ORIGINAL ARTICLE

Abdominal tuberculosis; Challenges imposed on surgeons owing to it's variable presentations

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Abstract

Introduction: Tuberculosis is a worldwide communicable disease caused by "Koch's Bacillus" mycobacterium tuberculosis. More than 90% of this occurs in developing countries. Extra pulmonary tuberculosis is more prevalent in the people of South Asian origin while pulmonary tuberculosis is more common in white races. The rationale of this study is to throw light on the varied clinical presentation of abdominal tuberculosis causing intestinal obstruction that present in surgical wards.

Objectives: To find out varied clinical presentations of abdominal tuberculosis causing intestinal obstruction validated upon histopathological report

Material and Methods: This prospective observational study was conducted in Department of Surgery, Khyber Teaching hospital, Peshawar after approval from the ethical board and research committee from April 2018 to March 2019 over 50-patients of either gender irrespective of age, collected by non-probability sampling method.

Results: The age range of patients studied was from 12 to 70 years with a mean age of 24 years. Out of 50-patients, 28-patients were female, and 22-patients were male. 25-patients (50%) presented with symptoms and signs of sub-acute intestinal obstruction while 20-patients (40%) presented with clinical features of acute intestinal obstruction and 5 patients (10%) presented with acute peritonitis. Pain abdomen was the most common symptom in all the cases.

Conclusion: Abdominal Koch's responds well to A.T.T so surgery is only reserved for complications. Depending upon site, type and extent of tubercular lesion, various surgical procedures are recommended.

Keywords: Abdominal tuberculosis, variable presentations, intestinal obstruction, peritonitis

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Introduction:

Tuberculosis is a worldwide communicable disease caused by "Koch's Bacillus" better known as mycobacterium tuberculosis. It evokes a focal granulomatous inflammation that typically undergoes central caseous necrosis, the hallmark of the disease. Tuberculosis is an ever-expanding public health hazard around the globe.[1] It is a cause of significant morbidity and mortality. In 2017 alone, a total of 1.6 million people died of tuberculosis, representing more deaths than any other infectious disease. The disease is still an epidemic and takes more lives than infections like Malaria and HIV.[2] Currently one third of the world's population harbors tuberculosis bacillus and is at risk of developing tuberculosis.[3]

More than 90% of infections are found in developing countries, resulting in around 3 million-deaths annually.[4] Pulmonary tuberculosis is more common in white races while extra pulmonary tuberculosis is more prevalent in South Asians.[5] The abdomen is the 4th most common site of involvement of extra pulmonary tuberculosis after lymph nodes, bones, joints and genitals. Abdominal tuberculosis covers a wide clinico-pathologic spectrum ranging from gastroduodenal tuberculosis, small bowel

ulceration, hyperplasic ileocecal tuberculosis, anorectal lesions to tuberculous peritonitis and infection of omentum and lymph nodes. Ileocecal region is the most frequently involved area of GIT.[6]

Abdominal tuberculosis is more prevalent in individuals of poor socio-economic status, living in unhygienic and congested areas, having a diet low in protein and those ingesting raw milk.[7] The incidence has decreased in developed countries due to wide spread use of pasteurized milk, culling of infected herds, and efficient use of chemotherapy.[8]

With the emergence of AIDS in recent times, the incidence of abdominal tuberculosis has risen in developed countries as well, where HIV patients have a 20 fold increased risk of infection.[9] Influx of people from areas of high prevalence along with emergence of drug resistant strains contribute to surge of infection in developed nations. AIDS patients are more likely to develop extra pulmonary tuberculosis with a progressive, sinister course.[10]

The presentation of abdominal tuberculosis in most patients is variable with inconclusive laboratory investigations.[11] Difficulty in diagnosing based on clinical presentation can be attributed to multi drug resistance, associated pulmonary infection being less commonly present along with non-specific signs and symptoms.[12] The clinical and radiological features may resemble those of Crohn's disease, ulcerative colitis, carcinoma of caecum and malabsorption syndrome.[13] Thus, abdominal tuberculosis with its protean profile and varied manifestations is a challenge for physicians and surgeons to diagnose. The diagnosis is confirmed by histopathological examination of surgically procured specimen.[14]

The delay in diagnosis results in majority of patients turning up with complications.[15] Complications include intestinal obstruction, fistula formation, bowel perforation with peritonitis and hemorrhage at which point, surgery is indicated.[16] On the basis of criterion laid down by world health organization, no single country has succeeded in reaching the point of control i.e. less than 1% tuberculin positive in children in the age group 0-14 years.[17]

The rationale of this study is to throw light on the varied clinical presentations of abdominal tuberculosis causing multiple surgical complications and the challenges faced by surgeons in dealing with them accordingly.

Objective: To find out varied clinical presentations of abdominal tuberculosis causing multiple complications and validated upon histopathological report

Materials and Methods:
This prospective observational study was conducted in Department of Surgery, Khyber Teaching hospital Peshawar after approval from the ethical board and research committee of the Hospital from April 2018 to March 2019 over 50 patients of either gender or age, collected by non- probability sampling method.

All admitted patients meeting the inclusion criteria which included patients with long history of vague abdominal symptoms like pain abdomen, GIT upset (anorexia, nausea, vomiting, diarrhea and constipation) and mass abdomen, having constitutional symptoms like fever, malaise weight loss, anorexia with evidence of pulmonary Koch's and abdominal symptoms, intestinal obstruction and symptoms and signs suggestive of abdominal tuberculosis as well as typical features of tuberculosis lesion seen peroperatively with proof of abdominal tuberculosis on histopathology.

A detailed history and thorough clinical examination were carried out in all patients and various investigations like baseline and special investigations like serum electrolytes, abdominal X-rays (erect and supine) and abdominal ultrasound were carried out.

Special investigations like P.C.R and Mycodot test were carried out in selected cases. All the patients were resuscitated (by keeping nill by mouth, nasogastric aspiration, giving them flu-

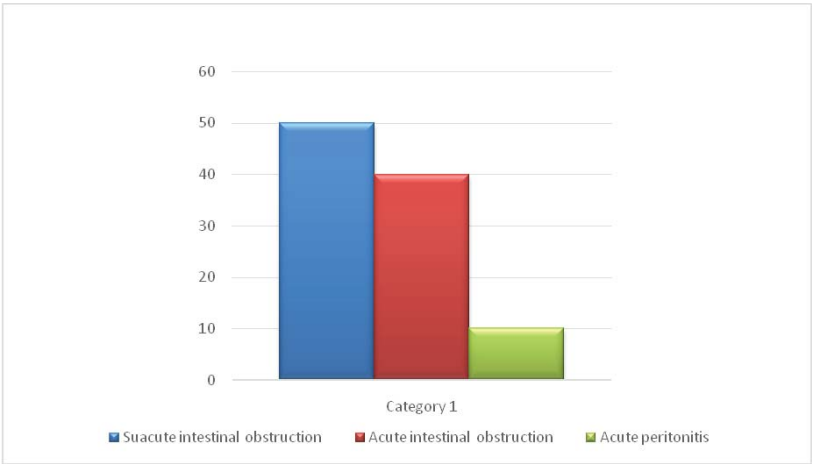

Figure 1:

Table 1: *Signs and symptoms*

Symptoms and Signs	Number of patients	Percentage
Pain abdomen	50	100
Abdominal distension	40	80
Constipation	40	80
Nausea and vomiting	30	60
Fever	25	50
Night sweats	10	20
Menstrual problems	10	20
Diarrhea/constipation	5	10
Pallor	30	60
Weight Loss	15	30
Visible peristalsis	5	10
Tenderness	30	70
Rigidity	10	20
Mass abdomen	6	12
Ascites	2	4
Exaggerated and loud bowel sounds	45	90

ids, antibiotics and analgesics) and laparotomy performed through midline incision.

Surgical procedures like stricturoplasty, resection with end to end anastomosis and limited right hemicolectomy were performed and tissue was obtained for biopsy depending upon the site involved, like intestine, peritoneum, omentum and mesenteric lymph nodes.

In those cases with perforation and widespread peritoneal contamination, exteriorization of gut in the form of ileostomy was performed, instead of primary closure. Patients who had typical tuberculosis lesion on gross examination and proven on histology were given one-year course of anti-tuberculosis therapy (initial phase of two to three months, including ethambutol, pyrazinamide, isoniazid plus rifampicin)

Finally, prospective clinical diagnosis was compared with final diagnosis based upon histopathology and occurrence of positive clinical findings in confirmed cases was calculated.

Strict exclusion criteria was followed which included patients with known malignancy, other causes of dynamic intestinal obstruction proved on laparotomy and patients with abdominal presentations of metabolic disorders like uremia, chronic liver failure and diabetes. Data was analyzed by using SPSS version 21. Standard Deviation was computed for numerical variables like age and incidence of primary and secondary TB as well as various modes of presentations.

Frequency and percentages were computed for categorical variables like gender. Tuberculosis presentation was stratified among age and gender. All the results were presented in the form of tables and charts.

Results:

The age range of patients studied was from 12 to 70 years with a mean age of 24 years. Out of 50-patients, 28 patients were female, and 22 patients were male.

40 patients (80%) were considered to have primary abdominal tuberculosis while 10-patients (20%) revealed characteristics tuberculosis findings on chest X-ray (active or healed) and were categorized as cases secondary abdominal tuberculosis.

25-patients (50%) presented with symptoms and signs of sub-acute intestinal obstruction while 20-patients (40%) presented with clinical features of acute intestinal obstruction and 5-patients (10%) presented with acute peritonitis (Fig 01). Pain abdomen was the most common symptom in all the cases. The pain was of colicky

Table 2: *Signs and symptoms*

Surgical Procedure	Nu of patients	Percentage
Resection of ileum and end to end anastomosis	22	44
Limited right hemicolectomy and ileocolic anastomosis	13	26
Stricturoplasty	5	10
Resection anastomosis with loop ileostomy followed by closure	3	6
Right hemicolectomy and end ileostomy with colonic mucus istula followed by ileocolic anastomosis	2	4
Exploratory laparotomy and lymph node biopsy	5	10

Table 3: *Operative Findings*

	Site	Lesion	
G.I.T	Jejunum (2)	Strictures (2)	Single (1)
			Multiple (1)
	Jejunum + Ileum (5)	Strictures (5)	Single (4)
			Multiple (1)
	Terminal ileum (30)	Strictures (27)	Single (20)
		Stricture with proximal Perforation (3)	Multiple (7)
	Ileocecal (13)	Mass (11)	
		Perforation (2)	
Lymph Nodes		Associated Mesenteric Lymphadenopathy (25)	
Peritoneum		Associated Ascitic Peritonitis (2)	

nature and mostly in the right iliacfossa.

The other common symptoms included abdominal distension (80%) (relative or absolute), nausea/vomiting (60%) and fever (50%) (70% had low grade pyrexia. Abdominal distension and visible peristalsis were seen in 80% and 10% of the cases respectively.

The most common finding was abdominal tenderness (70%), seen mainly in right iliac fossa. The other observed findings were abdominal rigidity (20%) and mass abdomen (12%). Ascites was observed in 4% of cases and exaggerated and loud bowel sounds were present in 90% of the cases as shown in table 1. All the 50-patients underwent laparotomy and summarized in table 2 and 3.

Discussion:

Abdominal tuberculosis has been reported in all age groups, but it has been implicated that this disease commonly occurs in the third decade of life.[18] Our study showed the same results, where the most commonly affected people were between the ages of 21-30 years. We observed that females slightly predominated males as also seen in other under-developed countries.[19]

In our study, 40% of patients were Afghan nationals, most of who presented as an acute emergency. Studies from third world countries indicate that a large proportion of patients with abdominal tuberculosis require urgent care upon presentation.[20] This contrasts with developed countries where abdominal tuberculosis rarely manifests as an acute emergency.[21]

Our study evaluated 50 patients suffering from abdominal tuberculosis, who predominately presented to us with complications. Most of our patients (80%) had developed acute or subacute intestinal obstruction like what has been observed in other parts of the subcontinent.[22]

The commonly reported complaints of our patients, were in agreement with other published series and included pain abdomen (100%), abdominal distention (80%), constipation (80%) and vomiting (60%).[23] Less frequent manifestations were night sweats (20%), menstrual abnormalities (20%) and diarrhea alternating with constipation (10%). Such patient complaints have also been reported elsewhere.[24]

Weight loss and pallor were two frequent general physical findings found in 60% and 30% respectively. The reported incidence of pallor and weight loss is 58.8%, 75.2%,[25] and 26%, 59%[26] respectively.

Similar to observations made by other studies, systemic examination of the abdomen most commonly revealed: abdominal tenderness (70%), abdominal distention (80%) and abdominal rigidity (20%).[26] Less commonly encountered examination findings were mass abdomen(12%) visible peristalsis (10%) and ascites (4%), parallel to distinct reports.[27]

Significant anemia (hemoglobin <10 grams%), a frequent lab finding in other studies was also seen in 70% of the patients.[25] While other stud-

ies have reported a raised TLC (>10,000/cm) with lymphocytosis and neutrophilic granulocytosis in around 24.7-51.8% of their cases, we only observed this in 10% of our patients.[25] Resembling other studies, we noted that a raised E.S.R (> 40mm/1st hour) was found in (60%) of our cases.[25,26]

Barium follow through was performed in 10 patients with sub-acute obstruction. As observed by other surveys, positive radiological findings were also seen in 8 of our patients (80%).[25,27] A correct diagnosis based upon clinical and laboratory findings was made in 25-patients (50%). Other surveys have reported an accuracy of clinical diagnosis in 48.60% and 73.83% of the cases, based on BACTEC-MGIT culture and Tuberculosis PCR. [28]

In unequivocally established cases of abdominal tuberculosis, positive clinical findings were observed in 35% of our cases. A diagnostic laparoscopy is probably the most reliable means of diagnosis as a full evaluation of the peritoneal cavity can be done, and biopsy of the lesion can be taken in case of any suspicion.[29]

All 50 of our patients underwent laparotomy and diagnosis was confirmed by finding characteristic tuberculous granulomas on histopathology. Highest yield in biopsy specimens have been reported by others.[29,30]

In the present study all cases were managed surgically as all the patients presented late with abdominal tuberculosis complicated by obstruction. This necessitated urgent laparotomy in order to relieve the obstruction and to clarify the diagnosis. We found 70% of the lesions to be present in the terminal ileum while ileocecal region was involved in 26% of the cases. Other surveys conducted, report involvement of the ileocecal valve in 65.9% and terminal ileum in 47.1% of the cases.[25] In accordance with other series, we also encountered strictures as the most common lesion.[25,26]

Good results were achieved with single staged procedures, as also done in separate studies.[21,25,26] Two-staged surgical procedures like loop ileostomy etc. were only performed in 10% of the patients in the setting of intestinal perforation. Alternative reports suggested avoiding primary anastomosis where there is a risk of post-anastomotic leakage, thus justifying our decision to abstain from such procedures.[21] As recommended; all patients were given anti-tuberculous therapy for a year following surgery.[25]

We recommend high degree of suspicion and proper work up of patients presenting with obstruction, especially sub-acute, in order to include or exclude the diagnosis of intestinal tuberculosis. Ileostomy is preferred over primary anastomosis in patients having frank peritoneal contamination due to perforation, in order to minimize the chances of subsequent anastomotic leakage and fistula formation. The study being carried out in a single setup makes it a limited data study, hence a more comprehensive study would be the need of the hour to know more about the variable presentations of intestinal tuberculosis and its management plan can be devised accordingly.

Conclusion:

Abdominal tuberculosis responds well to anti-tuberculous treatment so surgery is only reserved for complications. Depending upon site, type and extent of tubercular lesion, various surgical procedures like resection with end to end anastomosis, stricturo-plasty, limited right hemi colectomy and proximal ileostomy are recommended.

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Role and contribution of authors:

Dr Waleed Mabood, developed the concept, and initial Manuscript writing.

Dr Imtiaz Ahmed Khattak, did drafting and bibliography.

Dr Wajeeha Arshad, did data analysis, and data plotting.

Dr Jawad Mabood, helped in collecting the data collection, and Proof reading.

Dr Hafiza Mariam Nasarullah, helped in collecting the data and proof reading.

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