U, Tripathi M, Deo V, Aggarwal A, Tiwari RP, Sreenivas V, Gupta SD. Clinical, Endoscopic, And Histological Differentiations Between Crohn's Disease And Intestinal Tuberculosis. *American Journal Of Gastroenterology*. 2010 Mar 1;105(3):642-51.
- [12]. Sanai FM, Bzeizi KI. Systematic Review: Tuberculous Peritonitis—Presenting Features, Diagnostic Strategies And Treatment. *Alimentary Pharmacology & Therapeutics*. 2005 Oct;22(8):685-700.
- [13]. Rai S, Thomas WM. Diagnosis Of Abdominal Tuberculosis: The Importance Of Laparoscopy. *Journal Of The Royal Society Of Medicine*. 2003 Dec;96(12):586-8.
- [14]. Mamo JP, Brij SO, Enoch DA. Abdominal Tuberculosis: A Retrospective Review Of Cases Presenting To A UK District Hospital. *QJM: An International Journal Of Medicine*. 2013 Apr 1;106(4):347-54.
- [15]. Tirpude BH, Bhanarkar H. Role Of Laparoscopy In The Diagnosis And Management Of Abdominal Tuberculosis. *International Surgery Journal*. 2016 Dec 9;3(3):1495-501.
- [16]. Al-Mulhim AA. Laparoscopic Diagnosis Of Peritoneal Tuberculosis. *Surgical Endoscopy*. 2004 Dec 1;18(12):1757-61.
- [17]. Nafeh MA, Medhat A, Abdul-Hameed AG, Ahmad YA, Rashwan NM, Strickland GT. Tuberculous Peritonitis In Egypt: The Value Of Laparoscopy In Diagnosis. *The American Journal Of Tropical Medicine And Hygiene*. 1992 Oct 1;47(4):470-7.
- [18]. Islam J, Clarke D, Thomson SR, Wilson D, Dawood H. A Prospective Audit Of The Use Of Diagnostic Laparoscopy To Establish The Diagnosis Of Abdominal Tuberculosis. *Surgical Endoscopy*. 2014 Jun 1;28(6):1895-901.
- [19]. Kapoor VK. Abdominal Tuberculosis. *Postgraduate Medical Journal*. 1998 Aug 1;74(874):459-67.
- [20]. Urabinahatti KA, Singh AK, Nayak A, Gupta R, Jain M, Dubey C, Garg RK. Abdominal Tuberculosis: An Epidemiological Profile And Management Of 40 Cases In A Tertiary Set Up. *International Surgery Journal*. 2016 Dec 9;3(3):1502-8.
- [21]. Patil, Suwarna, Shweta M. Dhage, Pradeep S. Umap, S. V. Ghorpade, & Shyamkant Patharwat. "Cartridge Based Nucleic Acid Amplification Test: A Sensitive Diagnostic Tool For Tuberculosis On Fine Needle Aspirates Samples." *International Journal Of Community Medicine And Public Health* [Online], 7.4 (2020): 1511-1515. Web. 28 Dec. 2020