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RESEARCH ARTICLE

Diagnostic Laparoscopy Overtaking Other Diagnostic Modalities in Peritoneal Tuberculosis

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Abstract

Background: The diagonosis of abdominal tuberculosis is difficult as is its histopathological confirmation, because of suboptimal noninvasive access to intraperitoneal pathology. The diagnostic difficulty can be overcome to a great extent by the help of laproscopy (minimally invasive access to the peritoneum), computed tomography (CT),ascitic fluid analysis including adenosine deaminase (ADA) levels, polymerase chain reaction (PCR) etc.

Aim: To study the diagnostic value of different modalities in peritoneal tuberculosis. Material and methods:- The study consisted of 92 patients admitted with the clinical suspicion of abdominal tuberculosis. 50 patients were having biopsy proven peritoneal tuberculosis. Subsequent to hospital admission all patients underwent thorough clinical examination and diagnostic tests. Results:-Diagnostic laproscopy was positive in 46 patients out of 50 biopsy proven cases of peritoneal tuberculosis with a sensitivity of 92% .CECT abdomen detected 30 out of 50 cases of abdominal tuberculosis with a sensitivity of 60%. Zeil Neilson staining for mycobacterium tubercle bacilli (MTB) of ascitic fluid was positive in 2 cases (4%). Culture for MTB was positive in 8 cases (16%). Ascitic fluid analysis for ADA (> 33 U/L) showed a sensitivity and specificity of 100% and 96% respectivily. Mantoux test was positive in 23 cases (46%). Sensitivity of ESR was 90%.

Conclusion: Establishing the histological diagnosis can be difficult, frequently delaying treatment. In patients with the relevant background and clinical history, laparoscopy is the investigation of choice,and has the ability to take peritoneal biopsy (histological confirmation) in a minimal invasive way. CT reliably demonstrates the entire range of findings which need interpretation in the light of clinical and laboratory data. Other diagnostic tests can supplement the diagnosis of peritoneal tuberculosis.

Introduction

Peritonitis is the most common clinical manifestation of abdominal tuberculosis, affecting one third of all patients [1]. Peritonitis is thought to originate primarily from hematogenous spread; however, it may be secondary to a ruptured lymph node or gastrointestinal deposit or to fallopian tube involvement. Tuberculosis has been declared a global emergency by the World Health Organization and is the most important communicable disease
Worldwide. The prevalence of extra-pulmonary tuberculosis seems to be rising, particularly due to increasing prevalence of acquired immunodeficiency syndrome (AIDS) [2,3]. In patients with extrapulmonary tuberculosis, abdomen is involved in 11% of patients [4]. Abdominal tuberculosis denotes involvement of gastrointestinal tract (GIT), peritoneum, lymph nodes, and solid organs i.e., liver, spleen, and pancreas. Abdominal TB is seen more commonly between 25 and 45 years of age. Tuberculous infection of the peritoneum is rare in developed countries

but not infrequent in countries with a high prevalence of TB. Tuberculous peritonitis often exhibits female predominance. The involvement of the gastrointestinal tract is seen in 65%-78% of patients of abdominal tuberculosis [5,6] . Prompt diagnosis allows an early start to anti-TB therapy, with advantages for the patient and savings to the health system. The disease may involve any body system and in the abdomen it can mimic many conditions, like inflammatory bowel disease, malignancy and other infectious diseases [7,8,9]. Although in many cases biopsy or culture specimens are required to make the definitive diagnosis, it is imperative that radiologists and clinicians understand the typical distribution, patterns, and imaging manifestations of tuberculosis.

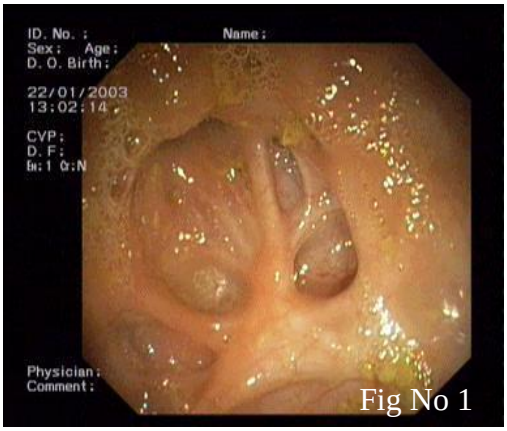
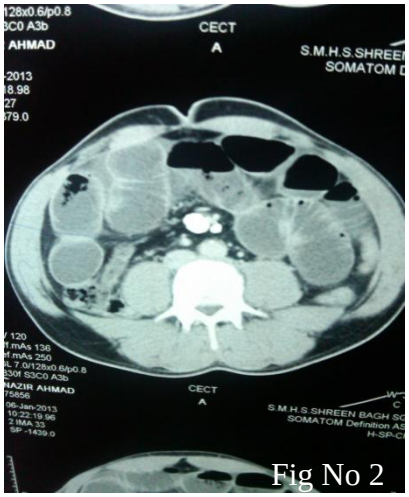


Fig No 1

PATIENTS AND METHODS: This prospective study was carried in government medical college Srinagar over a period of two years. The study consisted of 92 patients admitted with the clinical suspicion of abdominal tuberculosis. 50 patients were having biopsy proven peritoneal tuberculosis. Subsequent to hospital admission all patients underwent thorough clinical examination and diagnostic tests- ESR, Mountoux test, ascitic fluid analysis (ADA levels, Zeil Neilson staining and culture for MTB), CECT abdomen, Diagnostic laproscopy, etc. Thickened peritoneum, studding of the peritoneum with multiple tubercles, and adhesions are often seen on laparoscopy or laparotomy (Fig 1.).Biopsy of these tubercles shows granulomatous Changes [10-13]. CT features (Fig 2 & 3) of peritoneal TB include peritoneal thickening, ascites with fine septations, and omental caking. [14-16]. In patients with ascites, peritoneal fluid is straw coloured with proteins more than 30g/l, cells more than 1,000/cu.mm (mostly lymphocytes), ascitic/blood glucose ratio of less than 0.96, and adenosine deaminase (ADA) levels of more than 33 U/l [17,18]. Patients having contraindications to laproscopy and CECT abdomen study were excluded from study.



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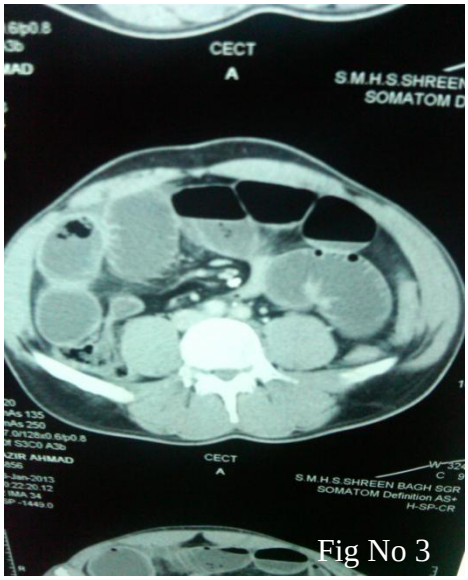

Fig No 3

RESULTS:

Young adults from rural areas were mainly affected with slight female predominance. Patients presented with fever (50%), weigh loss (40-90%), aneroxia (74%), malaise, pain (80%), diarrhea (10%), vomiting (40%) and constipation (25%). Physical signs were tender abdomen (70%), palor (74%), abdominal distension (50%), lump abdomen (20%), ascitis (15%), lymphadenopathy (8%) Anaemia was consistent feature in 84% patients. Diagnostic laproscopy was positive in 46 patients out of 50 biopsy proven cases of peritoneal tuberculosis with a sensitivity of 92%(table 1). CECT abdomen detected 30 out of 50 cases of abdominal tuberculosis with a sensitivity of 60%% and specificity of 71.42%. Zeil Neilson staining for mycobacterium tubercle bacilli (MTB) of ascitic fluid was positive in 2 cases (4%). Culture for MTB was positive in 8 cases (16%). Ascitic fluid analysis for ADA (> 33 U/L) showed a sensitivity and specificity of 100% and 96% respectively .Ascitic fluid PCR for tuberculosis showed a sensitivity of 83.33 %. Mantoux test was positive in 23 cases (46%). Sensitivity of ESR was 90%.

TABLE 1

Status of peritoneum (HPE)	**Positive LAP.**	**Negative**	**Total**	**Positive rate**
Tubercular	46	4	50	92 %
Non tubercular	10	32	42	23.81%
Total	56	36	92	

Chi square is 49.04; Degree of freedom (df) = 1; probability (p) is < 0.0001.

Males: Weight loss, weakness, aneroxia, abdominal pain, abdominal mass, Ascitis abdominal distension, omental thickening.

Females: Weight loss, weakness, aneroxia, positive family history, abdominal pain, night sweats, tuboovarian mass, Ascitis abdominal distension, omental thickening,

DISCUSSION

Abdominal TB should be considered in the differential diagnosis for patients who present with non-specific abdominal complaints and weight loss over a long period[19]. Our findings also support previous work on the value of laparoscopy, the most specific diagnostic test for abdominal TB[20,21] with its advantage of histological confirmation [22]. TB is re-emerging global emergency which is further complicated by AIDS/HIV infection and the use of immunosuppressant drugs [23]. Peritoneal TB is most common form of abdominal TB and involves alone or in combination the pereitoneal cavity, mesentry and omentum. Three types of peritoneal TB are described [24]. A wet type, a dry type, and a third type with mass formation due to omental thickening. The findings of the present study confirm earlier reports on the difficulties of diagnosis including non-specific presenting features, unhelpful laboratory tests, negative results with tuberculin skin tests and Ziehl–Neelsen staining and false-negative ultrasound and CT scans[19,25-27]. Examination of ascitic fluid is helpful but not conclusive in the diagnosis of disease. The ascitic fluid in TB is straw cloured with protein > 3 g/dl, and total cell count of 150-4000/microlitre consisting predominantly of lymphocytes (>70%). The ascitis to blood glucose ratio is < 0.965 aqnd serum ascitis albumin gradient (SAAG) <1.1 g/dl. The yield of organisms on smear and culture is low . AFB staining for mycobacterium tubercle bacilli (MTB) is positive in < 3 % of cases. A positive culture is obtained in < 20% of the cases, and it takes 6 to 8 weeks for mycobacterium colonies to appear. Singh et al advocated that processing of 1 litre of ascitic fluid may yield upto 80% positive result. In TB peritonitis, histopathological method is an appriopate both for diagnosing TB and to rule out other diseases such as malignancy. The value of laproscopy in diagnosis of abdominal TB is well established. Some authors consider it most specific diagnostic tests for abdominal tuberculosis [28-29] with advantage of histological confirmation [30]. Our findings also support the previous work on value of laparoscopy, the most specific diagnostic test for abdominal TB, with its advantage of histological confirmation. Unfortunately this investigation still tends to be used as last resort [31,32]. Our observations strengthen the evidence [33,34] that , in patients with revelant background and clinical history, laproscopy is investigation of choice. Unlike US the complex nature of the ascites is difficult to demonstrate by CT, [35] however CT is useful in determining the density of the ascetic fluid which is reported to be high; presumably due to the complex nature of the fluid. The high density nature of the fluid is reported by some authors [36,37] as specific for TB where as other [38] suggest that it is not a reliable factor and can overlap with peritoneal carcinomatosis. The differential diagnosis of complex ascites includes wide spread lymphoma and carcinomatous as well as pyogenic

peritonitis [37] CT features of peritoneal TB include peritoneal thickening, ascites with fine septations, and omental caking[14-16].

CONCLUSION

Establishing the histological diagnosis can be difficult, frequently delaying treatment with many ill consequences. If done, diagnostic laparoscopy can establish a valuable diagnosis in a less invasive manner thereby helping to initiate the appropriate treatment in time and reduce the complications and improve the survival rates. In patients with the relevant background and clinical history, laparoscopy is the investigation of choice, and has the ability to take peritoneal biopsy (histological confirmation) in a minimal invasive way. CT reliably demonstrates the entire range of findings which need interpretation in the light of clinical and laboratory data. Other diagnostic tests can supplement the diagnosis of peritoneal tuberculosis. We conclude the study by putting forward the diagnostic laproscopy as the primary rather the last resort or the threshold for diagnostic laproscopy should not be too high.

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