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Management of surgical emergencies of tuberculosis abdomen in peripheral hospitals at district hospital Rajouri (J&K), India

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Abstract
Tuberculosis is an important cause of morbidity in a developing country like India, as such as worldwide distribution despite of the fact that the causative organism was discovered more than a century ago and highly effective vaccines and drugs are available making it a preventable and curable diseases. The problem that tuberculosis is a rare disease may leads to missed diagnosis and delay in start of treatment. It kills about two million people each year worldwide and it continues to be major public health problems in the developing countries. It also has so much socio economic and health significance.
Rising HIV infection with emergence of multidrug resistance strains of tuberculosis pose additional threats so the incident and severity of abdominal tuberculoses is expected to rise with increasing incidents of HIV infections. Among the extrapulmonary forms of this disease abdominal tuberculosis continue to be a major problem in the developing countries. It is one the disease with symptomatology and physical signs are non specific and majority of patients present late and with complications. Any portions of the gastrointestinal tract (GIT) may be affected by swallowing the infected sputum with direct seedling, hematogenous spread or ingestion of milk infected with this disease. Terminal ileum and caecum are the most common sites involved and it is the sixth most frequent form of extra-pulmonary site after lymphatic, genitourinary, bone and joint, miliary and meningeal tuberculosis. It involves small intestines with single or multiple areas of strictures or indurated mass in the wall of the gut which leads to some degree of intestinal obstruction. The area proximal to it becomes hypertrophied and dilated which leads to perforation of guts and generalised peritonitis. So, non specific abdominal pain, fever and ascites should raise the doubt of tubercular peritonitis. The treatment of the abdominal tuberculosis is medical with antitubercular drugs, surgery is reserved for complications like acute intestinal obstruction, perforation and peritonitis. This study was conducted in the Department of Surgery at District Hospital Rajouri (J&K) India, from June 2014 to November 2018, to evaluate various patterns of surgical emergencies of tuberculosis abdomen, their clinical presentation and management thereafter.

Keywords: abdominal tuberculosis, extra pulmonary form, gastrointestinal tract, perforation, intestinal obstruction, tubercular peritonitis, antitubercular drugs

Introduction
Abdominal tuberculosis causes tuberculous infection of gastrointestinal tract, mesentry limphnodes, omentum and the peritoneum with related solid organs such as liver and spleen. Initial clinical presentations are non specific with multiple sites of involvement. No single lab test is pathognomonic, radiology fails to establish classical changes as described in surgical text books. Bacterial culture and tissue histopathology are confirmatory but time consuming and serological tests are rewarding but expensive, so abdominal tuberculosis with acute abdomen leads to enormous challenges to the surgeon who has to relay on his clinical judgment and surgical skill to determine the extent of surgical management in the unprepared, physiologically compromised patents in the emergency settings. Thus providing surgical care, the surgeon has to collect enough pathological tissues for histopathology and microbiology to overcome the diagnostic dilemma. It is to be remembered that emergency surgery may overcome the temporary crisis of this abdominal disease but permanent care can only be achieved by full course of antitubercular chemotherapy.

Review of Literature
Men's conflict with tuberculosis extended for back to Neolithic times as indicated from skeletal remains as evidence demonstrated in Egyptians mummies five thousand BC. Babylonian scriptures describe this disease. In Chinese literature it was called "lao Ping". In India, Rigveda 200BC describes "Yokshma" with descriptions fits in this disease. It has also been mentioned in Ancient Persia Greece and Macedonia. The mycobacterium is the oldest bacteria in the Earth's environment. So this is the oldest disease born out of acid fast bacilli found in human remains of skeleton in Heidelbarg, Germany dating 5000BC and in mummy of Egypt 3500BC. In fourth century BC Hippocrates describes the disease with pulmonary lesion and intestinal disease by name "Phthisis" means "waste away". He stated that the person with this disease die if diarrhea sets in which was a mortal symptom. He also recognized lung lesions and called them "Phymata of the lungs", which is the characteristics of tubercles (Harris at al. 1983) [1]. Hippocrates observed patients of open pulmonary tuberculosis could develop secondary intestinal complications. He has conducted autopsy on Louis XIII in 1643 and demonstrated the association of intestinal ulcerations, perforation and peritonitis (Edison 1983) [2].
Robert Koch in 1882 identified the causative organism as Mycobacterium tuberculosis which resulted in the emergence of effective antimicrobial agent that could

eradicate the organism. Ehrlich in May 1882 for the first time showed that the bacilli were acid fast and in the same year, the method of acid fast staining was developed by Ziehl and Neelson (Paustian F. F 1985) [3]. In the 19th century John Bunyan referred to tuberculosis as "Captain of the men of death" and a Century later Oliver Wendell Holmes described it as "White Plague" During the 2nd half of 19th century the surgeons started operating on abdomen and abdominal tuberculosis is reported to have been the most common pathology preceded only by malignant and acute inflammatory conditions [4].

Von Pirquet in 1907 described the tuberculin test. Calmette and Guerin of Pasteur institute in 1921 described the BCG vaccine. In 1928 Steward, stated that on autopsy, about half the cases of pulmonary tuberculosis (PT) were associated with tuberculous ulceration of the small intestine. He offered the hypothesis that the hyperplastic type of disease caused by a bovine strain of mild virulence patient with high resistance to tuberculosis which occur due to marked fibrosis at the ileocaecal region (Addison 1983) [5].

Intestinal tuberculosis was considered a uniformly fatal disease and if by chance patient recovers, it was considered to be a diagnostic error (Walsh L) [6]. The changed report on a series of patients with ulcerative tuberculous colitis diagnosed by barium meal/enema examination in the year 1919 (Brown L Sampson) [7]. Anand (1956), in his Hunterian lecture presented the work done on the basis of 50 hemicolectomies with positive histopathological proof in which 39 were classified as primary intestinal tuberculosis and in 11 of them with healed lesions in the lungs [8]. M. Ahmad (1962) [9] reported 4 cases of tuberculous perforation of small intestine in which two had tuberculoma of the ileum which had perforated, and other two cases had multiple strictures of the small intestine with tuberculous ulcers which had perforated leading to acute generalized peritonitis.

Robert L Faulkner, (1964) [10] reviewed 14 cases of tuberculosis in the abdomen of which 5 had tuberculous peritonitis without predominant localized lesion, 9 had visceral lesions, 4 had tuberculous peritonitis. Ileocaecal region was the most common site observed by Chandra,*et al*. in year 1968 [11].

Kolawole TM *et al.* (1975) [12] reviewed x-rays findings of 160 cases of tuberculosis of abdomen which include plain x-ray of abdomen, barium meal and follow through studies even barium enema. Peter Dineen *et al.* (1976) [13] review clinical course of 70 patients with tuberculous peritonitis from 1932 through 1975 (43 years period). Clinical manifestations observed included abdominal pain (93%), fever (63%), gastrointestinal upset (60%), weight loss (60%), and ascites (59%). Antituberculous chemotherapy is highly effective and is the treatment of choice.

Pritam Das *et al.* (1976) [14] reviewed the records of 182 cases of abdominal tuberculosis admitted to SRN Hospital, Allahabad during the 7 year period from 1967 to 73. The various lesions found, stricture ileum, jejunum or both (50 cases), hyperplasic ileocaecal lesion with or without small bowel stricture (38 cases), colonic stricture (5 cases), lymphadenitis (21 cases), chronic miliary tuberculous peritonitis (48 cases) and tuberculous ascites in 20 cases.

Thereafter literature were presented from Bhansali SK (1977) [15], JHN Wolfe *et al.* (1978) [16], B.D Pujari (1979) [17], Lambrianides Al *et al.* (1980) [18], S. Vyravanathan *et al.* (1980) [19], A Manohar*et al.* (1 990) [20], Mahajan D, *et al.* (2007) [21], Park SW, *et al.* (2007) [22], Safar Por Faizollah, *et al.* (2007) [23] and Tarcoveanu E, *et al.* (2007) [24] concluded that abdominal tuberculosis should be considered for diagnosis in patients with non specific symptoms of abdominal pain, fever, loss of appetite, abdominal distension and even symptoms of acute abdomen. Laparoscopy is the best approach for peritoneal tubercuiosis, and emergency surgery is necessary for acute complications like obstruction and peritonitis. Specific antituberculous drugs are indicated in postoperative period.

Material and Methods

This prospective study includes forty six patients, who reported to the Department of Surgery at the District Hospital Rajouri, J&K, India, from June 2014 to November 2018 and included:

1. Complete history tacking with emphasis on age, sex, occupation, residence and symptoms of abdominal pain, vomiting, constipation, fever, weight loss, night sweats, loss of appetite, lump in the abdomen and abdominal distension, past history of tuberculosis.
2. Clinical evaluation by general physical examinations with reference to pallor jaundice, lymphabdenopathy, pulse and temperature.
3. Complete Systemic examination with abdominal examinations for abdominal distention, lump, tenderness, ascites.
4. Routine investigation, complete blood count, ESR, Renal function test, Urine routine examination, x-ray of chest and abdomen with ultrasonography.
5. IgM ELISA (blood) and PCR (blood) for all tuberculosis patients. Special investigations like; barium studies, CT scan abdomen, IgM ELISA and PCR of ascitic fluids, diagnostic paracentesis, diagnostic laparoscopy, and histopathological examination of specimens were obtained during exploration and/or diagnostic laparoscopic.
6. Management is medical and surgical.
    1. Medical management includes patient with sub-acute intestinal obstruction (SAIO) were put on conservative line of treatments like Ryle's tube suction, intra venous fluid, antibiotics and analgesics. Meanwhile they were fully evaluated for tuberculosis abdomen and after confirmation of diagnosis of tuberculosis were put on antitubercular chemotherapy.
    2. Surgical management includes.
    a. Emergency surgeries which includes surgeries for intestinal obstruction, peritonitis and gut perforations.
    b. Elective surgeries are reserved for those patients who failed to respond to conservative line of the treatments, for which surgery is done in elective settings for gut obstruction. Surgical procedure performed in both emergency and elective settings includes adhesiolysis, strictureplasty, ileotransverse anastomosis, right hemicolectomy, resection anastomosis, peritoneal, and lymphnode biopsy and appendectomy. These procedures are performed with respect to demand on the operating table. All patients after confirmations of diagnosis of tuberculosis were put on anti-tubercular therapy.

Result and Discussions

The present study was conducted prospectively in fourty six patients, who presented as surgical emergencies of abdominal tuberculoses in the Department of Surgery at the District Hospital Rajouri, J&K, India, from June 2014 to November 2018. The age of the patients varies from 9 to 60 years and is similar to the experience of other scholars and majority of the patients were 2nd 3rd and 4th decades of life [25, 26].

Table 1: Age Wise distribution (n=46)

S. No	Age in Years	No. of patients (n)	Percentage (%)
1	0-10	1	2.17
2	11-20	5	10.86
3	21-30	12	26.08
4	31-40	16	34.78
5	41-50	10	21.73
6	51-60	2	4.34
	Total	46	100

Table 2: Sex Wise distribution (n=46)

S. No.	Age in Years	Sex		Persentage (%)	
		Male	Female	Male	Female
1	0-10	1	0	2.17	0
2	11-20	2	3	4.34	6.5
3	21-30	6	5	13.04	10.86
4	31-40	9	7	19.56	15.21
5	41-50	5	4	10.86	8.70
6	51-60	1	3	2.12	6.5
	Total	24	22	52.17	47.82

Many scholars have reported the disease to be more common in females then males but there is no agreement on this issue in the literature, many reports shows slight male preponderance but in our studies males out numbers females. In the present studies most of the patients were from rural areas i.e. 86.95% and 13% from urban areas that too from lower socio-economic class. Similar observations have been made by other scholars [27].

Table 3: Demographic distribution (n=46)

Demographic Distribution		Percentage (%)	
Rural	Urban	Rural	Urban
40	06	86.95	13.04

The most common symptom in the present study were abdominal pain, vomiting, constipation, fever, weight loss, night sweats, loss of appetite. Similar observations were made by Bhansali S. K *et al.* (1977). In the present study abdomen pain is the most common symptom observed in 40 patients (86.95%). Similar observations made by other scholars [28-30]. In our study the vomiting were seen in 25 patient (54.34%). The incidents of vomiting varies from 40 to 76 % in various studies (Anand, 1956) [31]. Vomiting were presents in 56% of his cases. Pritam Das *et al.* 1976 [32] incidents were 69.6 %, Paustian F. F. (1985) [33]. Incidents were 38.1 %.

Constipation were presenting symptom of 28 to 46.6% in varies studies, Anand 1956 [34] 28%, Pritam Das at al. 1976 [35] incidents were 46.6 %, Paustian F. F. (1985) [36]. Incidents were 20.6 %. And in our studies it was found 45.65 % i.e. 21 patients. In our studies Diarrhea were present in six patients i.e. 13%. It is similar to Pritam das at al. 1976 (11.8%). Evening rise of temperature in the present study was in twenty patients (43.74%) similar to the other scholars.

Table 4: Symptoms at Presentation (Clinical features)

S. No.	Symptoms	No. of cases	Percentage (%)
1	Pain abdomen	40	86.95
2	Vomiting	25	54.34
3	Constipation	21	41.65
4	Diarrhea	06	13.04
5	Fever	20	43.47
6	Weight loss	38	82.60
7	Loss of appetite	34	76.08

Abdominal tenderness was present in 32 patients (69.56%), which is similar to Paitam Das at al. 1976 (25) which were 65.9%. Ascites was present more frequently with peritoneal tuberculoses then intestinal tuberculoses in our study it was present in 15.21%. Abdominal distentions in our study were present in 43.47% of the cases, which is less as compared to other scholars. Abdominal lump has been reported in literature and varies from 24% to 48% and in our studies it was in 19.56% of the cases, which is similar to some scholars [37, 38].

Extra abdominal lymphadenopathy was noted in five patients (10.86%) in our study. Two patients have acute and one has sub acute intestinal abstraction, one has peritonitis, one presented with ileal perforation and peritonitis, one with ascites. Historically all of them proved to be tubercular lymphadenopathy, which is similar to other scholars [39-41].

Table 5: Physical Signs

S. No.	Signs	No. of Patients	Percentage (%)
1	Abdominal Tenderness	32	69.56
2	Pallor	30	65.21
3	Distension Abdomen	20	43.47
4	Ascites	7	15.21
5	Lymphadenopathy	5	10.86
6	Lump abdomen	9	19.56

Past history of tuberculosis was present in eight patients (17.39%) out of which three has received complete medical treatment, while one was a defaulter and four patients are still on the treatment of tuberculoses. In the present study 20% of patients have associations with pulmonary tuberculosis with x-ray evidence, three has healed lesions of lung and six patients (13%) presented with concomitants pulmonary with abdominal tuberculosis. This was also reported in the literature by some scholars

Laparoscopy were performed in those cases where diagnosis remains in doubt and it was proved to be most effective investigations yielding results in diagnosis in 75 % of patients, where it was performed. With the findings of peritoneal tubercles in four patients, enlarged mesenteric nodes and peritoneal tubercles in three patients, adhesions and bands in three patients and ascites in two patients. The histopathological examinations were performed on the specimens obtained during exploratory laparotomy in 34 patients and in 8 patients with diagnostic laparoscopy. The histopathological examination was positive in for 96% of patients.

Management

Out of 46 patients 34 require surgery in emergency and 12 patients admitted with feature of sub acute intestinal abstraction and abdominal colics were managed conservatively. Medical management of the 12 patients with feature of SAIO was put on conservative line of treatment with Ryle's tube suction, intra venous I/V fluids, I/V antibiotics and analgesics. Meanwhile their signs and symptoms improved and they were evaluated for abdominal tuberculosis with detailed history, clinical examinations and investigations after confirmations of diagnosis were put on anti tubercular treatment (ATT). The signs and symptoms were improved with this treatment was also proved by other scholars [42, 43].

Table 6: Treatment modality (n=46)

Treatment modality	No. of cases (n)	Percentage (%)
Medical	12	32.60
Surgical	34	73.91

Surgical Management

Surgical interventions were required in 34 out of 46 patients in emergency. The indication of surgery was due to acute intestinal obstruction (47%), peritonitis (23.5%), gut perforation in four patients (11.76%), while six patients surgery were performed electively due to gut obstruction. On exploration the patients were subjected to various procedures like- adhesionolosis of the gut for twelve patients, stricturoplasty in two patients, right hemicolectomy in one patient, ileotransverse anastomosis two patients, peritoneal and lymph node biopsy four patients and appendectomy in one patient.

Table 7: Surgical modality of treatment (n=34)

Treatment modality	No. of cases	Percentage (%)
Emergences Surgeries		
Gut Perforations	4	11.76
Gut Obstruction	16	47.05
Peritonitis	8	23.52
Elective Surgeries		
Gut Obstruction	6	17.64

These procedures were performed with respect to demand of the type of procedures on operating table. Surgery provides both confirmations of diagnosis and care of complications. These observations correspond to the studies of various other scholars [44-46].

In our study appendectomy was performed in one patient with pre operative diagnosis of peritonitis as the appendix was grossly inflamed and gangrenous and later on turn out to be tubercular on histopathological examinations. Similar observations were made by other scholars [47-49].

Table 8: Surgical procedures performed

Surgical procedures	No. of Patients (n)	Percentage (%)
Emergency Surgeries		
Adhesionolysis of Gut	12	35.29
Peritoneal and Lymph node Biopsy	4	11.76
Stricturoplasty	2	5.88
Ileo transvers anastomasis	2	5.88
Paritonial Biopsy	3	8.82
Resection and anastomosis	4	11.76
Appendectomy	1	2.88
Elective Surgeries		
Adhesionolysis of Gut	5	14.7
Right hemicolectomy	1	2.88

Site of involvement/nature of lesions

In present study ileocecal region remains the most common site of involvement (23%) comprises of eight patients. Both ileocecal region and mesenteric nodes in four patients. Peritoneal tubercles in four patients, mesenteric nodes in three patients, structure ileum in two patients, enlarged mesenteric nodes with gut matted near ileocecal region in five patients, cacooned abdomen in one patient, right tubo-overian mass in one patient. Discrepancies in the number is due to multiple lesions in the same patients, which is reported by other scholars [50-52].

Ileocaecal is a most frequent site of involvement in GI tract [53]. Physiologic stasis, absorption of digested materials and lymphatic tissue is a cause of this property. GI tract and ileocaececal region is the most frequently involved diseased part. Incidence of post operative respiratory tract infection was high which was observed in eight patients. Other complications include, wound infections two patients, fecal fistula in one patient, burst abdomen in one patient and septicemia in one patient. These complications were also reported by others scholars [54].

Follow Up

All 46 patients either managed surgically or medically with confirmation of diagnosis of abdominal tuberculosis were put on ATT. 1) First two months – INH, Rifampicin and Pyrazinamide. 2) Next four months - INH plus Rifampicin.

Duration of treatment was for six months for which patients were regularly fallowed up. The results of the treatment were analyzed clinically and by routine laboratory test like; hemoglobin and ESR. Clinically patients became asymptomatic showed improved appetite and gain in weight; they also showed increase in hemoglobin level and decrease in ESR. There was gain of weight in 84% of patients. Hemoglobin increased at the start of the treatment but it was less than 12 gm% before start of ATT and after competition of treatment more than 60% of patients have increased their hemoglobin. 94% patients have ESR more than 20mm in first hour at the time of admission and after ATT more than 52% patients have ESR less than 12mm in first hour.

Conclusions

Abdominal tuberculosis can occur with or without asociater pulmonary tuberculosis and can have maximum incidents in third and fourth decades of life with slight male preponderance i.e. (52.17%). This disease mostly affects rural areas (86.95%) with lower socioeconomic class. Abdominal pain, vomiting and constipation were the most common presenting symptoms. Ascites were present in 15.21% of patients with 20% patients has past history of pulmonary tuberculosis and none of patient has extra pulmonary tuberculosis. PCR for blood and ascitic fluids were positive in 72% to 87% cases and were more reliable than elisa for blood.

X-ray abdomen standing shows air fluid levels with distended loops in 48% and gas under deiform in 5% of cases, whereas as USG abdomen shows abdominal mass 8% free fluid 32% and dilated loops of gut in 28%. The barium anima and barium fallow through were informative in significant cases i.e. > 65 % of cases. The laparoscopy was suggestive of the disease in 75% of the cases. 12 patients (32.60%) responded to conservative treatment with ATT, whereas 34 patients (73.91%) needed surgery, 28 patients (82.35%) were operated in emergency whereas 6 patients (17.6%) were operated electively.

The procedures like adhjinolisis of gut (35.29%), peritoneal and lymph node biopsy (11.76%), strictuoplasty (5.88%), rescetion and anastomosis (11.76%), ileotransverse anstomosis (5.88%) and apendectmy (2.88%). Both medically and surgically managed patients were put on ATT, 12 patients i.e. (35.29%) developed post operative complications among them most common was respiratory tract infections in 7 patients (20.58%).

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