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A Prospective Study of Abdominal Tuberculosis and the Role of Surgery in its Diagnosis and Treatment

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Research Article

Abstract: **Background:** Abdominal tuberculosis though a rare disease has worldwide distribution. It is uncommon in west but still common in developing countries. Increased incidence is noted in developed countries due to increase incidence of HIV infections. Of the extra pulmonary tuberculosis, abdominal tuberculosis still has a major role for a surgeon in the form of treating various complications. ***Materials and Methods:*** All patients admitted to surgical department, Chettinad Hospital and Research Institute, and diagnosed to have abdominal tuberculosis were included in the study from oct 2010 to oct 2013. All the patients in our study were evaluated by clinical assessment, chest X ray, X ray abdomen, USG abdomen, ascitic fluid analysis. CT scan, Barium meal follow through and diagnostic laparoscopy were performed if required. ***Results:*** Of the 76 patients studied, maximum number of patients were found to be between 3rd to 5th decade with equal sex distribution. Abdominal pain was the most common presenting symptom. More than 72% of the patients were found to be anemic. Less than 20% had ESR above 90mm in one hour. Imaging of the abdomen showed ascites and abdominal mass as the two common findings. Most of these patients had peritoneal tubercles and adhesions. Stricturoplasty (26%) was the most common procedure performed followed by small bowel resection (22%). ***Conclusion:*** Diagnosis of abdominal TB is challenging. It can occur independent of primary pulmonary tuberculosis. Still medical management is the first line of treatment requiring surgical management for the purpose of diagnosis and managing complications.

Keywords: ATT – Anti Tuberculous Treatment; Clubsandwich or sliced bread sign. Limited Right Hemicoloectomy; Stricturoplasty.

Introduction

Tuberculosis, though uncommon in the west it is still prevalent in developing countries like India and the frequency of the infection has recently increased in the west due to an increase in the incidence of Human Immune Deficiency Virus (HIV) infections. Abdominal tuberculosis may involve the gastrointestinal tract, peritoneum or the mesenteric lymph nodes[7]. The commonest sites of involvement are the terminal ileum and the ileo-caecal region, followed by the jejunum and colon. Involvement of solid viscera like the liver, spleen and pancreas, proximal gut like stomach and duodenum and distal parts of GIT like anorectal region are also known. The clinical presentations of abdominal tuberculosis are so varied and may mimic malignancy, Crohns disease and Irritable Bowel Syndrome[8] and the signs are so nonspecific so that it still continues to challenge the diagnostic acumen and therapeutic skills of the medical professionals.

Material and Methods

A prospective evaluation study was done among all patients admitted in the Department of General Surgery in Chettinad Hospital and Research Institute between October 2010 and October 2013 and showing histopathological, smear or microbiological proof of abdominal tuberculosis. Patients who were below 14 years of age were excluded from the study. A detailed history with a thorough clinical examination with special attention to the abdominal examination was done and details were recorded. In addition to the routine haematological investigations, patients were also investigated with a chest X-ray, abdominal X-ray, Ultrasonography and a CT scan. Patients who were suspected to have small bowel pathology had a barium meal follow through and those suspected to have large bowel pathology underwent barium enema study or a colonoscopic examination with biopsy of any lesions found. Patients documented to have ascites were tapped and the fluid sent for cytological, biochemical and examination. The results of all these investigations were noted. Patients presenting with non-specific symptoms underwent a diagnostic laparoscopy. In all patients who required surgical intervention, the indication for the surgery, the intra-operative findings, operative procedure performed and complications, if any were recorded. All lesions were biopsied and sent for histopathological examination.

Result

Table 1: Demographic Characteristics, Operative Time, Pain Score and Duration of Hospital Stay in all patients

Sr. No.	Presenting symptoms (9=76)	Number	%
1	Pain	67	88.2
2	Vomiting	33	43.4
3	Distension	35	46.1
4	Fever	30	39.5
5	Anorexia	19	25.0
6	Weight loss	21	27.6
7	Mass	2	2.6
8	Bleeding per rectum	1	1.3
9	Pus discharge	1	1.3

Pain abdomen was the most common presenting symptom present in more than 88% of the study population followed by vomiting and distention whereas abdominal mass and bleeding per rectum/pus discharge accounts for <3% of the presenting symptoms in the study.

Table 2: CT Scan Findings

Sr. No.	Findings	Number	%
1	Normal	1	2.4
2	Ascites	27	65.9
3	Lymphnodes	5	12.2
4	Obstruction	7	17.1
5	Hepatomegaly	9	21.9
6	Splenomegaly	8	19.5
7	Mass	6	14.6
8	Bowel wall thickening	1	2.4
9	Omental thickening	2	4.9
10	Coccon	1	2.4
11	Localised Collection	1	2.4

When CT scan was done to the necessary patients ascites was the most common finding. Obstruction and mass was found in 17% and 14% respectively in this imaging. Bowel wall thickening, cocoon and localized collection were the least common findings in CT scan.USG was done for all cases as a routiene of which Club sandwich" or "sliced bread" sign is due to localized fluid between radially oriented bowel loops, due to local exudation from the inflamed bowel (inter loop ascites) was found to be more pathagnomic.

Table 3: Endoscopy Findings

Sr. No.	Endoscopy findings(n=200)*	Number	%
1	Mass	1	5.0
2	Ulcers	10	50.0
3	Nodules	4	12.5
4	Strictures	1	5.0
5	Erosions	1	5.0
6	Deformed IC valve	3	15.0
7	Normal	5	25.0

*some patients had multiple findings

Tuberculous ulcers in the mucosa of GI tract was present in half of the patients undergoing colonoscopy and was the most common colonoscopic finding followed by deformed IC valve. In ascitic fluid analysis total proteins showed moderate elevation in 10% of the patients Majority of the patients it was found to be in the normal range. Blood glucose was more than 150 mg/dl in <16% of the population. Raised LDH level were noted in approximately 32%.Increased ADA levels noted in 50% of the study population.

Table 4: Ascitic Fluid Analysis – Biochemical

Bio-chemical Parameter	Number	%
Total Protein mg/dl(n=19)		
1. 5-3.0	4	21.05
3.0-6.0	13	68.4
>6.0	2	10. 5
Albumin mg/dl (n=19)		
<1. 50	6	31.6
1. 50-2.50	7	36.8
>2.50	6	31.6
Glucose mg/dl (n=19)		
<100	10	52.6
100-150	6	31.6
>150	3	15.8
LDH units (n=19)		
<200	3	15.8
200-400	10	52.26
<400	6	31.6
ADA units (n=6)		
<30	1	16.7
30-60	2	33.3
>60	3	50.0

Table 5: Intraoperative Findings

Sr. No.	Intraoperative findings (n=54)	Number	%
1	Ascites	18	33.3
2	Lymph nodes	17	31.5
3	Adhesions	21	38.9
4	Tubercles	36	66.7
5	Strictures	8	14.8
6	Mass	14	25.9
7	Perforation	7	12.9
8	Caseous Necrosis	3	5.6
9	Coccon	2	3.7

*Most people had multiple findings

Table 6: Operative Procedure

Sr. No.	Operative procedure (n=55)	Number	%
1	Diagnostic laproscopy+Biopsy	21	38.2
2	Laprosocy and Adhesionolysis	4	7.3
3	Laproscopic splenectomy	1	1.8
4	Rt.Hemicolectomy+Ileo transyerse anastamosis	9	16.4
5	Ileocaecal resection+ Ileo anastamosis	7	12.7
6	Open Biopsy	13	23.6
7	Segmental resection + anastamosis	2	3.6
8	Perforation closure	2	3.6
9	Resection +Stoma	2	3.6

10	Adhesionolysis	4	7.3
11	Sticturoplasty	5	9.1
12	GJ Vagotomy	1	1.8
13	Drainage of Cold Abscess	2	3.6
14	Laparotomy+Frozen section	1	1.8
15	Oompahalectomy	1	1.8

Biopsy taken either by diagnostic laparoscopy or laparotomy were the two most common surgical procedure done. Right hemicolectomy and ileo-transverse anastamosis and ileacaecal resection and ileo-colic. Anastamosis(Limited right hemicolectomy) is the most common surgical procedures done in case of intestinal obstruction. Adhesiolysis (Fig 3) and stricturoplasty were the required in approximately 8% of the study group. Cold abscess drainage was rarely required.

Figure 1: Tuberculous abdomen showing bowel thickening and tubercles

Figure 2: Abdominal Cocoon

Peritoneal tubercles (Fig 1) was present in >65% of patients undergoing surgery and adhesions causing obstruction was also a common finding in patients developing symptoms of intestinal obstruction. Ascites and enlarged mesenteric lymphnodes was also a striking feature of abdominal tuberculosis. Abdominal cocoon (Fig 2) was the least common intraoperative finding identified.

Figure 3: Adhesiolysis

Discussion

Presenting Complaints

Pain abdomen was the most common presenting symptom in all series including the present one. It was present in 86% in Forrest C *et al*[1] series. Distention of abdomen was presenting complaint in 46.1% patients in the present series, while in Forrest C *et al*[1] series, it was present in 31%. Vomiting was also a significant complaint being present in 43.4% of the patients in this series as compared to 47% in the Forrest C *et al*[1] series. Low-grade fever was a significant complaint in the present study, being present in 39.5% patients, while it was present in 8% cases of Prakash series and29% cases of Forrest C *et al* series. Abdominal tenderness, distention, Ascites and organomegaly were the most common signs which were consistent with most studies[9,10,11].

CT Scan Findings

Rai S *et al*[2] had findings suggestive of TB in 32.14% of their patients with ascites in 39.9% of them. Suri R *et al*[3] performed CT guided FNAC in 30 patients and found definite evidence of tuberculosis in 58% of them. In our series CT demonstrated presence of ascites in 65.9% of the patients. A abdominal mass in 14.6%, presence of lymph nodes in 12.2%, hepatomegaly in 21.9%, and splenomegaly in 19.5% of patients were the other features seen

Ascitic Fluid Analysis

Das P and Shukla HS[4] reported, an ascitic fluid protein content of 2-5 gm or more and lymphocyte count of over 100cells/mm3 are diagnostic of tuberculous origin. In the present study, ascitic fluid protein content of >3gm/dl was found in 78.4% of the patients. Lymphocytic predominance was found in 73.68% of the patients. In the study by Bhargava *et al*[5], serum ADA level above 54U/l, ascitic fluid ADA level above 36 U/l and a ascitic fluid to serum ADA ratio>0.985 were found suggestive of tuberculosis. In our study analysis of ADA in 6 patients revealed elevation beyond 60 units in 3 (50%), between 30 and 60 units in 2 (33.3%) andbelow 30 units in 1 (16.7%) patient.

Operative Findings

Peritoneal tubercles were the most common finding and were found in 36(66.7%) of the patients followed by adhesions in 21 (38.9%), ascites in 18(33.3%). These findings are similar to those reported by Forrest C *et al*[1] who reported diffuse disease in 36% of patients but the most common finding was strictures. Bhansali SK[6] reported lymphadenitis as commonest finding, followed by peritoneal tubercles. In our study Lymph nodal disease was found in 31.5%, and strictures in 14.8% of the patients.

Operative Procedures

Stricturoplasties was the most common procedure performed in 26.67% of the patients of the Forrest C *et al*[1] series. Small bowel resections done in 22.96% and

Adhesionolysis done in 14.81% of the patients came next in frequency. In contrast, in our series, diagnostic laparoscopy was the most common surgical intervention performed in 32.72% of the patients. Laparotomy and biopsy were required in 23.6% of the cases. Stricturoplasties in 9.1% and Adhesionolysis in 7.3% lagged behind in frequency as compared to major surgical resections including right hemicolectomies in 16.4% and Ileocaecal resections in 12.7% of the patients.

Conclusion

- The diagnosis and management of abdominal tuberculosis is still challenging to surgeons as it presents with a variety of symptoms.
- Abdominal tuberculosis can occur independent of pulmonary tuberculosis.
- Tissue biopsy either by endoscopy or diagnostic laproscopy is always required before starting medical management
- Medical management with ATT- ANTI TUBERCULOSIS TREATMENT is the main stay of therapy which should be started as soon as the diagnosis is made.
- The role of surgery is principally in diagnosis and management of various complications.

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References

1. Forrest C Ecgleston, Madhu C, Deodhar, Ashutosh Kumar. Surgery in Abdominal tuberculosis: Results in 137 cases. Ind J Tub 1983; 30: 139.
2. Rai, S, Thomas WM. Diagnosis of abdominal tuberculosis: the importance of laparoscopy: JRSM 2003 December; 96 (12): pp 586-588.
3. Suri R, Gupta S, Gupta SK, Singh K, Suri S. Ultrasound guided Fine Needle Aspiration Cytology in Abdominal Tuberculosis: Br J Rad 1998; 71: 723-727.
4. Das P, Shukla HS. Clinical Diagnosis of Abdominal Tuberculosis: Br J Surg 1976; 63: 941-946
5. Bhargava DK, Gupta M, Nijhawan S, Dasarathy S, Kushwaha AKS. Adenosine deaminase (ADA) in peritoneal tuberculosis: diagnostic value in ascites fluid and serum. Tubercle 1990; 71: 121-6.
6. Bhansali SK. Abdominal tuberculosis. Experiences with 300 cases. Am J Gastroenterol 1977; 67: 324-37.
7. Tewari M, SahooSp, Shukla HS. Abdominal Tuberculosis. In: Sharma SK, editor. Tuberculosis. 2nd ed. New Delhi: Jaypee Brothers; 2009. Pp. 275-93. [pubmed]
8. Jadavar H, Mindelzum RE, Olcott EW, Levitt DB. Still the great mimicker: Abdominal tuberculosis. AJR Am J Roentgenol. 1997; 168:1455-160. [pubmed]
9. Zendehedel N, Heidarnazhad H. Biopsy proved abdominal tuberculosis in Tabriz. Arch Iran Med. 2003;6:261-4.
10. Baloch NA, Baloch MA, Baloch FA. A study of 86 cases of abdominal tuberculosis. J Surg Pak. 2008;13:30-2.
11. Hu ML, Lee Ch, Kuo CM, HuangCC, Tai WC, Chang KC, *et al*. Abdominal tuberculosis: analysis of clinical features and outcome of adult patients in southern Taiwan. Chang Gung Med J.2009;32:509-16. [pub med].