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RESEARCH ARTICLE

CLINICAL SPECTRUM OF PERITONEAL TUBERCULOSIS IN ANDHRA PRADESH

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ABSTRACT

Tuberculosis (TB) can involve any part of the gastrointestinal tract and is the sixth most frequent site of extrapulmonary involvement. Both the incidence and severity of abdominal tuberculosis (AT) are expected to increase with increasing incidence of HIV infection. Peritoneal tuberculosis a form of abdominal tuberculosis occurs in three forms wet type, dry type and loculated type. Clinically peritoneal tuberculosis is characterized by abdominal distension, constitutional symptoms and abdominal pain. Along with peritoneal tuberculosis other forms of abdominal tuberculosis can coexist. Peritoneal tuberculosis can be associated with extraabdominal tuberculosis. Ascitic fluid analysis and abdominal imaging aids in diagnosis in majority of cases. Acid Fast staining and culture of ascitic fluid analysis is the diagnostic but sensitivity is very low. Other molecular diagnostic like TB PCR etc improves sensitivity but the availability is limited and the cost is very high. Response to Anti Tubercular treatment (ATT) helps in the confirmation of diagnosis. Conventional Anti Tubercular treatment for 6 months is the treatment of choice.

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INTRODUCTION

Tuberculosis is rightly named as India's national disease. (Kapoor, 1998) Abdominal tuberculosis is one of the common forms of tuberculosis, constituting 11% of extra pulmonary tuberculosis. (Cook, 1985) Abdominal tuberculosis can involve any part of gastrointestinal tract from mouth to anus, peritoneum, abdominal viscera and lymphnodes and it can have varies presentation, frequently mimicking various common and rare diseases. Peritoneal tuberculosis accounts for about 25 to 60 percent of abdominal tuberculosis in various series. Tubercular peritonitis constitutes 4 to 10% of all patients with extra pulmonary tuberculosis and has been estimated to occur in 0.1 to 3.5 % of patients with pulmonary tuberculosis. (Sahoo and Shukla, 2001) The disease is usually post primary. Most often persons between 25 to 45 years of age are affected. Cirrhosis may be associated in a small proportion of patients. (Sahoo and Shukla, 2001) Tubercular peritonitis may be due to activation of long latent foci of peritoneal infection, hematogenous spread from active pulmonary lesion, rupture of tuberculous lymph node, free perforation of tubercular ulcer, transmural spread of bowel without peroration, contiguous spread of infection from fallopian tube TB infection and very rarely as complication of peritoneal dialysis. (Hussein *et al*., 2003) Tuberculosis peritonitis may be acute or chronic. Chronic tuberculous peritonitis is further subdivided into ascitic form (wet type), encysted (loculated) form, fibrous form (dry type) and rarely purulent form. Ascitic fluid analysis plays a major role in diagnosis of peritoneal tuberculosis. Ascitic fluid is straw coloured exudative ascites with low SAAG. Cytology shows elevated WBC count with predominant lymphocytosis. AFB culture is positive in only 50 % of patients. PCR amplification of IS6110 DNA sequence is useful tool. (Vzunkoy and Harma, 2004) ADA levels are useful in diagnosing peritoneal TB and helps to differentiate from other cause of ascites. (Burrack and Hollistter, 1960) Taking a cut off level of 33 U/l, the sensitivity, specificity and diagnostic accuracy were 100, 97 and 98% respectively. (Dwivendi *et al*., 1990) Ultrasound abdomen and CT abdomen plays a minimal role in peritoneal tuberculosis. Video laproscopy and guided biopsy for histology and culture is the best diagnostic procedure to make a definite diagnosis of peritoneal tuberculosis. (Taazzioli *et al*., 2005; Bhargava *et al*., 1992) The aim of the present study is to study the clinical spectrum of peritoneal tuberculosis and the usefulness of various investigations in these patients.

MATERIALS AND METHODS

This is a retrospective study conducted in the department of Gastroenterology over a period of 3 years from 2013 to 2016. Patients attending medical and gastroenterology departments with the presumed diagnosis of peritoneal tuberculosis were included in the study. Patients who did not come to follow up

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and who are non compliant to drugs are excluded from the study. The diagnosis of peritoneal tuberculosis was done by abdominal imaging, ascitic fluid analysis for total protein, glucose, SAAG, cytology, AFB smear and AFB culture. Patients were specifically examined for peripheral lymphnodes and investigated for extra abdominal tubercular focus like chest X ray etc. Al l patients with suspected diagnosis of tuberculosis were started on ATT and good response to ATT was taken as confirmation of tuberculosis. All patients were under regular follow up and complications were noted such as drug induced hepatotoxicity etc.

Observations

The age of patients included in the study ranged between 16 to 75 years of age with a mean age of 36.5 years. The age distribution is shown in Table 1. Out of 32 patients included in the study 20 were males and 12 were females with a male: female ratio of 1.6:1.

The distribution of various types of peritoneal tuberculosis is shown in Table 2. Ascitic form seen in 78% of patients and the remaining 22 % constitutes loculated and fibroadhesive forms. Out of 32 patients isolated peritoneal involvement is seen is 20 patients. The remaining 12 patients has other abdominal organ involved along with the peritoneum and the distribution is shown in Table 3. Clinical features of patients with abdominal tuberculosis and their frequency of distribution is shown in Table 4. Abdominal distension and constitutional symtoms are seen in 81% of patients. Abdominal pain is seen in 56% of patients. Altered bowel habits seen in 33% of patients. On examination ascites was present in 84% of patients. Abdominal mass was found in 21% of patients. Cough and peripheral lymphadenopathy is present in 37 % and 21% of patients respectively. The findings of various laboratory investigations are shown in table 5. 87 % of patients has anemia on routine examination. Lymphocytosis and raised ESR was found in 78% of patients. HIV seropositive in 15 % of patients. Positive montoux test found in 81 % of patients and positive chest X Ray was found in 25 % of cases. Ascitic fluid analysis was done in all ascitic and loculated forms of peritoneal TB patients and findings in ascitic fluid analysis was shown in Table 6. In all patients with ascites low SAAG is found. AFB staining was positive in none of patients. ADA >33 was found in 81% of patients. AFB culture was positive in 15 % of patients.

Ultrasound examination of patients showed abnormalities in all the patients and the frequency of abnormalities are shown in the Table 7. Ultrasound examination shows ascites in 83 % of patients, loculated in 15 % of patients. Various other findings include mesenteric and omental thickening, bowel involvement and enlarged lymphnodes. Liver and spleen involvement seen in 6 % of patients each. CT scan was done in only 20 patients and the findings and their relative frequencies are shown in Table 8. Ascites was seen in 85 % of patients. Peritoneal thickening which is found only in CT scan was seen in 90 % of patients. Omental cake appearance and omental line was found in 25 % of patients each. Bowel involvement is seen in 40% of patients and lymphnodal involvement is seen in 25 % of cases. All patients were started on ATT for 6 months and the response to treatment is taken as the confirmation of tubercular peritonitis. Out of 32 patients 28 patients responded to treatment. 3 patients did not respond to ATT and they were diagnosed as multidrug resistant TB and given second line therapy. Out of 32 patients 4 developed ATT induced hepatitis out of which 2 were started on second line therapy and 2 patients were reintroduced CAT 1 ATT. None of the patients included in the study died during the study period.

Table 1. Age distribution

Age groups (years)	No of patients	percentage
<20	5	15%
21-40	19	60%
41-60	5	15%
>60	3	10%
Total	32	100%

Table 2. Distribution of peritoneal TB

Type	No of patients	Percentage
Ascitic form	25	78%
Loculated form	4	12.7%
Fibroadhesive form	3	9.3%
Total	32	

Table 3. Multiorgan involvement

Organs involved	No of patients
Peritoneum alone	20
Peritoneum and lymph nodes	6
Peritoneum and spleen	2
Peritoneum and liver	2
Peritoneum and intestine	5
Peritoneum and female genital tract	1

Table 4. Clinical features of peritoneal tuberculosis

Clinical features	No of patients(n =32)	Percentage
Abdominal pain	18	56%
Abdominal distension	26	81%
Vomiting	10	31%
Diarrhea	7	21%
Constipation	4	12%
Bleeding per rectum	2	6%
Constitutional symptoms	26	81%
Cough	12	37%
Signs		
Anemia	23	71%
Peripheral lymphadenopathy	7	21%
Abdominal tenderness	16	50%
Abdominal mass	7	21%
Ascites	27	84%
Obstructive features	5	15%

Table 5. Frequencies of various laboratory abnormalities

Investigations	No of patients	Percentage
Anemia < 10	28	87%
Lymphocytosis	25	78%
Elevated ESR	25	78%
HIV seropositivity	5	15%
Positive montoux test	26	81%
Positive Chest X Ray	8	25%

Table 6. Ascitic fluid analysis in peritoneal TB

Ascitic fluid analysis	No of patients	percentage
Low SAAG*	29	90%
lymphocytosis	25	78%
Smear AFB positive	None	
AFB culture postitive	5	15%
ADA>33	26	81%

*Serum Ascitic Albumin Gradient

Table 7. Ultrasound findings in patients with peritoneal tuberculosis

Ultrasound finding	No of patients	Percentage
Exudative ascites	20	62%
Clear ascites	7	21%
Loculated ascites	5	15%
Thickened mesentry	10	31%
Omental thickening	8	25%
Bowel involvement	5	15%
Enlarged lymphnodes	6	19%
Liver involvement	2	6%
Spleen involvement	2	6%

Table 8. Various CT abdomen findings in peritoneal TB

CT finding	No of patients(n=20)	Percentage
Ascites HU *(25-45)	17	85%
Peritoneal thickening	18	90%
Mesenteric stellate appearance	6	30%
Omental cake appearance	5	25%
Omental line	5	25%
Bowel involvement	8	40%
Lymphnodal involvement	5	25%

*Hounsfeild Unit

DISCUSSION

Peritoneal tuberculosis one form of abdominal tuberculosis is commonly seen in developing countries. Although the disease can affect any age group subjects in the age group of 20 to 40 years are most often affected. (Marshall, 1993; Bhansali, 1978) Similar to previous observations in our study also about 60% of patients were in the age group of 20 to 40 years of age. There are differences among various studies regarding gender distribution. Marshall *et al*. (1993) reported slight female preponderance where as Bhansali *et al*. (1978) reported male preponderance of abdominal tuberculosis. In the present study there is male preponderance. The male predominance may be due to health seeking behavior of people. Many studies shows that ascitic form of peritoneal tuberculosis is the most common form. (Bhargava *et al*., 1992; Marshall, 1993) Consistent with the previous studies our study shows the ascitic form and loculated ascetic form constitutes 90 % of cases. Fibroadhesive peritoneal TB constituted only 10 % of cases. Peritoneal TB patients in our presented with abdominal distension (81%), and abdominal pain (56%). Ascites was the most common physical finding. These observations were consistent with findings of Manohar *et al*. (1990) and Bhargava *et al*. (1992). Symptoms such as abdominal pain (56%), constitutional symptoms (81%) were more common in our patients when compared to previous studies. Abdominal lump was palpable in 21 % of patients in our study which is slightly higher when compared to study done by Manohar *et al*. (1990). Evidence of extrapulmonary tuberculosis was found in 30 % of cases. Out of them half of the patients has pulmonary tuberculosis and remaining half has peripheral lymphadenopathy. One fourth patients has both pulmonary tuberculosis and peripheral lymphadenopathy. In the present study 25% of patients has positive chest X Ray findings. Chest X Ray abnormalities reported in various studies were 25% (Bhansali *et al*., 1977), 39% (Prakash *et al*., 1978) Positive tuberculin skin test was reported in 55 – 100 % of patients in various studies. (Marshall, 1993) Balasubramanyam *et al*. (1997) reported a postitivity of 75 % of cases. In the present study montoux was positive in 81 % of cases. Rathi *et al*. (1997) found that HIV seroprevalence was significantly high in patients with abdominal tuberculosis (16.6%) than in voluntary blood donors (1.4%). The prevalence of HIV infection in the present study was 15 % which is consistent with the previous study.

Abdominal imaging and ascitic fluid analysis were the main investigations in the diagnosis of peritoneal tuberculosis in the present study. Kedar *et al*. (1994) described the ultrasonographic features in peritoneal tuberculosis. In the present study ascites was present in 83 % and loculated ascites in 15 % of patients. Thickened mesentery is found in 31% of patients, omental thickening seen in 25 % of patients and bowel involvement is seen in 15 % of patients. Lymphnodal involvement is seen in 19 % of patients. Liver and spleen involvement is seen in 6 % each. The findings in CECT abdomen were described by Gulati *et al*. (1999) and Ha *et al*. (1996) In CECT abdomen 85 % patients has demonsrated ascites, 90 % of patients has peritoneal thickening, 40 % has bowel involvement, 30 % patients has mesenteric thickening, 25 % patients has omental cake and omental line appearance. Lymphnodal involvement is seen in 25 % of patients. Ascitic fluid ADA was positive in only 81 % of cases which is low when compared to previous studies. (Dwivendi *et al*., 1990) May be the higher HIV seroprevalence may explain relative low sensitivity of ADA. Staining for ascetic fluid acid fast bacilli is positive in less than 3% of cases. A positive culture is obtained in less than 20% of cases (Marshall, 1993; Singh *et al*., 1969). In the present study none has demonstrated postitve for AFB staining. AFB culture was postitve in 15 % of patients. Although demonstration of Acid Fast Bacilli is required for the diagnosis it can be demonstrated only in limited number of cases and for culture it takes around 6-8 weeks. Based on other findings ATT can be started empirically and in our study based on ascitic fluid analysis and imaging findings we started ATT and later confirmed the diagnosis after seeing response to therapy. In our study 12.5 % of cases developed ATT induced hepatitis and out of them 50 % of cases are coinfected with HIV and on ART. May be HIV seroprevalence is the major cause of increased of increased incidence of ATT induced hepatotoxicity in present study. However all the patients completed ATT either by first line or second line of drug.

Conclusion

Peritoneal tuberculosis is a form of abdominal tuberculosis. Abdominal imaging and ascetic fluid analysis aids in the diagnosis of peritoneal tuberculosis. Increased prevalence of HIV seropositivity and ATT induced hepatitis is noted.

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