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Original Research Article

The role of surgery in management of tuberculous peritonitis

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ABSTRACT

Background: Tuberculous peritonitis is a serious condition with rising prevalence in recent years. The most common site of involvement is the ileo-caecal region. Treatment with standard antituberculous drugs is usually highly. Surgery is usually reserved for patients who have developed complications, obstruction or not responding to medical management. The aim of this study was to describe the surgical management of tuberculous peritonitis.
Methods: This study was carried out at Al-Karama Teaching Hospital between December 2015 to June 2018. A sixty patients with proved tuberculous peritonitis. It was a prospective study in which the records of the patients operated upon as peritonitis or acute intestinal obstruction and whose diagnosis was later confirmed as tuberculosis on histopathology were analysed with regards clinic-pathologic profile, intra-operative findings, surgical intervention performed and outcome in terms of morbidity and mortality.
Results: Their age range was between 20-39 years, 25 (62.5%) were females and 15 (37.5) were males, abdominal distension and pallor were a common clinical finding 92.5% and 90% prospectively and 42.5 % of the patients have their complaints for 2-3 months, while history of pulmonary tuberculosis was present in 22.5% of the patients only. In 50% of the patients there were no important findings on chest X-ray. Ascites was positive in 82.5% of patients on abdominal sonography while on diagnostic laparoscopy in 45% of patients the findings were ascites with peritoneal and bowel adhesions.
Conclusions: Early diagnosis is the key factor in avoiding systemic and local complications of intestinal tuberculosis. Laparoscopy is the minimal invasive technique for definitive diagnosis with minimal sides effects.

Keywords: Ascitis, Ileocaecal region, Laparoscopy, Peritoneal tuberculosis

INTRODUCTION

Tuberculosis (TB) remains one of the important infections worldwide especially in the developing countries and still an important cause for morbidity and mortality.[1] Abdominal tuberculosis probably occurs due to reactivation of a dormant focus. This primary gastrointestinal focus is established as a result of hematogenous spread from a pulmonary focus acquired during primary infection in childhood. It may also be caused by swallowed bacilli which pass through the Peyer's patches of the intestinal mucosa and are transported by macrophages through the lymphatics to the mesenteric lymph nodes, where they remain dormant.[2]

It can affect all the systems of the body with abdominal tuberculosis being the 6th most common site of affection in extra-pulmonary tuberculosis after lymphatic, genitourinary, bone, joint and meningeal tuberculosis.[3,4]

The intestinal tuberculosis involve gastro-intestinal tract, peritoneum, lymph nodes and solid organs (liver, spleen and pancreas) are the four areas of involvement in abdominal tuberculosis.[5]

The most common site of involvement is the ileo-caecal region, possibly because of the increased physiological stasis, increased rate of fluid and electrolyte absorption, minimal digestive activity and an abundance of lymphoid tissue at this site. It has been shown that the M cells associated with Peyer's patches can phagocytize BCG bacilli.[6]

Three types of intestinal lesions are commonly seen-ulcerative, stricturous and hypertrophic, cicatricial healing of the ulcerative lesions resulting in strictures. Occlusive arterial changes may produce ischemia and contribute to development of strictures. These morphological types can coexist, e.g., ulcer-constrictive and ulcero-hypertrophic lesions. Small intestinal lesions are usually ulcerative or stricturous and large intestinal lesions are ulcero-hypertrophic. Colonic lesions are usually associated with ileo-caecal or ileal involvement.[7]

Peritoneal involvement may be of either an ascitic or adhesive (plastic) type. The lymph nodes in the small bowel mesentery and the retro peritoneum are commonly involved and these may caseate and calcify. Disseminated abdominal tuberculosis involving the gastrointestinal tract, peritoneum, lymph nodes and solid viscera has also been described.[8]

Abdominal tuberculosis may present in acute, chronic or acute on chronic forms and yet many at times it may be an incidental finding.[9] In the chronic form fever, pain, altered bowel habits, anorexia, weight loss and malaise are the most common symptoms of abdominal tuberculosis and abdominal distension, caused either by ascitis or partial intestinal obstruction.

Perforation peritonitis due to bowel perforation or acute intestinal obstruction are the acute presentations of abdominal tuberculosis.[10,11]

Abdominal tuberculosis (uncomplicated) is mainly managed by anti-tubercular drugs but the complications, such as perforation peritonitis and acute intestinal obstruction, require prompt surgical intervention followed by anti-tubercular drug therapy.[12]

TB peritonitis should be suspected in high risk patients e.g. patients with family history of tuberculosis, diabetic patients, patients undergone gastrectomy, immune compromised and patients with renal failure.[13] Therapy with standard antituberculous drugs is usually highly effective for intestinal TB. Six-months therapy is as effective as nine-months therapy. Surgery is usually reserved for patients who have developed complications or obstruction not responding to medical management. Author undertook this study to evaluate surgical management of tuberculous peritonitis at Al-Karam Teaching Hospital.

METHODS

Sixty patients with proved tuberculous peritonitis have been involved prospectively for the period between December 2015 to June 2018. All suspected cases presented to emergency department or outpatient were invited to participate in this study.

Adult above 18 years old, provide consent to participate in this study and Iraqi national were included. Patients with presence of other surgical emergencies and presence of perforation were excluded.

After their admission a detailed history and physical examination had done for them with the appropriate general investigation. Other specific tests for ascitic fluid including biochemical for protein and sugar contents and for cytology. A chest X-ray with abdominal sonography for all these patients. Thirty-six patients of them had undergone diagnostic laparoscopy with biopsy in the operating theatre under general anesthesia. While two patients underwent diagnostic laparotomy with biopsy prone to be abdominal tuberculosis. Two patients with ascitis and suspicious lesions in the liver undergone needle biopsy for the liver prove to be tuberculous lesions.

All data were described with frequency and percentage and presented in frequency tables.

RESULTS

This study on role of surgery in the diagnosis and management of peritoneal tuberculosis was conducted at the Department of Surgery at Al-Karama Teaching Hospital between December 2015 to June 2018.

Sixty patients admitted to the Department of Surgery at Al-Karama Teaching Hospital were involved prospectively.

They were 23 males and 37 females with a total mean age of 37.5 years. The maximum incidence was at the age range 20-39 years for both males and females, which occurred among 32 patients (53.33%) (Table 1). Abdominal distension with pain was the most prevalent presenting feature. Medical history for these patients shows pulmonary TB in 9 patients, diabetes mellitus 3 patients and one patient with liver cirrhosis as shown in Table 2.

Among other features, abdominal distension was the most frequent findings followed by pallor. Hepatomegaly and hepato-splenomegally among the frequent findings with 23% and 20% respectively. Mild, moderate and huge ascites were almost distributed evenly.

Table 1: Distribution of the study according to age of the patients.

Variable		N	%
Age in years (mean=37.5, SD=16.2)	<20 years	5	8.33
	20-39	32	53.33
	40-59	15	25.00
	60+	8	13.34
Total		40	100

Table 2: Distribution of patients by their chief complaints and history.

Characteristic	N	%
Abdominal distension	44	73.33
Abdominal pain	23	38.33
Fever	12	20
Jaundice	7	11.66
Weight loss	6	10
History		
Pulmonary TB	15	25
Diabetes mellitus	5	8,3
Liver cirrhosis	1	1.70

Table 3: Distribution of patients by positive physical signs and laparoscopic findings.

Characteristic		N	%
Abdominal distension		37	92.50
Pallor		36	90
Jaundice		7	11.70
Abdominal mass		7	11.70
Palpable organomegaly	Absent	34	56.70
	Hepatomegaly	14	23.30
	Hepatosplenomegaly	12	20
Abdominal ascites	Not detected	3	5
	Mild	21	35
	Moderate	22	36.70
	Huge	14	23.30
Fever		40	66.70
Generalized wasting		55	91.70
Ascitis+adhesion of peritoneum and bowel		25	46.30
Ascites+whitish nodules+omental thickenings		18	33.30
Bowel thickenings+adhesions of the viscera+no ascitis		4	7.40
Peritoneal nodules+genital involvement		4	7.40
Peritoneal nodules+hepatic involvement		3	5.6

The laparoscopic finding done for 54 patients out of the total (60) patients. Showed in 18 (45%) patients free fluid with multiple adhesions. In 12 (30%) patients in addition to that there were scattered whitish nodules all over with omental without bowel thickening with adhesions without ascitis found in 2 (5%) patients only. While female genital organs involvement with peritoneal nodule in 2 (5%) patients. Peritoneal nodules with liver involvement in another 2 (5%) patients. For all of the patients undergone diagnostic laparoscopy biopsy usually taken for diagnosis (Table 3).

The result of laboratory investigation showed in 11 patients the Hb level was below 10gm/dl WBC between (4000-10.000/mm^3) in 38 patients, ESR (40-79m/hr) in 24 patients. The biochemical tests of the ascitic fluid showed in twenty patients (50%) the glucose concentration between 40-59mg/dl, while the protein content in 14 patients (43.8%) was 3-4.9mg/ml (Table 4).

Table 4: Results of clinical laboratory investigations.

Characteristic	N	%
Blood hemoglobin concentration (in gm/dl) (mean=10.5, SD=1.8)		
<10	16	26.7%
10-11	24	40%
11.1-15	20	33.3%
WBC count (in cell/HPF) (mean = 6000 and SD =1876)		
<4000	2	3.3 %
4000-10000	54	95 %
11000	4	6.7%
ESR (in mm/hour) (mean=68 and SD=21.7)		
25-39	3	5%
40-79	36	60%
80+	21	35%
Total serum protein (TSP in gm/ml) (mean=6.9 and SD=0.5)		
5.4-5.9	3	5%
6-6.9	16	26.7%
7-7.8	41	68.3%
Total	60	100%
Ascitic fluid contents		
Glucose concentration (in mg/dl) (mean=73.5 and SD=16.4)		
40-59	9	15%
60-79	30	50%
80-115	21	35%
Protein (in mg/ml) (mean = 4.1 and SD = 1.5)		
1.4-2.9	13	21.7%
3-4.9	26	43.3%
5-6.8	21	35%
Total	60	100%

Abdominal sonographic finding in 50 patients (83.3%) showed sign of free fluid in the peritoneal cavity while hepato and or splenomegaly in 27 (45%) of patients. CT scan abdomen was done in all patients, 48 of them were suggestive of abdominal tuberculosis and twelve were inconclusive. Features suggestive of TB were high

density peritoneal free fluid, intra-abdominal lymphadenopathy, thickened small bowel loops and omental thickening. Only 39 of them had positive (65%) histology for tuberculosis and 21 were negative (35%). The sensitivity and specificity of CT scan are 96% and 46% respectively.

DISCUSSION

The main problem of abdominal TB is in its early diagnosis, since its clinical presentation are range and ill-defined and may mimic other disease especially intra-abdominal malignancies associated with ascitis.

The awareness of this clinical condition is the most important step in its early diagnosis.

The findings of Acid-Fast Bacilli (AFB) in the ascitic fluid or histological diagnosis are the only ways to reach the definitive ensure. Anti-tuberculosis therapeutic trials used to be one way to ensure the problem of abdominal TB.[14]

Comprising present study results with other studies. In this study the age range of most of the patients were in the third and fourth decades of life with more females than males (25 females to 15 males) of child bearing age which is consistent with other studies.[15,16]

The clinical features presented by the patients e.g. abdominal pain and distension due to the presence of free fluid in the peritoneal cavity detected in 92% of these patients which is almost the same as other studies.[14-18]

The duration of symptoms at the time of diagnosis was varying from one to six months, in one report they found in more than 70% of their patients having had symptoms for more than four months before the definitive diagnosis other features e.g. fever, weight loss, general weakness, pallor are often found in other studies.[12] Evidence of pulmonary TB on chest X-ray was found in 11 patients (27.5%) and pleural effusion in 9 patients (22.5%) of the patients, which lower than other results who found (80%) of this patients show pleural effusion or pulmonary infiltration.[18] Other studies found ascitic pulmonary TB in 15-20% of this patients.[14]

Ascitic fluid analysis showed that the mean glucose content was 73.5mg/dl which was higher than other report who found the glucose content was around 30mg/dl, while the protein content in 25 patients (78.2%) were more than 3gm/dl ranging between 3.6-8gm/dl while other reports found an exudate in 94.4% of their patients.[19]

The sonographic findings of abdominal TB are variable either free or loculated fluid collection, intra-abdominal abscesses, ileocaecal mass, enlarged mesenteric lymph nodes, mesenteric or omental thickening adherent loops of bowel are among the findings on abdominal sonography.[20] Other reports in 40 patients with peritoneal TB they record other sonographic findings as sliced bread appearance in dry TB in 8 cases and in the remaining 32 patients with ascitis from a freely floating bands with or without network in 20 cases and lotus petals like sign in 12 cases.[20]

Present sonographic results showed the presence of free fluid in 33 patients (82.3%) of patients, organomegaly in 18 patients (45%), peritoneal adhesion and bowel thickening in 9 patients, liver involvement, pleural effusion and abdominal masses in other patients, these results are different from other reports because the ultrasonic results are from different sources with variable experience of the sonographist.

The role of laparoscopic investigation proves to be a useful diagnostic tool in some cases to avoid the need of open surgical exploration and it's the most convenient method in evaluating patients with abdominal fluid collection, it depends on visual as well as getting tissue for histological diagnosis. So, it helps in differentiating abdominal TB from disseminated intra-abdominal tumors.

The laparoscopic findings in most of patients are ascitis, multiple nodules in the peritoneal surface with adhesions and bowel thickening, liver and female genital tract involvement, thickening of the ileocaecal region. Present study findings also reported in other similar studies.[21,22]

CONCLUSION

Early diagnosis is the key factor in avoiding systemic and local complications of intestinal tuberculosis. In emergency cases, prompt surgical exploration and vigilant care is met with good recovery. Noninvasive investigation showed first to be used to decrease the list of differential diagnosis. Laparoscopy avoids the morbidity and mortality of laparotomy in chronically ill patients, reduces the rate of misdiagnosis of other abdominal conditions and unnecessary long-term therapy. Diagnostic laparoscopy and tissue sampling are a viable and reliable strategy in patients with suspected abdominal tuberculosis.

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