ORIGINAL ARTICLE

Frequency of intestinal tuberculosis in patients of intestinal perforation presenting in surgical emergency

Sheikh Atiq-ur-Rehman, Fayyaz Ahmad, Muhammad Younus Khan, Nawab Ali

Abstract

Introduction: Intestinal perforation is the serious complication of intestinal tuberculosis with high morbidity & mortality.

Objectives: To determine the frequency of intestinal tuberculosis in patients of intestinal perforation presenting in Surgical Emergency, Bahawal Victoria Hospital, Bahawalpur.

Study design: Descriptive, cross-sectional.

Study duration: 1st November 2020 to 31st October 2021.

Settings: Department of Surgery, Bahawal Victoria Hospital, Bahawalpur

Material & Methods: A total of 106 patients with intestinal perforation of age 20-50 years and both genders were included. Patients with clinical features of duodenal perforation, intestinal perforation due to malignancy and traumatic perforation were excluded. Laparotomy was performed in all selected patients and tissue was sent to laboratory for histopathology. Clinical & laboratory findings of all patients were entered in pre-designed proforma in term of intestinal tuberculosis.

Results: Mean age was 36.90±8.16 years. Majority of the patients 58(54.72%) were between 36 to 50 years of age. Out of the 106 patients, 69(65.09%) were male and 37(34.91%) were females with male to female ratio of 1.9:1. Frequency of intestinal tuberculosis in patients of intestinal perforation was found in 19 (17.92%) patients, whereas there was no intestinal tuberculosis in 87 (82.08%) patients.

Conclusion: The study concluded that frequency of intestinal tuberculosis in patients of intestinal perforation is quite high in this region.

Received
date:3rd September, 2021
Accepted
date: 24th January, 2022

Keywords: intestinal tuberculosis, intestinal perforation, peritonitis, surgical emergency.

Quaid-e-Azam Medical College/Bahawal Victoria Hospital, Bahawalpur
SA Rehman,
F Ahmad
MY Khan
N Ali

Correspondence:
Dr. Sheikh Atiq-ur-Rehman, Associate Professor Surgery.
Quaid-e-Azam Medical College/ Bhawal Victoria Hospital, Bhawalpur.
Address: House No 9/A, Block 'X' model town C, Bahawalpur
Cell No:+92 300-6808500
email: dratiq2002@gmail.com

Introduction:

Tuberculosis has been declared a global emergency by the World Health Organization (WHO) and is the most important communicable disease worldwide.[1] Approximately one third of the world population is infected with tubercolosis (TB) and about three millions die each year from this disease.[2] Tuberculosis remains the major cause of death in the developing countries, probably due to poverty, lack of education, low detection rate, non-availability of experienced staff and insufficient coverage of the community by immunization programme.[3] The incidence of tuberculosis is again on the rise in developed countries due to immigrants from third world countries, HIV infection and increasing use of immune-suppressive therapy.[4]

The disease may involve any system of the body but abdomen is one of the commonest site of involvement after lungs.[5] although potentially curable, abdominal tuberculosis continues to be a major cause of morbidity and mortality. In the abdomen, tuberculosis may affect the gastro-intestinal tract, peritoneum, lymph node and solid viscera.[6] Perforation is a serious complication of TB of gastro-intestinal tract, associated with high morbidity and mortality. The

Table 1: Age distribution of patients (n=106)

Age (in years)	No. of Patients	%age
20-35	48	45.28
36-50	58	54.72
Total	106	100.0

Mean±SD=36.90±8.16 years

low incidence of tuberculous perforation is due to reactive fibrosis of the peritoneum. However, in recent years, intestinal perforation, which was relatively rare in the past has been reported more frequently. The cause of this remain unknown.[7]

Intestinal tuberculosis has usually one of the three main forms i.e. ulcerative, hypertrophic and fibrous stricture form[8] the disease can mimic various gastrointestinal disorders, particularly the inflammatory bowel disease, colonic malignancy, or other gastrointestinal infections.[9] It usually runs an indolent course and presents late with complications especially acute or subacute intestinal obstruction due to mass (tuberculoma) or stricture formation in small gut and ileo-caecal region or gut perforation leading to peritonitis.[8]

In spite of advancement in medical imaging, the early diagnosis of abdominal tuberculosis is still a problem and patients usually present when complications had developed.

The purpose of this study was to determine the frequency of intestinal tuberculosis in patients of intestinal perforation presenting in surgical emergency. So that we can minimize these fatal complications by early diagnosis and timely treatment of the cases.

Material & Methods:

Study design: Descriptive, cross-sectional study.

Setting: Department of Surgery, Bahawal Victoria Hospital, Bahawalpur.

Duration of study: 1st November 2020 to 31st October 2021.

Sample size: Sample size of 106 cases has been calculated with 95% confidence level, 0.07 desired precision and taking frequency of intestinal tuberculosis as 16%.[8]

Sample technique: Non-probability, consecutive sampling.

Sample selection:
Our inclusion criteria includes all patients with peritonitis due to intestinal perforation, patients 20-50 years. Both genders. Our exclusion criteria includes patients with past history of laparotomy & intestinal perforation due to maligancy. Duodenal ulcer perforation. Patients with traumatic intestinal perforation.

Data collection procedure: After approval from the ethical review committee, total number of 106 patients presented to the Emergency department of Bahawal Victoria Hospital, Bahawalpur, fulfilling the inclusion criteria was selected. Informed written consent was taken from each patient. Laparotomy was performed in all selected patients and tissue was sent to laboratory for histopathology. Findings of the laboratory were entered in pre-designed proforma in term of intestinal tuberculosis (yes/no). All the data was recorded along with demographic profile of the patients on pre-designed performa (Annexed).

Data analysis procedure: Collected data was analyzed through computer software SPSS 23.0. Mean and standard deviation were calculated for age gender and intestinal tuberculosis (present/absent) were presented as frequency and percentage. Stratification was done for age and gender and post-stratification chi square was applied. P-value ≤0.05 was taken as significant.

Results:
Age range in this study was from 20 to 50 years with mean age of 36.90±8.16 years. Majority of the patients 58(54.72%) were between 36 to 50 years of age as shown in Table I. Out of the 106 patients, 69(65.09%) were male and 37(34.91%) were females with male to female ratio of 1.9:1 (Figure I). Frequency of intestinal tuberculosis in patients of intestinal perforation was found in 19(17.92%) patients, whereas there was no in-

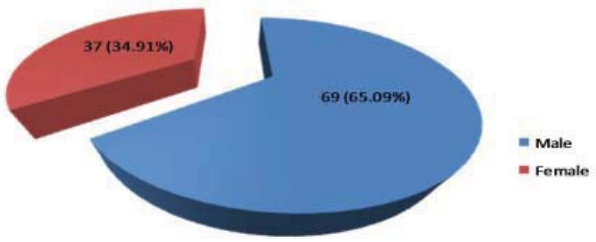

Figure-I: Distribution of patients according to gender (n=106).

Figure-II: Frequency of intestinal tuberculosis in patients of intestinal perforation (n=106).

Table 2: Stratification of intestinal tuberculosis with respect to age groups

	Intetinal Tuberculosis		
Age (years)	**Yes**	**No**	**P-value**
20-35	11 (22.92%)	37 (77.08%)	0.223
36-50	08 (13.79%)	50 (86.21%)	

Table 3: Stratification of intestinal tuberculosis with respect to gender

	Intetinal Tuberculosis		
Gender	**Yes**	**No**	**P-value**
Male	14 (20.29%)	55 (79.71%)	0.386
Female	05 (13.51%)	32 (86.49%)	

testinal tuberculosis in 87(82.08%) patients as shown in Figure II. When stratification of intestinal tuberculosis was done on age groups, it was found that there was no significant difference between different age groups as shown in Table II while the stratification of intestinal tuberculosis with respect to gender has shown in Table III which also showed no significant difference between male and female.

Discussion:

Tuberculosis is a major public health hazard and is the leading cause of death in Pakistan.[10] It infects one-third (⅓) of world population and kills about three million people each year.[11] Pulmonary tuberculosis is the most important form as it is responsible for spread of tuberculosis in community. It is very important that no efforts should be planned to diagnose, treat tuberculosis[12] and to avoid complication of intestinal tuberculosis like intestinal obstruction, bowel perforation leading to peritonitis, bleeding & entero-cutaneous fistulas. Intestinal obstruction is the most common complication of intestinal tuberculosis.[13,14] We have conducted this study to determine the frequency of intestinal tuberculosis in patients of intestinal perforation.

Age range in our study was from 20 to 50 years with mean age of 36.90±8.16 years. Majority of the patients 58(54.72%) were between 36 to 50 years of age. Out of the 106 patients, 69(65.09%) were male and 37(34.91%) were females with male to female ratio of 1.9:1. Frequency of intestinal tuberculosis in patients of intestinal perforation was found in 19(17.92%) patients, whereas there was no intestinal tuberculosis in 87(82.08%) patients. In a study by Sheikh et al,[8] total number of 200 patients with acute abdomen was included. Their ages ranged from 11 to 75 years with a mean age of 35.6 years. Majority of the patients were seen between 11 to 30 years of age. There was male pre-dominance, the male to female sex ratio being 1:0.56. Frequency of intestinal tuberculosis is 16%.[8] In another study,[15] mean age was 33.88±9.82 years for the age range was 20-50 years. Out of 83 patients, intestinal tuberculosis was found in 20(24%) patients. In age group 36-50 years out of 39(46.99%) patients, intestinal tuberculosis was found in 10(25.64%) patients. No association (P = 0.8) between age and intestinal tuberculosis was found.

Total 40(48.19%) patients were malnourished and intestinal tuberculosis was found in 16 (40%) patients. Total 43(51.81%) patients were properly nourished and intestinal tuberculosis was noted in 4(9.30%) patients. Significantly (0.001) higher rate of intestinal tuberculosis was noted in malnourished patients as compared to properly nourished patients.[15] 15% patients

presented with intestinal obstruction due to tuberculosis in a study,[16] however one other study from Pakistan has reported 11% cases of intestinal obstruction due to tuberculosis.[17] Involvement of mesenteric vasculature by granulomatous inflammation was commonly associated with ulceration and perforation, suggesting that ischemia caused by vascular thrombosis is potentially responsible for tissue break down. This implies that vaculitis plays an important role in the natural history of abdominal tuberculosis. Acid fast bacilli were demonstrated in the tissue sections of 37.5% of the patients. AFB positivity was higher in caseating granulomas.[18]

The complications of intestinal tuberculosis are bowel obstruction(31.7%), intestinal perforation(4.9%), entero-cutaneous fistula(2.4%) and small bowel volvulus due to mesenteric lymphadenitis(2.4%).[19] Intestinal perforations are the most feared one and are associated with high mortality. Tubercular intestinal perforation is very rare account for only 1-10% of abdominal tuberculosis. It has a poor prognosis with mortality rate higher than 30%.[20,21] Perforation in intestinal tuberculosis usually occurs in the terminal ileum[22] and it can occur even in patients during anti tuberculosis therapy.[23] In 90% of the cases, perforation is solitary, but multiple perforations occur in 10-40% of patients and are associated with a poor prognosis, therefore immediate operative intervention is indicated.[24]

Acute abdominal condition is one of the most common emergencies in A & E department. Abdominal tuberculosis is one of common causes of acute abdomen in endemic areas. Intestinal tuberculosis is a common extra-pulmonary manifestation of tuberculosis. Its incidence is increasing in urban and rural areas due to poverty, under nutrition and over crowding, Intestinal & abdominal tuberculosis is a systemic disease. Early diagnosis is the key factor in avoiding systemic and local complications of intestinal tuberculosis. Anti-tuberculous therapy remains main stay of treatment after the surgery. Surgical intervention in acute abdominal conditions of tuberculosis is important to decrease the morbidity and mortality in these patients.[25]

Conclusion:

This study concluded frequency of intestinal tuberculosis in patients of intestinal perforation is quite high. So, we recommend that early diagnosis is the key factor in avoiding systemic and local complications of intestinal tuberculosis, and anti-tuberculous therapy remains main stay of treatment after the surgery as early as possible in order to decrease the morbidity and mortality in these patients.

Conflict of interest: None

Funding source: None

Role and contribution of authors:

Sheikh Atiq-ur-Rehman, collected the data, references and did the initial write up.

Fayyaz Ahmad, collected the data and helped in introduction writing.

Muhammad Younus Khan, collected the data, references and helped in interpretation of data and discussion and result writing.

Nawab Ali, helped in collecting the data, did interpretation of data and helped in discussion writing

References:

1. Sandhu GK. Tuberculosis: current situation, challenges and overview of its control programs in India. J Glob Infect Dis. 2011; 3(2):143-50.
2. Zaman K. Tuberculosis. A global health problem. J Health Popul Nutr. 2010; 28(2):111-3.
3. Mohan MK, Ramesh D, Reddy KG. A study on various modes of presentation of gastrointestinal tuberculosis at emergency, its management and outcomes. J Evid Based Med Health. 2016; 3(15):537-47.
4. Chalya P, Mchembe MD, Mshana SE, Rambau P, Jaka H, Mabula JB. Tuberculosis bowel obstruction at a university teaching hospital in north western Tanzania: a surgical experience with 118 cases. World J Emerg Surg. 2013; 8:12.
5. Debi U. Abdominal tuberculosis of the gastrointestinal tract: Revisited. WJG. 2014; 20(40):14831.
6. Chalya P, Mchembe MD, Mshana SE, Rambau P, Jaka H, Mabula JB. Clinico-pathological profile and surgical treatment of abdominal tuberculosis: a single center experience in northwestern Tanzania. BMC Infect Dis. 2013; 13:270.
7. Dasgupta A, Singh N, Bhatia A. Abdominal tuberculosis: a Histopathological study with special reference to intestinal perforation and mesenteric vasculopathy. J Laborat Phys. 2009; 1(2):56.
8. Shaikh MS, Dholia KR, Jalbani MA, Shaikh SA. Prevalence of intestinal tuberculosis in cases of acute abdomen. Pak J Surg. 2007; 23:52-6.

9. Rubin DC, Shaker A, Levin MS. Chronic intestinal inflammation: inflammatory bowel disease and colitis-associated colon cancer. Front Immunol. 2012:3.
10. Afridi SP, Malik F, Ur-Rahman S, Shamim S, Samo KA. Spectrum of perforation peritonitis in Pakistan: 300 cases Eastern experience. World Journal of Emergency Surgery. 2008; 3(1):31
11. Khushk IA, Ahmed I, Shah SS. Tuberculosis control in Pakistan: current issues and challenges. J Coll Physicians Surg Pak. 2006; 16(6):387-8.
12. Memon AA, Siddiqui FG, Abro AH, Agha AH, Lubna S, Memon AS. An audit of secondary peritonitis at a tertiary care university hospital of Sindh, Pakistan. World Journal of Emergency Surgery. 2012; 7(1):6.
13. Baloch NA, Baloch MA, Baloch FA. A study of 86 cases of abdominal tuberculosis. Journal of Surgery Pakistan (International). 2008; 13(1):30-2.
14. Afridi SP, Siddiqui RA, Rajput A, Alam SN. Spectrum of abdominal-tuberculosis in emergency surgery: 100 cases at a tertiary care Centre Dow University of Health Sciences and Civil Hospital Karachi, Pakistan. Stoma. 2016; 34:34.
15. 15. Shahid ZA, Ahmad I, Awais MZ. Frequency of intestinal tuberculosis in patients of intestinal perforation presenting in surgical emergency. Med Forum Monthly 2017; 28:49-52.
16. Malik KA, Waheed I. Frequency of intestinal tuberculosis in cases of intestinal obstruction. J Liaquat Uni Med Health Sci. 2006:119-121.
17. Maqbool. Ileocaecal tuberculosis; a study of 31 cases. Pak J Gastroenterol. 1998; 12(1-2):45-50.
18. Akbar M, Haider IZ, Naveed D, Akbar I, Khattak I, Akbar K, Zafar A. Surgical management of tuberculous small bowel obstruction. Journal of Ayub Medical College Abbottabad. 2010; 22(2):171-5.
19. Arif AU, Shah LA, Asadullah MS. The frequency and management of intestinal tuberculosis; a hospital based study. Emergency. 2008; 34:48.
20. Jamal S, Khan Z, Ahmed I, Shabbir S, Khaliq T. Presentation and outcome of abdominal tuberculosis in a tertiary care Unit. Ann Pak Inst Med Sci. 2011; 7(1):33-6.
21. Mirza B, Ijaz L, Saleem M, Sheikh A. Surgical aspects of intestinal tuberculosis in children: our experience. African Journal of Paediatric Surgery. 2011; 8(2):185.
22. Debi U, Ravisankar V, Prasad KK, Sinha SK, Sharma AK. Abdominal tuberculosis of the gastrointestinal tract: revisited. World J Gastroenterol 2014; 20:14831-40.
23. Saaiq M, Shah SA, Zubair M. Abdominal tuberculosis: epidemiologic profile and management experience of 233 cases. J Pak Med Assoc 2012; 62: 704-7
24. Masiello A, Pacifico P, Giglio S, Maio P, Dell'Aquila G, Magliocca M, et al. Abdominal tuberculosis in a young immigrant patient: a clinical case. Infez Med 2012; 20: 120-4
25. Shimy GG, Borham MM, Gaber M. Incidence of tuberculosis in acute abdomen in endemic area. AAMJ. 2013; 10:1-15.