

Diagnostic Laparoscopy in Diagnosis of Abdominal Tuberculosis

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Abstract

Background: Abdominal tuberculosis presents with vague symptoms and marked by a delay in establishing a diagnosis. Present study was done to compare the utility of Computerised Tomography abdomen with diagnostic laparoscopy in the diagnostic algorithm of Abdominal Tuberculosis.

Method: This study enrolled 25 patients who underwent a operative procedure in the form of a diagnostic laparoscopy or explorative laparotomy. In these patients intra-operative findings were noted and tissue send for histopathological examination.

Results: The commonest findings observed was presence of tubercles over peritoneal surface. Tubercles over gut and peritoneum were present in 72% and on omentum in 32%. Other common findings were adhesions (56%), ascitis (52%), cocoon abdomen was present in 28%. Other findings were omental thickening, visceral and parietal peritoneum thickening, loculated collection, ileo-caecal mass, gall-bladder mass, mesenteric lymphadenopathy and ileal strictures.

Conclusion: Computerized Tomography has a better sensitivity for omental thickening, retro peritoneal lymphadenopathy, bowel wall thickening, omental stranding and mesenteric thickening. Diagnostic laparoscopy was found to have better sensitivity for detection of tubercles, particularly those less than 5 mm, adhesions, matting of gut (cocoon abdomen) and ileal strictures while these findings were easily picked up on laparoscopy. Both these diagnostic modalities had nearly equal sensitivity towards findings like intra-abdominal collection, loculated or generalised and peritoneal thickening.

Keywords: Abdominal tuberculosis; Laparoscopy; Diagnostic laparoscopy; Tubercles; Peritoneal tuberculosis

Introduction

Living in the 21st century with advanced healthcare and medical science, Tuberculosis continues to be a major health problem in the developing world. With issues like immigration from endemic areas, increased prevalence of immunosuppression, and emergence of multidrug- and extensively drug-resistant strains of Mycobacterium tuberculosis; tuberculosis continues to be a healthcare challenge in the developed world. Extrapulmonary disease occurs in 27%-49% of all reported cases of tuberculosis in developed countries, and the abdomen is the most common extra thoracic site of infection. The disease involves multiple different sites in the abdomen in 27% of patients with abdominal tuberculosis and concurrent active pulmonary involvement occurred in 36%-47% of patients with abdominal disease. With HIV, the risks of developing tuberculosis increase and the disease is of multi-organ nature in more likelihood. The sources of genesis for abdominal tuberculosis are multiple. One common occurrence is reactivation of a latent focus in abdomen which was formed during the primary infection [1].

Other possible sources are haematogenous or lymphatic spread from current active tuberculosis, ingestion of the pathogen, or by direct extension from adjacent involved tissues. Abdominal tuberculosis can be asymptomatic or cause non-specific symptoms such as weight loss, abdominal pain, fever, abdominal distension,

vomiting, diarrhoea, and anorexia [2]. Early diagnosis of abdominal tuberculosis is challenging owing to its varied clinical manifestations and the difficulty in obtaining specimens for tissue culture wherever attempted. There are numerous modalities of diagnosis, both definitive and supportive. Definitive diagnosis can only be established by showing caseating granulomas, positive acid-fast bacillus, culture for M. tuberculosis, or a positive polymerase chain reaction. There usually is a delay in diagnosis arising both, from the patient and the physician leading to significant morbidity and mortality [3].

The purpose of this study is to compare the findings in ATB on CT and diagnostic laparoscopy *viz a viz* the diagnosis and management of ATB.

Materials and Methods

This study was undertaken in the Department of General and Minimal Invasive Surgery and Infectious Disease Unit of General Medicine SKIMS Soura, Srinagar, Jammu and Kashmir, India. The study was retrospective and prospective in design spanning a period of four years (2012-2016). All the patients underwent thorough assessment in form of detailed history, general physical and systemic examination, analysis of blood and ascitic fluid, radio-imaging, and when indicated diagnostic laparoscopy/laparotomy [4].

Results

We registered 46 patients with abdominal tuberculosis out of which 44 underwent a CT scan and 25 of them underwent operative procedure. (Diagnostic laparoscopy in 18, explorative laparotomy in five).

Thirty four were female while the rest were males. The female to male ratio in our study was 2.1:1. Mean age of patients in our study was 31.8 years. Most of the patients (71.7%) belonged to the age group of 20-40 years.

Most of our 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. Computerised Tomography was done in 44 patients out of the 46 cases.

The commonest findings on CT were ascitis(72.7%), mesenteric lymphadenopathy (40.9%), omental thickening (36.4%) and retroperitoneal lymphadenopathy (13.4%). Other findings on CT in ATB are tabulated as in (Tables 1 and 2)(Figure 1).

CT Findings	No. of Patients (n)	Percentage (%)
Ascitis	32	72.7
Mesentric lymphadenopathy	18	40.9
Omental thickening	16	36.4
Retroperitoneal lymphadenopathy	14	30.4
Bowel wall thickening	9	20.5
Parietal peritoneum	8	18.2
Visceral peritoneum	5	11.4
Hepatomegaly	5	11.4
Omental stranding	4	9.1
Loculated collection	3	6.8
Tuboovarian mass	3	6.8
Nodular peritoneal deposits	2	4.5
Small gut obstruction	2	4.5
Mesenteric thickening	2	4.5
Abdominal mass	2	4.6
Matted gut	1	2.3

Table 1: CT Findings in studied patients [n=44].

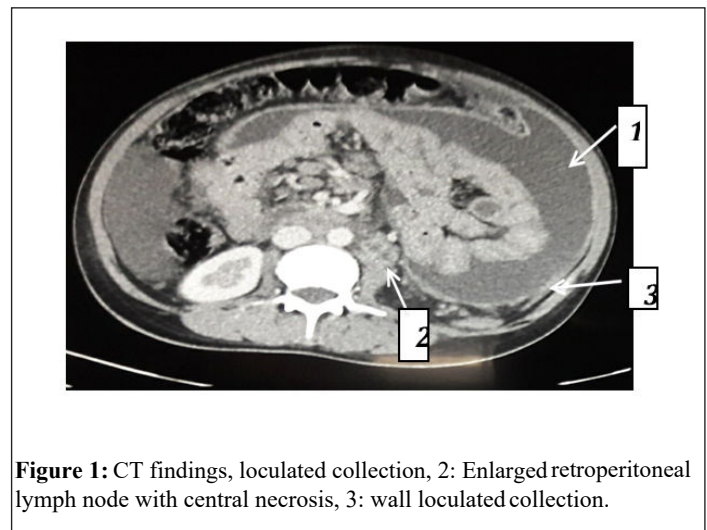


Figure 1: CT findings, 1: loculated collection, 2: Enlarged retroperitoneal lymph node with central necrosis, 3: wall loculated collection.

Findings	No. of Patients (n)	Percentage (%)
Tubercles/nodules over gut And peritoneum	18	72
Adhesions	14	56
Ascitis	13	52
Tubercles on omentum	8	32
Cocoon abdomen	7	28
Omental thickening	2	8
Visceral and parietal peritoneum thickening	2	8
Loculated collection	2	8
Ileo-caecal mass	1	4
GB mass	1	4
Mesentric lymphadenopathy	1	4
Ileal strictures	1	4

Table 2: Intra-operative Findings in studied patients [n=25].

Diagnostic laparoscopy was performed in 20 (43.5%) patients in two of which it had to be converted to laparotomy because of extensive adhesions. Five of our patients (1.1%) were diagnosed to have abdominal TB on explorative laparotomy performed for some other reason. The commonest intraoperative finding was presence of tubercles [5-9]. Tubercles over gut and peritoneum were present in 72% of the cases, these tubercles were multiple in number, white-yellowish in colour, uniformly sized (4-5 mm) and diffusely distributed [9-11]. Other common findings were adhesions (56%), ascitis (52%), tubercles on omentum (32%) and cocoon abdomen was present in 28%. Intraoperative findings are tabulated as in.

Discussion

In the 25 patients in whom both CT and diagnostic laparoscopy/laparotomy were done, the intra operative findings were compared with CT findings and it was observed that Computerised Tomography

and Diagnostic Laparoscopy/Laparotomy are complementary to each other in diagnosing abdominal tuberculosis. While certain findings are easily missed on the CT scan, they were identified on Diagnostic Laparoscopy/Laparotomy e.g tubercles.

On Diagnostic laparoscopy tubercles over peritoneum were found in 21 patients, adhesions in 14, cocoon abdomen/matted gut in 7 and ileal stricture in one patient, however these findings were missed in the preoperative CT scan in all of these patients. Both these modalities showed equal efficiency in detecting ascitis loculated collection and peritoneal thickening. CT detected omental thickening in 10 cases, however on diagnostic laparoscopy omental thickening was detected in only two out of these patients.

Mesenteric lymphadenopathy was found only in one patient intraoperatively while 11 patients showed the finding on the CT scan. CT detected retroperitoneal lymphadenopathy in five patients, bowel wall thickening in five, omental stranding in three, mesenteric thickening in two patients, however these findings were missed by diagnostic laparoscopy/laparotomy.

In our knowledge there is no single study comparing CT with diagnostic laparoscopy in the diagnostic work up of abdominal tuberculosis, though many workers have studied these two diagnostic modalities in isolation. In majority of studies, features of peritoneal and mesenteric disease predominate being present in almost 80-100% patients. The presentation could be divided into wet, dry and fibrous on the basis of features like ascitis, fibrous stranding, omental thickening, nodules and fat stranding, wet being the most common (50%-90%).

Another commoner type of involvement was the lymph nodes in the range of 40%-60%.

Distribution of lymph nodes

- Diffuse (Peripancreatic ± Mesentric ± paraaortic) (48%)
- Mesentric: (26%)
- Peripancreatic/Portal: (13%)
- Para aortic: (13%)

Next common finding on Abdominal CT in ATB is the involvement of GIT between 35%-70% in the form of strictures, bowel thickening, matted bowel, and rarely perforation. The distribution of intestinal tuberculosis can be described in the following table.

Ileocecal and distal ileum: (50%)

- Small bowel: (36.8%)
- Large bowel: (10.5%)
- Stomach (ulcer): (5.2%)

The commonest findings on CT are ascitis (72.7%), mesenteric lymphadenopathy (40.9%), omental thickening (36.4%) and retroperitoneal lymphadenopathy (13.4%). Other uncommon findings on CT scan in various studies are involvement of hepatobiliary system, spleen, pancreas, ureters, kidneys, female and male genital organs, and adrenal glands.

On the other side of the story, multiple studies have been conducted on the utility of laparoscopy in diagnosis of ATB and found the mere

physical appearance to be of diagnostic importance in 78%-82% . In no particular order, the various physical findings on laparoscopy were ascitis, presence of milliary tubercles (1-3 mm) on visceral and peritoneal peritoneum, fibroadhesive bands, omental thickening and hyperemia. A long fibrous band extending from the parietal to the visceral peritoneum termed stalacticis a rarer finding but is characteristic of abdominal tuberculosis. These findings closely corroborate with those in our study as listed above tables.

Conclusion

From the statistics given, we conclude that CT has a better sensitivity for omental thickening, retro peritoneal lymphadenopathy, bowel wall thickening, omental stranding and mesenteric thickening. These findings were missed on diagnostic laparoscopy in a good proportion of patients (see table above). Diagnostic laparoscopy had a better sensitivity for tubercles, particularly those less than 5mm, adhesions, matting of gut (cocoon abdomen) and ileal strictures while these findings were easily picked up on laparoscopy. These two diagnostic modalities had nearly equal sensitivity towards findings like collection, loculated or generalised and peritoneal thickening. Moreover the gold standard for definitive diagnosis of ATB to date remains the histopathological examination of retrieved tissue specimen which is possible only with laparoscopy/laparotomy.

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