# Abdominal Tuberculosis: Epidemiologic profile and management experience of 233 cases

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## Abstract

**Objective:** To document the epidemiologic profile and management outcome of patients with abdominal tuberculosis in a tertiary care setup.

**Methods:** This descriptive case series was conducted at the Department of Surgery, Pakistan Institute of Medical Sciences (PIMS), Islamabad, between January 2003 and December 2008. All adult patients of either gender who presented with abdominal tuberculosis and were managed at our hospital during the study period were included in the study on the basis of convenience sampling. Numerical data were expressed as mean ± standard deviation, while categorical data were analysed using SPSS version 10. Chi square test was conducted to compare categorical variables.

**Results:** Of the 233 adult patients with abdominal tuberculosis who were part of the study, 110 (47.21%) were males and 123 (52.78%) females. The mean age was 28.21 ± 5.75 years. Majority of our patients (80.68%) belonged to poor families. History of concomitant pulmonary tuberculosis was found in 23 (9.87%) patients. Family history of tuberculosis was found in 13 (5.57%) patients. Of the patients 157 (67.38%) presented with acute abdomen; strictures were the most common operative finding (n=161; 69%); the patients needing hospitalisation were 204 (87.55%), with the mean hospital stay being 19.55±4.51 days. The in-hospital mortality was 5 (2.14%).

**Conclusion:** Abdominal tuberculosis was found prevalent in the population and predominantly affected the younger lot belonging to the poor socioeconomic strata. Majority of the cases were of primary intestinal variety, and in a small proportion it was secondary to pulmonary tuberculosis. Majority of the patients presented with complications such as acute intestinal obstruction, intestinal perforation and peritonitis, necessitating emergency laparotomy.

**Keywords:** Abdominal tuberculosis. Acute intestinal obstruction. Sub-acute intestinal obstruction. Ileostomy. Reversal of stoma. (JPMA 62: 704; 2012).

## Introduction

Abdominal tuberculosis constitutes a common public health issue in developing countries like ours. It is relatively less common in the western world. It can occur as a primary disease or develop secondary to pulmonary tuberculosis. It carries significant morbidity and mortality.[1-3]

The tubercle bacilli may reach the gastrointestinal tract via direct contact through the ingested food, swallowing infected sputum, haematogenous route, or may spread from infected adjacent lymph nodes and viscera such as fallopian tubes.[1]

Internationally, there is growing awareness about the significant morbidity and mortality associated with abdominal tuberculosis. On our national level, we need mass awareness and dissemination of knowledge about the medical and socio-economic implications of this common public health issue. The present study was undertaken to document the presentation of abdominal tuberculosis in our population, analyse the profile of the patients, and generate an evidence base that may prompt measures to address the issue more efficiently.

## Patients and Methods

This descriptive study was undertaken at the Department of Surgery, Pakistan Institute of Medical Sciences (PIMS), Islamabad from January 2003 to December 2008. All adult patients of either gender who presented with abdominal tuberculosis and were managed during the study period were included. Convenience sampling technique was employed. Initial assessment and diagnosis was made on the basis of history, physical examination and ancillary investigations. Ultrasound abdomen, X-ray abdomen erect and supine and X-ray chest were conducted in all patients, while other investigations such as Barium meal follow-through, Mantoux test and ESR were done where indicated. The operative diagnosis was confirmed by histological diagnosis of tissues specimen.

The socio-demographic profile of the patients, past or present history of concomitant pulmonary tuberculosis, family history of tuberculosis, co-morbids both - diabetes, human immunodeficiency virus or immunosuppression for any reason - mode of presentation, type of surgical procedure undertaken, operative findings, post-operative complications encountered,

duration of hospital stay, and mortality were all recorded.

Based on the mode of presentation, the patients were stratified into the three groups: Group A comprised those presenting with acute abdomen (e.g. acute intestinal obstruction, perforation, and peritonitis); Group B had those presenting with Sub-acute intestinal obstruction, mass right iliac fossa; and Group C comprised those presenting with non-acute symptoms of weight loss, altered bowel habits, evening pyrexia, diarrhoea, constipation etc.

Patients in Group A underwent emergency laparotomy. The surgical procedures were individualised to the cases and included resection of the affected gut segment and exteriorisation of the ends, or primary end-to-end anastomosis, stricturoplasty, adhenolysis or biopsy. Intra-operative findings such as strictures, perforations, caseating tubercles, enlarged mesenteric nodes and ascites were noted. Tissue for histopathological diagnosis was taken. Patients who had an initial exteriorisation of the resected/perforated gut ends as defunctionong stoma, underwent second-stage surgery for the reversal of stoma at 10-12 weeks.

Patients in Group B were managed conservatively initially and upon resolution of the acute abdomen, they were subsequently investigated with Barium meal follow-through and Mantoux test for establishing a definitive diagnosis.

Patients in Group C underwent diagnostic workup with Barium meal follow-through and Mantoux test, and were treated with anti-tuberculous therapy on outdoor basis.

All the patients received anti-tuberculous therapy for a period of 12 months. This included an initial intensive-phase therapy with four drugs. (i.e. isoniazid, rifampin, pyrazinamide and ethambutol), followed by a 10-month continuation phase therapy with two drugs (isoniazid and rifampin). Supplementation with vitamin B6 and vitamin D were also ensured. All the patients receiving anti-tuberculous therapy had 4 weekly follow-up to ensure compliance to chemotherapy and to rule out any complications of the anti-tuberculous therapy. Liver function tests were performed before starting the therapy and were repeated every 8 weeks.

The data were analysed through SPSS for Windows version 10. Numerical data, such as age, hospitalisation and the duration of hospital stay, were expressed as Mean ± Standard Deviation. Categorical data, such as gender, mode of presentation, operative findings and surgical procedures instituted, were expressed as frequencies and percentages. The percentages of categorical variables were compared by employing chi square test and a P value of less than 0.05 was regarded as statistically significant.

## Results

Of the 233 patients in the study, 110 (47.21%) were males and 123 (52.78%) were females. The male:female ratio was 1:1.09. The age of the patients ranged between 18-59 years with a mean of 28.21 ± 5.75 years. Majority of the patients (n=143) were in their third and fourth decades of life. Of the total, 119 (51.07%) were from the twin cities of Islamabad and Rawalpindi while the rest had been referred from other areas, including Azad Jammu Kashmir, upper Punjab and Khyber Pukhtunkhwa. A majority 188 (80.68%) of the patients belonged to poor families, 45 (19.31%) were from the middle class, while none was from the upper class.

Past or present history of concomitant pulmonary tuberculosis was found in 9.87% (n=23) patients, while family history of tuberculosis was found in 13 (5.57%) patients. Co-

**Table-1: Association of abdominal tuberculosis with various sociodemographic\presenting features. (n=233).**

| | Characteristics/ Variables | Percentage of patients | P-value % |
|---|---|---|---|
| 1 | Gender: | | |
| | Male (n=110) | 47.21% | >0.05** |
| | Female (n= 123) | 52.78% | |
| 2 | Age: | | |
| | Up to 40 years(n= 143) | 61.37% | ≤ 0.001* |
| | >40 years (n= 90) | 38.62% | |
| 3 | Socioeconomic status: | | |
| | Low (n= 188) | 80.66% | ≥ 0.00* |
| | Middle (n=45) | 19.31% | |
| 4 | Residence: | | |
| | Islamabad\ Rawalpindi (n=119) | 51.07% | >0.05** |
| | Others (n=114 ) | 48.92% | |
| 5 | Mode of presentation: | | |
| | Acute abdomen (n=157) | 67.38% | ≥ 0.00* |
| | Others (n=76 ) | 32.61% | |
| 6 | Type of tuberculosis: | | |
| | Primary (n= 210) | 90.12% | ≥ 0.00* |
| | Secondary (n=23) | 9.87% | |
| 7 | Family history: | | |
| | Present (n= 13) | 5.57% | ≥ 0.00* |
| | Absent (n=220) | 94.42% | |
| 8 | Past history: | | |
| | Present (n=23 ) | 9.87% | ≥ 0.00* |
| | Absent (n=210) | 90.12% | |

* p-value significant=<0.05. ** p-value insignificant=>0.05.

**Table-2: Operative findings. (n=164).**

| | Findings | No. of patients / % |
|---|---|---|
| 1 | Strictures: | |
| | Solitary | 11 (6.70%) |
| | Multiple | 103 (62.80 %) |
| 2 | Intestinal perforation | 34 (20.73 %) |
| 3 | Breakable adhesions/ Bands | 39 (23.78 %) |
| 4 | Enlarged mesenteric lymph nodes | 19 (11.58 %) |
| 5 | Caseating tubercles | 18 (10.97 %) |
| 6 | Hyperplastic lesion: | |
| | With stenosis | 13 (7.92 %) |
| | Without stenosis | 3 (1.82 %) |
| 7 | Ascites | 15 (9.14 %) |
| 8 | Plastered abdomen/ Cocoon | 4 (2.43 %) |

**Table-3: Operative procedures performed. (n=164).**

| | | |
|---|---|---|
| **A** | **Single Stage Procedures** | |
| | **Procedure** | **No. of patients (%)** |
| | 1 Adhenolysis | 41 (25 %) |
| | 2 Stricturoplasty | 27 (16.46 %) |
| | 3 Resection of affected segment of ileum and ileo-ileal anastomosis | 17 (10.36 %) |
| | 4 Biopsy alone | 7 (4.26 %) |
| **B** | **Two Stage Procedures** | |
| | **Procedure** | **No. of patients (%)** |
| | 1 Resection of affected segment of ileum, exteriorisation of ends in first stage and Stoma reversal with ileo-ileal anastomosis in second stage | 53 (32.31 %) |
| | 2 Limited Right hemicolectomy, exteriorisation of ends in first stage and Stoma reversal with ileo-colic anastomosis in second stage | 19 (11.58%) |

morbids found among the patients included diabetes mellitus in 5 (2.14%), and immunosuppression for renal transplant 1 (0.42%). There was no case of human immunodeficiency virus.

The most common mode of presentation was acute abdomen 157 (67.38%), followed by sub-acute intestinal obstruction/mass right iliac fossa 47 (20.17%) and non acute symptoms suggestive abdominal tuberculosis 29 (12.45%). Among the patients with sub-acute obstruction, 7 (14.89%) did not resolve with conservative management and underwent semi-elective laparotomy. None of the patients with non-acute symptoms of abdominal tuberculosis were operated upon.

The association of various demographic/presenting features with abdominal tuberculosis were noted (Table-1) and the same was done with operative findings (Table-2), and the surgical procedures undertaken (Table-3).

Postoperative complications included superficial incisional wound infection in 13 (7.92%) patients, chest infection in 6 (3.65%), septicaemia with acute respiratory distress syndrome in 5 (3.04%), and anastomotic leak and abdominal wound dehiscence in 1 (0.60%) each.

Hospitalisation was required in 204 (87.55%) cases. The hospital stay ranged from 13-27 days with a mean hospital stay of 19.55±4.51 days. The in-hospital mortality in our series was 5 (2.14%); with all such patients having fulminant peritonitis secondary to gut perforation, and death taking place within the first week of admission.

Patients receiving anti-tuberculous therapy had 4 weekly follow-ups. Treatment compliance was good, and there were no major side effects that warranted discontinuation of the anti-tuberculous therapy.

## Discussion

The exact incidence and prevalence of abdominal tuberculosis is difficult to establish as we have no national registry for the disease. However it is certainly high among our population as indicated by our study as well as other published local studies from different parts of the country.[4-7] Chandir S et al[8] from Karachi have reported abdominal tuberculosis to be the third most frequent extra-pulmonary site of tuberculosis, following the tuberculosis of lymph nodes and spine. In the same study, the frequency of abdominal tuberculosis was equal to that of the tuberculosis of the central nervous system and the musculoskeletal systems. Malik KA et al[9] from Karachi found that intestinal tuberculosis accounted for about 16% of all cases of intestinal obstruction.

In our study, the gender distribution was almost equal. Some studies have reported significantly higher number of cases involving female than males.[4,5,8,10,11] However, Rajput MJ et al[7] and Skopin MS et al[12] have reported greater number of males than females with abdominal tuberculosis.

In our study, we observed more frequent involvement of relatively younger population. This finding is in conformity with several earlier studies.[4,5,7,11]

The majority of our patients belonged to poor families with poor nutritional status. Given their malnourished status, we presumed that they had low serum levels of vitamin D as indicated by other local studies.[13] There is a growing body of evidence suggesting strong association between tuberculosis and vitamin D deficiency.[14] Hence, vitamin D supplementation is now becoming part of the management of these patients.[15]

Our study found concomitant pulmonary tuberculosis in approximately 10% of patients. Arif AU et al[4] and Rajput MJ et al[7] have observed pre-existing pulmonary tuberculosis in 20% and 33.95% of their patients respectively. Sircar S et al[16] from India have also reported concomitant pulmonary tuberculosis in significant number of patients with abdominal tuberculosis.

Our study we did not find any case of HIV/AIDS. In the west, a marked rise in the incidence of abdominal tuberculosis is reported in association with HIV/AIDS infection.[2,3,17-19]

In our study, the majority of the patients presented with acute intestinal obstruction requiring emergency exploratory laparotomy. Most of the published local literature have reported similar observations.[4,11]

We found ileocaecal regional as the most frequently involved part in abdominal tuberculosis. The most frequent manifestation was in the form of multiple strictures involving the terminal ileum. Our findings conform with those of the published literature.[4,9,11] The exact explanation for more frequent involvement of the ileocaecal region is unknown, but it may be due to a variety of factors such as increased rate of fluid/electrolyte absorption, abundance of lymphoid tissue in the form of Pyers patches, physiological stasis, and minimal digestive activity at the ileocaecal region.

We had four cases of plastered abdomen. There was plastering of the entire gut in the form of diffused non-breakable adhesions of the intestines and omentum. In these patients,

tissue for histopathology was taken which confirmed tuberculosis. All these patients responded well to the anti-tubercular therapy.

Resection of the affected segment of ileum, with exteriorisation of ends in the first stage and reversal of the stoma with ileo-ileal anastomosis in the second stage, constituted our most frequently performed procedure. Local studies have variably employed various surgical procedures. For instance, Baloch NA et al[11] performed stricturoplasty in 47.6% patients, while Khan IA et al[5] reported adhenolysis/node biopsy as the most frequently performed procedure in their patients (26.41%). Malik KA et al[9] reported right hemicolectomy as the most commonly performed procedure (48.60%) in their series. Rajput MJ et al[7] and Arif AU et al[4] reported resection and anastomosis in their 58.92% and 39.58% patients respectively. The choice of surgical procedure depends on a variety of factors such as the site and the extent of disease, status of the remaining gut, general condition of the patient, expertise available in emergency, preference of the individual surgeon and institutional protocols. Hence, standardisation as well as comparison of the surgical procedures undertaken by different researchers is difficult. In our series, we preferred two-stage procedures in patients with perforations, peritonitis or where the condition of the remaining gut or general condition of the patient was unsuitable for primary anastomosis. Reversal of stoma in a well-prepared gut and the patient having received anti-tuberculosis therapy for 10-12 weeks helped to reduce the risk of anastomotic leaks and septic complications.

Inhospital mortality in our series was 2.14%. The mortality reported by Baloch NA et al,[11] Rajput MJ et al,[7] Malik KA et al[9] was 2.3%, 3.57% and 10% respectively.

As there exist no national guidelines for the anti-tuberculosis therapy of extra-pulmonary tuberculosis in our country, we suggest that they should be developed in the context of our local population. In practice, most of the surgeons employ anti-tubercular therapy for 10-12 months.

Given the evidence base, we also suggest that health promotion of the poor people and increased awareness among them about early recognition and reporting of the disease be ensured in order to reduce the associated morbidity and mortality.

Our study had some limitations as it covered only the most important aspects of the epidemiology of tuberculosis. The relationship between the disease and individuals at risk is complex and influenced by many factors. Further research is needed to confirm and improve upon our results. Issues such as use the of unpasturised milk as a possible source of mycobacterium bovis, involvement of any atypical bacteria etc need to be addressed by some well-designed studies.

## Conclusion

Abdominal tuberculosis is prevalent in our population and predominantly affects the younger generation belonging to the poor socio-economic strata. Majority of the cases are of primary intestinal variety while a small proportion is secondary to pulmonary tuberculosis. Better nutrition and awareness about the significance of early diagnosis and treatment need to be ensured among the population.

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