Original Research Paper

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General Surgery

"A CLINICO PATHOLOGICAL STUDY OF ABDOMINAL TUBERCULOSIS"

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ABSTRACT

BACKGROUND AND OBJECTIVES : Tuberculosis caused by Mycobacterium tuberculosis is one the oldest disease of mankind. inspite of effective measures such as DOTS & DOTS PLUS introduced by RNTCP programme, it becomes rare but still quite common.
The objective of the study is to know incidence, age and sex distribution of abdominal tuberculosis including various modes of presentation, different modalities of diagnosis, treatment and progress in my set up
METHODS: The study population consist of patients admitted with chronic abdominal pain which have clinically diagnosed as abdominal tuberculosis, as supported by investigations like x-ray, ultrasound abdomen, CECT abdomen, barium enema, FNAC and diagnostic laparoscopy. Patients were examined systematically giving importance to clinical examination. treatment was instituted appropriately and follow up done.
RESULTS: Most of cases of abdominal tuberculosis presented with chronic pain abdomen and abdominal tenderness & distension is the commonest sign elicited. Surgery is indicated for complications of abdominal tuberculosis. Prognosis depends on the severity of the infection.
INTERPRETATION & CONCLUSION: Abdominal tuberculosis is an important socio economic problem in our country with male preponderance. The symptoms of abdominal tuberculosis is vague and nonspecific. Abdominal tuberculosis affects GIT, peritoneum, lymph nodes, solid viscera. Among diagnosis diagnostic laparoscopy &laparotomy is an important diagnostic tool. Diagnosis is mainly by clinical examination and confirmed by investigations.
All the post operative patients should receive 1 yr of Anti tuberculous therapy which is recommended by RNTCP programme and follow up regularly. This study proves that DOTS &DOTS PLUS promoted by RNTCP reduces incidence of tuberculosis among surgical wards when compared to medical wards.

KEYWORDS : Abdominal tuberculosis, RNTCP, DOTS.

INTRODUCTION

ABDOMINAL TUBERCULOSIS :

Abdominal tuberculosis (TB) includes TB of the gastrointestinal tract, peritoneum, omentum, mesentery, lymph nodes, and other solid intra-abdominal organs like liver, spleen, and pancreas. It constitutes about 1 – 3% of all cases of TB and about 12% of extra- pulmonary TB. Abdominal TB is again on the rise all over the world with the resurgence of multidrug resistant TB and with AIDS pandemic.

Diagnosis of abdominal TB is usually very difficult, due to nonspecific symptoms and signs. Moreover, it can mimic many abdominal disorders like malignancy, Crohn's disease, and irritable bowel syndrome. Diagnostic confirmation often requires histopathological examination of the surgical specimen.

Our study aims to evaluate the varied presentations of abdominal TB, usefulness of different diagnostic tests, and outcome of these patients under treatment with anti-tuberculous drugs.

AIMS AND OBJECTIVES

1. Incidence, age and sex distribution of abdominal tuberculosis among patients admitted in surgical wards.
2. Study of clinical features of abdominal tuberculosis and various modes of surgical management.
3. Comparision of incidence of tuberculosis among medical and surgical wards following introduction of DOTS and DOTS PLUS by RNTCP.

PATIENTS AND METHODS

Source of data :

Data was collected from patients who presented with signs and symptoms of abdominal tuberculosis to Government General Hospital, Kurnool, Department of General Surgery for treatment

Design of the Study :

Prospective study

The clinical study of 60 cases of abdominal tuberculosis was conducted by selecting cases presenting to Government General Hospital, Kurnool, Department of General Surgery during a period of 2 years from October 2014 to October 2016.

Government General Hospital, Kurnool is attached to Kurnool Medical College, Kurnool.

Method of Collection of Data :

All the patients with suspected Abdominal tuberculosis were investigated, offered individualized treatment and followed up

The Institution where this study was conducted is equipped to carry out all necessary investigations which helped in diagnosing and treating the cases.

These include Ultrasound scan, Computed Tomography, Barium studies, Colonoscopy, Diagnostic laparoscopy + peritoneal biopsy etc… which were immensely helpful in arriving at the diagnosis of abdominal tuberculosis

Plan for Data Analysis :

The clinical outcomes were documented using a standard proforma. The collected data were analysed by comparing it with various standard studies on abdominal tuberculosis

OBSERVATIONS AND RESULTS

Overview:

Total no. of cases admitted in surgical wards during Oct' 2014 - Oct' 2016 : 60

Total no. of cases admitted in medical wards during Oct' 2014 -Oct' 2016 : 340

Average no. of cases admitted in hospital per year : 30,000
Average no. of cases admitted in surgical wards per year : 6000
Average no. of cases admitted in medical wards per year : 15,000
Incidence of tuberculosis among surgical wards =

$$\frac{\text{Total no. of tuberculosis cases admitted}}{\text{Total no. of surgical admissions}} \times 1000 = 3.33$$

Incidence among medical wards =

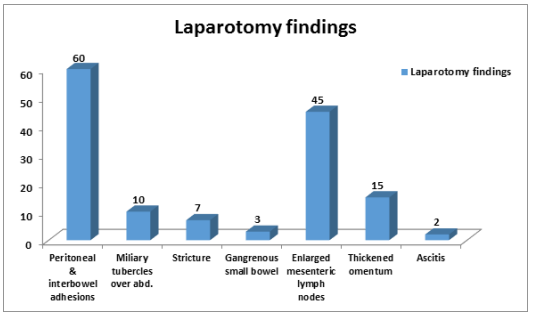
$$\frac{\text{Total no. of tuberculosis cases admitted}}{\text{Total no. of medical admissions}} \times 1000 = 7.55$$

INFERENCE : Decrease in incidence among surgical wards is due to proper implementation of DOTS as per RNTCP

TABLE 5 –Laparotomy findings in 60 cases of abdominal tuberculosis

Sl No	Laparotomy findings	No. of cases	Percentage (%)
1	Peritoneal and interbowel adhesions	60	100
2	Miliary tubercles over abdomen	10	16.66
3	Stricture	7	11.66
4	Gangrenous small bowel	3	5
5	Enlarged mesenteric lymph nodes	45	75
6	Thickened omentum	15	25
7	Ascitis	2	3.33
8	Ileal perforation	0	0

Graph -5 : Laparotomy findings



In our study of 60 cases of abdominal tuberculosis, surgery was the mainstay of treatment. Most common laparotomy findings were: Peritoneal and inter bowel adhesions (100%), and enlarged mesenteric lymph nodes (75%) with thickened omentum (25%).

Surgical procedures done in 60 cases of abdominal tuberculosis :

Table – 6 : Surgical procedures

S. No	Surgical procedure	No. of cases	Percentage (%)
1	Adhesiolysis and release of constriction bands	60	100
2	Stricturoplasty	7	11.6
3	Resection + end to end anastomosis of gangrenous bowel	3	5
4	Mesenteric lymph node biopsy	45	75
5	Closure of bowel perforation	0	0
6	Ileo-transverse anastomosis	2	3.33

Graph - 6 Surgical Procedures

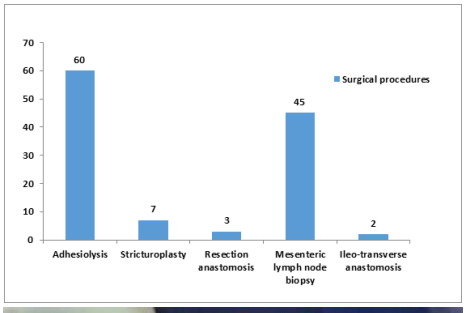


Figure-1 : Stricture of small bowel in abdominal TB

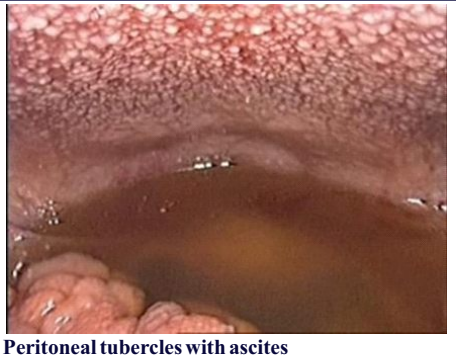


Fig – 2 : Peritoneal tubercles with ascites

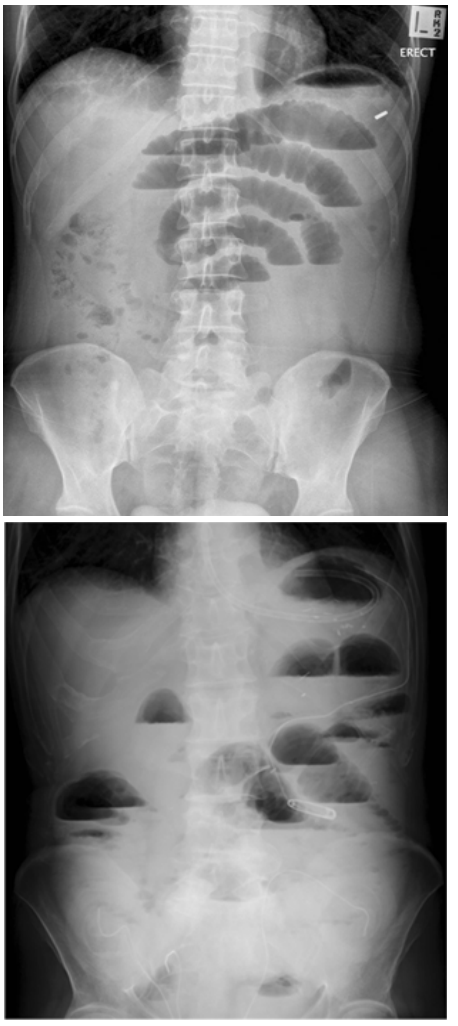


Figure - 3 : Erect X ray abdomen with multiple air-fluid levels in abdominal TB with Intestinal Obstruction

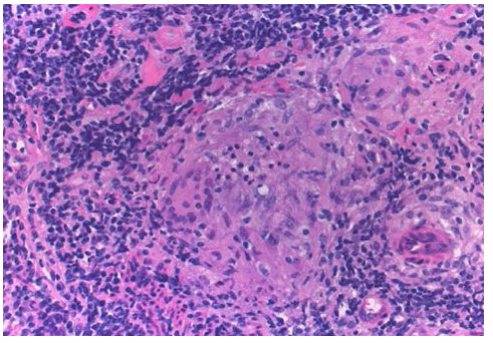


Fig-4 : H & E stain of epithelioid granuloma with Langhans type giant cells.

Fig – 5 : Goose neck deformity (Ileocaecal TB – Barium enema)

DISCUSSION [35,36,37]

The annual incidence of TB is nearly 8 million with 2 million deaths worldwide. The total disease burden in India is enormous and it is estimated that >40% of the population is infected. The abdomen remains a major extra-pulmonary site for TB and constitutes upto 12 % of extra pulmonary TB.

Tuberculosis can involve any part of the gastrointestinal tract and is the sixth most frequent site of extra pulmonary involvement. It may involve GIT, peritoneum, ;lymph nodes or solid viscera.

Tuberculosis bacteria reach the gastrointestinal tract via ingestion of infected sputum, haematogenous spread, or direct spread from infected contiguous lymph nodes and fallopian tubes. The gross pathology is characterized by transverse ulcers, fibrosis, thickening and stricturing of the bowel wall, enlarged and matted mesenteric lymph nodes, omental thickening, and peritoneal tubercles.

Present study : All patients were treated either surgically or non-surgically by anti tuberculosis therapy. The operations were performed either by a consultant surgeon or a senior resident under the direct supervision of a consultant surgeon.

Intraoperative tissue biopsy was taken for histopathological studies; a portion of the tissue was fixed in 10 per cent formalin; routine processing was done as per standard procedures and stained with haemotoxylin and eosin. Presence of caseating granulomas surrounded by epitheloid cells, lymphocytes, plasma cells and giant cells were diagnostic of tuberculosis

Post-operatively patients were kept nil orally till the return of bowel sounds and at that time nasogastric tubes were removed. Final diagnosis and postoperative treatment was dependent on the operative findings and histopathological confirmation. Those found to be tuberculous were started on anti tuberculosis therapy according to RNTCP.

The anti tuberculosis therapy given included Isoniazid, Rifampicin, Pyrazinamide, Ethambutol and Streptomycin.

All patients had been managed by medical and surgical teams.

Data on each patient were entered into a proforma prepared for the study.

The study variables included socio-demographic (i.e. age and sex, level of education, occupation and area of residence), clinical presentation, radiological findings, timing of surgical procedure, operative findings and surgical procedure performed.

Management of Abdominal T.B :

- TB is etiological for 50% of all intestinal obstructions and is the commonest cause of obstruction in females.
- In India, 20% of all gastrointestinal perforations (excluding appendicular) are tuberculous in origin.
- It is also an important cause of malabsorption in India, only second to tropical sprue.Ulcers, blind loops due to strictures/adhesions, lymphatic involvement and intestinal fistulas contribute to its development.

Diagnosis of abdominal TB:

Diagnosis is difficult and most tests are nonspecific. In endemic areas, accuracy of clinical diagnosis is less than 50%. DNA polymerase chain reaction is now being increasingly applied for diagnosis but is sparsely available.

Adenosine deaminase levels :

Adenosine deaminase activity in peritoneal fluid is increased and at cut off values above 33 units/l has reported 100% sensitivity, 97% specificity and overall accuracy of 98%.

Imaging findings:

Ultrasound abdomen :

- Ascitis (free / loculated; clear / complex)
- Uniform and concentric bowel wall thickening (ileo-caecal region)
- Pseudo-kidney sign,
- Club sandwich or sliced bread sign,
- Mesenteric lymphadenopathy (discrete / matted) with heterogeneous echo texture

CECT Abdomen :

- Similar findings as noted on USG, but with better definition and resolution.
- The thickening and nodularity of the peritoneum and mesentery can be more easily identified with CT than USG.
- Ascitic fluid has high density appearances due to its elevated protein content.
- The USG and CT findings, although fairly characteristic, are not pathognomonic of abdominal tuberculosis. Similar appearances can be seen in other diseases such as lymphoma, metastatic carcinoma, peritoneal mesothelioma, and pseudomyxoma peritonii.

***Double contrast barium enema (DCBE)*:**

- Fleishner's sign
- Conical caecum
- Goose neck deformity
- Sterlin's sign
- String sign

***Endoscopy and biopsy* :**

The ileo-caecal region can be accessed easily by colonoscopy, and the use of enteroscopes allows examination of the small bowel.

The usual endoscopic findings are : mucosal ulcerations (transversely oriented and have sharply defined margins with surrounding mucosal erythema), nodularity, deformity, narrowing and stricture of the bowel.

Diagnostic laparoscopy and peritoneal biopsy :

The single most sensitive diagnostic test is laparoscopic examination of the peritoneum. The peritoneal lining loses its smooth, glistening appearance and becomes rough, irregular and dull. The characteristic finding is the presence of military tubercles. In addition, fibrous adhesions ranging from tiny filaments to thick bands may be seen. Targeted biopsy specimens should be obtained, preferably from the military tubercles. Peritoneal biopsy should be performed, even if peritoneal nodules are not seen; histological examination shows caseating granulomas in nearly 90% of patients.

The combination of the distinctive visual and histological appearances accurately identifies nearly all patients. Ascitic fluid, if present, should be sent for biochemical analysis and culture.

The complication rate of diagnostic laparoscopy is low (less than 5%) but care should be taken in the presence of adhesions.

Clinical presentation in current study :

In our study, majority of patients were having acute presentation and

were admitted through emergency department with intestinal obstruction and peritonitis requiring emergency exploratory laparotomy. Other authors have also reported similar observations. The presence of large number of patients with intestinal obstruction and peritonitis in our series may be attributed to diagnostic delay of abdominal TB leading to development of complications such as intestinal obstruction and peritonitis.

The surgical treatment of intestinal tuberculosis has gone through three phases.

- Bypassing the stenosed segment by enteroenterostomy or by ileo-transverse colostomy was practiced when effective antitubercular drugs were unavailable, as any resectional surgery was considered hazardous in the presence of active disease. This practice however, produced blind loop syndrome, and fistulae and recurrent obstruction often occurred in the remaining segments.
- With the advent of antituberculous drugs, more radical procedures became popular in an attempt to eradicate the disease locally. These included right hemicolectomy with or without extensive removal of the draining lymph nodes and wide bowel resections. These procedures were often not tolerated well by the malnourished patient. Moreover the lesions are often widely spaced and not suitable for resection.
- The recommended surgical procedures today are conservative. A period of pre operative drug therapy is controversial.
- Strictures which reduce the lumen by half or more and which cause proximal hypertrophy or dilation are treated by stricturoplasty. This involves a 5-6 cm long incision along the anti-mesenteric side which is closed transversely in two layers.
- A segment of bowel bearing multiple strictures or a single long tubular stricture may merit resection. Resection is segmental with a 5 cm margin.

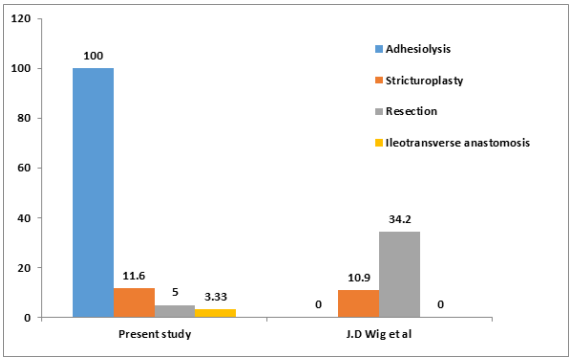
Bands and adhesions were the most common operative findings in this study. Similar operative findings were reported by Ali *et al***, but in sharp contrast to other authors who reported bowel strictures as the most frequent intra-operative findings.

In our series, release of bands and adhesions was the most frequent surgical procedure performed followed by stricturoplasty and segmental bowel resection with end to end anastomosis. Similar surgical treatment pattern was reported by other writers also*. Anti-tuberculous therapy was prescribed in all the tubercular patients postoperatively.

Table 15 : Comparison of surgical procedures with J D Wig et al

Sl No	Surgery	J.D wig etal 1979	Present study
1	Resection	34.2%	5%
2	Right hemicolectomy	50.6%	0%
3	Ileocaecal resection / Ileo transverse anastamosis	0	3.33%
4	Stricturoplasty	10.9%	11.6%
5	Adhesolysis	0%	100%
6	Perforation closure	4.1%	0%

Graph 15 : Comparison of surgical procedures with J D Wig et al



DIAGNOSTIC ALGORITHM

Clinical presentation	Possible site of lesions	Type	Suggested
Intestinal	Small intestine Peritoneum	Stricturous Adhesive	Small bowel enema CT
Lump	Ileo-caecal region, Colon, Lymph nodes	Hypertrophic	DCBE, colonoscopy + biopsy USG, CECT, FNAC
Diarrhoea	Small intestine	Ulcerative	Small bowel enema, Retrograde ileoscopy + biopsy
Rectal bleeding	Large intestine	Ulcerative	Colonoscopy + biopsy
Ascites	Peritoneum	Ascitic	USG, CECT, Ascitic tap, Laparoscopy + biopsy

MANAGEMENT

Site	Type	Suggested treatment
Any site	Acute abdomen	Emergency surgery + procedure
Intestinal	Ulcerative Stricturous Hypertrophic	ATT ± Emergency surgery ATT / Stricturoplasty / Resection ATT ± Resection anastomosis
Peritoneal	Ascitic, adhesive	ATT ± ? Steroids
Lymph nodes	-	ATT

ATT – Anti-tubercular therapy

Comparative study conclusions : In comparison to my study with other studies :

1. Age distribution is common i.e 20 - 50 yrs
2. Sex distribution is reversed i.e male : female is 2:1
3. Abdominal pain is the commonest symptom compared to other studies
4. Abdominal distension is the commonest sign in my study compared to other studies where abdominal tenderness is the commonest sign
5. Commonest surgery is adhesolysis in my study but Right hemicolectomy is the commonest surgery in other studies.

SUMMARY & CONCLUSIONS

- Peak incidence of GIT TB was between the ages of 20 - 40 years
- The male female ratio is 2 : 1
- Tuberculous abdomen is mostly seen in poor socio - economic class
- Diffuse pain abdomen and abdominal distension are common.
- The cases with strictures and hyperplastic forms presented with intestinal obstruction. In these cases, the proximal bowel is thickened and dilated as it bore the brunt of obstruction.
- Results were good following adhesolysis and post operative chemotherapy administration.
- Post operative chemotherapy should be continued for 6 - 12 months.
- The incidence of tuberculosis in medical wards is 7.55 during 2014 – 2016 period.
- The incidence of tuberculosis in surgical wards is 3.33 in prospective study during 2014 - 2016 period.
- In conclusion, the incidence of tuberculosis (in surgical wards) is decreasing due to introduction of DOTS and DOTS PLUS according to RNTCP (Revised National Tuberculosis Control Programme)

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