



Full Length Research Article

DEMOGRAPHIC AND CLINICAL PROFILE OF ABDOMINAL TUBERCULOSIS: A STUDY FROM A DEVELOPING REGION

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ABSTRACT

Background: Abdominal tuberculosis presents with vague symptoms, marked by a delay in establishing diagnosis. Present study was conducted to study demographic and clinical profile of abdominal tuberculosis.

Methods: It was a prospective observational study done for a period of 4 years from 2012 to 2016. All the patients underwent thorough assessment in form of detailed history, general physical examination, systemic examination and relevant investigations to establish diagnosis of abdominal tuberculosis.

Results: A total of 46 cases abdominal were enrolled. There was female predominance with female to male ratio in our study was 2.1:1. Mean age in our study was 31.8 years. Most of the patients (71.7%) belong to the age group of 20-40 years. Majority of cases (78.3%) belonged to rural areas. More than half (58.7%) of our cases were literate while 41.3% were illiterate. Family history of TB was presented in 15.2% and previous history of TB was present in 4.3%. One of our patients (2.2%) was having HIV infection and one was on immunosuppression drugs for rheumatoid arthritis. Patients of abdominal tuberculosis present with vague and non-specific symptoms and thus there was a delay in diagnosis. Most common symptoms were fever (60.9%), abdominal distension (60.9%), weight loss (58.7%), abdominal pain (50%) and anorexia (50%). Abdominal distension was present in 60.9% of cases and 23.9% had abdominal tenderness.

Five cases (10.9%) presented for the first time as intestinal obstruction in emergency room. Duration from start of symptoms to diagnosis varied from 2 weeks to 3 years with mean duration of 6 months.

Conclusion: Abdominal tuberculosis affects mostly productive age group. Major proportion of ATB patients belong to rural areas. Diagnosis requires high clinical suspicion as patients of abdominal tuberculosis present with vague and non-specific symptoms and thus there is delay in diagnosis.

Key words: tuberculosis, Abdominal, Cocoon, Koch's, Clinical profile, Laparoscopy, Acute abdomen, ATT, ATB, Signs, Symptoms.

INTRODUCTION

Tuberculosis (TB) has been a common and major health problem, especially in developing countries where, ignorance, poverty, overcrowding, poor sanitation and malnutrition are prevalent (Butt *et al.*, 2001). The majority of patients (72.9%) come from the rural areas (Shaikh *et al.*, 2007; Iqbal *et al.*, 2008; Gomez and McKinney, 2004). The disease is more common in males in the western countries while in developing countries the females predominate (Homan *et al.*, 1977). The disease is more prevalent in young age group affecting people

in the 2nd and 3rd decade of life (Phillipo *et al.*, 2013; Phillip *et al.*, 2013; Abdelaal *et al.*, 2014; Ramesh *et al.*, 2008). Tuberculosis can affect any part of the body and abdomen is the next common site after lungs affected by the disease.¹⁰ Approximately 1-3% of total TB cases are extra pulmonary^{11,12}, of these abdominal tuberculosis (ATB) accounts for 11%-16%^[8]. The modes of infection of abdominal tuberculosis include hematogenous spread from a primary lung focus that reactivates later or miliary tuberculosis, spread via lymphatics from infected nodes, ingestion of bacilli either from the sputum or from infected sources such as milk products, or by direct spread from adjacent organs (Sharma and Bhatia, 2004). Ileo-caecal region is the most common part of bowel involved in (57.5%)

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patients, followed by ileum and jejunum in (34.0%) and (5.7%) patients respectively. Colon is involved in (2.8%) patients⁶. In HIV positive patients the incidence of extra pulmonary TB is up to 50% cases^{1,14}. The majority of patients (77.3%) had primary abdominal tuberculosis. Associated pulmonary tuberculosis is found in 22.7% of cases⁶. Past history of TB is present in 5.9%¹⁵. Abdominal tuberculosis can present with symptoms like abdominal pain, fever, abdominal distension, anorexia, weight loss, which are non-specific and can mimic a diverse abdominal pathologies^{6,13,16}. The vague nature of complaints, the absence of a concurrent tubercular focus, absence any specific diagnostic test and a low prevalence make the diagnosis of Abdominal tuberculosis a challenge. Despite advances in medical imaging, the early diagnosis of abdominal tuberculosis is still a problem¹⁷ and the diagnosis is delayed and patients usually present with complications such as bowel obstruction or perforation². It may be an incidental finding at laparotomy done for other diseases¹⁸. This study is aimed to note the demographic profile, the clinical characteristics, diagnosis and outcome of abdominal tuberculosis in Kashmiri population.

MATERIALS AND METHODS

The study was undertaken in Department of General and Minimal Invasive Surgery and Infectious Disease Unit of General Medicine SKIMS Sours Srinagar, a tertiary care hospital and included all the patients diagnosed as abdominal TB for a period of 4 years from year 2013 -2016. The patients were labeled as Abdominal TB based on Ascitic fluid AFB staining, Ascitic fluid AFB culture, PCR MTB, histopathology or response to empirical ATT. All the patients underwent thorough assessment in the form detailed history, general physical examination, systemic examination, base line investigations, and other relevant investigations which include ESR, Montoux test, Sputum smear for AFB, Chest X-Ray, Abdomen X-Ray, USG Abdomen, CT abdomen, Ascitic fluid analysis (Color, TLC, DLC, Proteins, Albumin, Glucose, AFB staining, Culture, LDH, ADA, PCR MTB). Laparotomy/ Laparoscopy were done wherever required and the tissue was sent for Histopathological examination. Any perioperative or postoperative complication, ATT intake, improvement in symptoms and signs, relapse of symptoms and signs was noted.

RESULTS

In our study, a total of 46 patients who fulfilled the criteria of abdominal tuberculosis were enrolled and included 34 females (65.2%) and 16males (34.8%) with a female to male ratio of 2.1:1. Most of the patients (71.7%) belonged to the age group of 20-40 years, 13% were below 20 years and 15.1% above 40 years of age as shown in Table 1. The Modal age group in our study was 21-30 years (47.8% of cases).

Table 1. Age distribution of studied patients

Age (years)	No. of Patients (n)	Percentage (%)
20	6	13.0
21-30	22	47.8
31-40	11	23.9
41-50	2	4.3
51-60	3	6.5
>60	2	4.3
Mean±SD=31.8±13.31		

Out of 46 patients, 28.3% belonged to lower, 45.7% belonged to middle and 26.1% of patients belonged to upper socioeconomic status (classified according to Modified Muppusswamy Scale²⁵). More than half (58.7%) of the patients were literate and significant majority (78.3%) belonged to rural areas. One patient (2.2%) was having HIV infection and one (2.2%) was on immunosuppressive drugs for rheumatoid arthritis. A family history of TB was present in 15.2% of cases and previous history of TB was present in 4.3%. Patients of abdominal tuberculosis present with vague symptoms so there is usually some delay in the diagnosis. Most common symptoms were fever, abdominal distension, weight loss, abdominal pain and anorexia. Various symptoms and signs with frequency and their percentage are shown in Table 2 and Table 3.

Table 2. Various symptoms in studied patients

Symptoms	No. of Patients (n)	Percentage (%)
Fever	28	60.9
Abdominal Distension	28	60.9
Weight Loss	27	58.7
Anorexia	23	50.0
Pain Abdomen	23	50.0
Abdominal Discomfort	15	32.6
Generalised Weakness	13	28.3
Nausea/Vomiting	8	17.4
Cough	6	13.0
Night Sweating	6	13.0
Constipation	4	8.7
Breathlessness	2	4.3
Cervical Swelling	2	4.3
Bleeding Per Rectum	2	4.3
Haemoptysis	1	2.2
Low Back Ache	1	2.2

Table 3. Various signs in studied patients

Signs	No. of Patients (n)	Percentage (%)
Fever	28	60.9
Tender Abdomen	11	23.9
Distended abdomen	28	60.9
Pallor	13	28.2
Cervical lymphadenopathy	1	2.2
Inguinal lymphadenopathy	1	2.2

Five of the patients (10.9%) patients presented as Acute Abdomen (obstruction) in emergency room. Four patients presented with only Abdominal distension and no other symptoms. Duration from start of symptoms to diagnosis varies from 2 weeks to 3 years with mean duration of 6 months. Table 4 shows duration of symptoms before diagnosis is made in studied patients.

Table 4. Duration of symptoms in studied patients

Duration	No. of Patients (n)	Percentage (%)
< 2 Months	12	26.1
2-4 Months	13	28.3
4-6 Months	10	21.7
6-12 Months	5	10.9
12-24 Months	2	4.3
24 Months	4	8.7

In our study 6.5% had Hb less than 8gm/dl, 28.3% had less than 10gm/dl and 82.6% had less than 12gm/dl with a mean HB of 10.5gm/dl. ESR level was raised in 90.6%. Montoux test was done in 40 cases and it was positive in 4(10%),

equivocal in 4(10%) and negative in 32(80%). Sputum for AFB was done in 20 patients and it was positive in 3 (15%) cases. On ascitic fluid analysis, Lymphocytosis was present in 24 cases (68.6%). Mean lymphocytic count was 62.7% (SD=27.36) with variation ranging from 5% to 95%. Ascitic fluid ADA was done in 34 patients and was positive (>60U/L) In 50% of cases, strongly suspected (40-60U/L) in 23.5% of cases, suspected in 11.8% of cases and normal(<30UL) in 14.7%. Ascitic fluid AFB staining done in 35 cases and was positive in only one (2.9%) case and AFB culture was positive in another (2.9%) case. PCR for MTB was positive in 4 (12.1%). On USG abdomen, Ascitis was found in 69.6% of

diagnostic in 24 cases (96.4%) cases and suggestive of ATB in one patient. Other organ TB/disseminated tuberculosis was present in 13%, pulmonary TB in 6.5%, pleural TB in 2.2%, CNS TB in 2.2%, genitourinary TB in 2.2% and TB lymphadenopathy was present in 50%. All cases received ATT chemotherapy. Duration of ATT intake varied in different cases. Most of cases 69.4% received treatment for 6months, 4.3% for 8 months, 12.9% for 9 months, 4.3% for 11months and 8.6% for 12 months. Seven (15%) cases had ATT induced hepatitis and one (2.3%) had ATT induced gastritis. Out of 46 cases 44 cases were cured, there were no relapses or defaulters. Two cases died, one among them was HIV positive and in other cause was not known.

Table 5. Showing Symptoms of Abdominal Tuberculosis from Various Studies

Study	Our Results	Chalyal <i>et al</i> ⁶	Bakhshi <i>et al</i> ¹⁶	Chalyal <i>et al</i> ⁷	Ramesh J <i>et al</i> ⁹	Sharma M P <i>et al</i> ¹³
Symptoms	%	%	%	%	%	%
Fever	60.9	-	-	-	42	-
Abdominal distension	60.9	36.7	28	52	22	-
Weight loss	58.7	47.7	84	67	57	40-90
Abdominal pain	50.0	93.8	80	100	50	80-90
Vomiting	17.4	79.7	-	83	15	-
Anorexia	50.0	-	72	-	8	-
Night sweats	13.0	-	-	-	8	-
Cough	13.0	-	-	-	3.5	-
Dysphagia	0.0	-	-	-	2	-
Shortness of breath	4.3	-	-	-	1	-
PR bleed	4.3	-	-	-	1	-
Diarrhea	0.0	30.5	-	21	-	11-20
Constipation	8.7	64.5	-	72.9	-	-
Generalised weakness	28.3	-	-	-	-	-
Haemoptysis	2.2	-	-	-	-	-
Low backache	2.2	-	-	-	-	-

Table 6. Showing Signs of Abdominal Tuberculosis From Various Studies

Study	Our Results	Chalyal <i>et al</i> ⁶	Bakhshi G Det <i>al</i> ¹⁶	Chalyal <i>et al</i> ⁷	Ramesh J <i>et al</i> ⁹	Sharma M P <i>et al</i> ¹³
Signs .	%	%	%	%	%	%
Fever	60.9	33.6	-	61	46.5	40-70
Abdomen tenderness	23.9	27.3	48	69.5	27	-
Abdominal mass	4.4	6.6	24	5.1	11.5	-
Peritonitis	-	27.3	-	13	3.5	-
Acute bowel obstruction	2.2	-	-	-	2	-
Lymphadenopathy	-	-	24	-	-	-
Cervical Lymphadenopathy	2.2	-	-	-	-	-
Inguinal lymphadenopathy	2.2	-	-	-	-	-
Distended Abdominal	60.9	-	-	-	27	-

cases, Mesenteric lymphadenopathy in 21.7%, Omental thickening in 13%,retroperitoneal lymphadenopathy in 14.3%. Other findings were bowel wall thickening 8.7%, loculated fluid collection (6.5%), parietal peritoneum thickening (4.3%),visceral peritoneum thickening (2.2%). USG was labelled normal in 6.5%. Out of 46 of cases CT was done in 44 cases. On CT ascitis was present in 72.7% cases. Mesenteric lymphadenopathy was present in 40.0%, omental thickening in 36.4%, retroperitoneal lymphadenopathy in 30.4%, bowel wall thickening in 20.5%, loculated collection in 6.8%. Parietal peritoneum thickening was observed in 18.2%, visceral peritoneum thickening in 11.4%. Diagnostic laparoscopy was required in 18 (72%) of cases, diagnostic laparotomy in 2 (8%) and explorative laparotomy in 5 (20%).

In 3 (16.7%) of cases laparoscopy procedure was converted to open due to adhesions. Five patients (10.8%) were diagnosed incidentally as abdominal TB on explorative laparotomy performed for some other reason. In all the operated patients, intraoperative findings were suggestive of ATB with biopsy

DISCUSSION

In this study we enrolled 46 patients of abdominal tuberculosis of which 34(65.2%) were females and 16(34.8%) were males thus there was female predominance. Similar observation was made by *Vinod KD*¹⁹ who concluded that females predominate males in developing countries. The female to male ratio in our study was 2.1:1, this ratio is comparable with female to male ratio of 2:1 observed *M R. Khan et al*¹⁰ in their study. However other studies^{6,20} show male predominance. However, some studies^{9,21} showed that males and females are equally involved. The Mean age, age range and the modal age groups in our study closely corroborate with other studies^{5,6,7,9,16}.The disease mostly affects productive age group (20-40 years) as also mentioned in other study¹⁶. The abdominal tuberculosis continues to be a disease of immunocompetent young adults in developing world as compared to developed where the disease is more prevalent in people above 50 years²⁵.

The percentage of patients from rural areas is high probably due to high proportion of rural population. A similar observation has been made by other workers^{3,22}. There is no clustering of patients to a particular socioeconomic class or educational group in contrast to observations made by other studies^{1,6} where in most patients belonged to low socioeconomic class or were uneducated. A family history of TB was present in 15.2% cases, it is in synchrony with other study⁹. Previous history of TB was present in 4.3%. This figure is comparable with other studies^{15,16} suggesting most of the patients are either fresh cases or represent a reactivation of latent tuberculosis. One of our patients (2.2%) was having HIV infection and one was on immunosuppression drugs for rheumatoid arthritis. However associated HIV infection observed by other authors^{6,4} is high (18.8% by and Phillip L Chalyal *et al*⁶ and 21.2% by Chalyal *et al*⁷). The symptoms are vague and non-specific leading to a delay in diagnosis ranging from 2 weeks to 3 years with a mean of 6 months. The similar observation has been put forth by a multitude of authors^{6,16,17,26}. Hence, the prompt diagnosis remains a challenge in all working conditions and needs high clinical suspicion. Most common symptoms were fever, abdominal distension, weight loss, abdominal pain and anorexia and common signs were fever and distended abdomen. Various symptoms and signs with percentage and their comparison with other studies are shown in Table 5 and table 6. Only 5 of our patients (10.9) presented as an acute emergency with obstructive features. This figure is much less as observed by Phillip L Chalyal *et al*⁶. The trend could be explained by an increased awareness or easy access to medical care. Four of our patients presented exclusively as abdominal distension with no other symptoms and the diagnosis of ATB in such patients warrants a high clinical suspicion.

Mean Hb value in our studied cases was 10.5 gm/dl with 28.3% having less than 10 gm/dl which is in contrast with other study⁴ who observed the median hemoglobin level to be 8.0 (range = 4.2-12.6 g/dl less than 10 g/dl in (82.4%) patients. A raised ESR in 90.6% is also confirmed by other authors^{9,23}. Montoux was positive in 10%. This figure is lower than 22% as observed by other study¹⁵. ADA was positive (>60 U/L) in 50% of cases, strongly suspected (40-60 U/L) in 23.5% of cases, suspected in 11.8% of cases and normal (<30 U/L) in 14.7%, mean value of ADA in all cases was 86.6 U/L (SD=104.47) and ranging from 11 to 621 U/L, it is comparable with observation made by other author²³. AFB staining and culture of ascitic fluid is not reliable as AFB staining and tubercular culture was positive in only 2.9% cases and same point has been reiterated by other author¹³ (<3%). PCR for MTB was positive in 12.1% cases.

Radio imaging is a useful method of non-invasively assessing the intra-abdominal structures. However CT remains more sensitive than USG. The most common finding picked up by radio imaging was ascites and the finding is non-specific. Associated findings of loculated fluid collection, parietal peritoneum thickening, visceral peritoneum thickening, retroperitoneal LAP, omental thickening and bowel wall thickening could increase the suspicion for ATB. Similar findings were also mentioned in other studies^{13,15}. Out of the 25 cases who underwent a surgical procedure, diagnostic laparoscopy was done in 18 and diagnostic laparotomy in 2. Five of our patients were incidentally diagnosed as having

abdominal TB on explorative laparotomy performed for some other reason. The various intra-operative findings suggestive of tuberculosis were tubercles over peritoneum (72%), ascites, cocoon abdomen, omental thickening, loculated collection, ileocaecal mass, mesenteric lymphadenopathy, ileal strictures^{13,9}. In all patients with intra-operative findings suggestive of abdominal tuberculosis, diagnosis of tuberculosis was confirmed by histopathological examination of tissue specimen⁹. Post-operative tissue diagnosis is most accurate investigation for diagnosis of abdominal TB as reported by other authors^{16,17}. An elective, diagnostic laparoscopy helps in making an early diagnosis, preventing undue delay in treatment, the development of complications and the need for emergency laparotomy. Out of 25 patients who underwent a surgical procedure, surgical site infection occurred in only one patient (4%), which is much less than 29.7% as observed by J. Ramesh *et al*⁹ and 42.9% as observed by Chalyal *et al*⁷. Enterocutaneous fistula formation mentioned by Chalyal *et al*⁷ did not occur in any of our patients. The mortality rate in our study was less than as described by others^{6,7}. Two (4.3%) patients died and one of them was HIV positive. The low mortality in our study can be explained by a low prevalence of associated HIV as compared to a high prevalence described by other authors^{6,7}.

Conclusion

In our study Abdominal TB affects females more than males. Productive age group is affected more than others. Major proportion of ATB patients belong to rural areas. HIV association is low and so is the mortality. Complaints are vague and diagnosis requires a high clinical suspicion. Elective diagnostic laparoscopy can help in confirming the disease.

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