Gender Predilection and Mortality In Abdominal Tuberculosis Patients Presenting With Peritonitis

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ABSTRACT

Objective — *To determine the sex predilection and mortality in patients with tuberculous peritonitis.*

Study design — *Cross-sectional study.*

Place & Duration of study — *Departments of Surgery, Abbasi Shaheed Hospital Karachi & Civil Hospital Karachi, from June 2015 to November 2019.*

Methodology — *Patients of both gender and age above 13 years, who were diagnosed as cases of abdominal tuberculosis on the basis of history, presence of acid fast bacilli (AFB) on smear, computed tomography (CT) scan, positive culture for Mycobacterium tuberculosis and on histopathology were included in the study. The age, gender, family history, contact history, other characteristics, and outcome in terms of mortality were recorded.*

Results — *Out of 144 patients enrolled there were 81 females and 63 males with mean age of 45.94±9.19 year. The mean age of the patients among females was 45.80 year and 46.13 year in males. The patients with confirmed diagnosis for tuberculosis after culture and sensitivity and presenting with tuberculous peritonitis were 47 (32.6%). Twelve patients with tuberculous peritonitis expired.*

Conclusion — *Frequency of tuberculous peritonitis was higher in females as compared to males and the ratio of mortality also showed females preponderance.*

Key words — *Tuberculosis, Tuberculous peritonitis, Mortality.*

INTRODUCTION:

Tuberculosis affects close to one third of human population and 9 million active cases are reported annually. It results in 1.5 deaths per million each year.[1,2] Abdominal tuberculosis constitutes 1-3% of cases affecting different anatomical regions of the body.[3] Tuberculous peritoneal involvement is an important cause of morbidity in areas where this disease is endemic. Despite abdomen being an uncommon site of tuberculosis, it is relatively common in the immunosuppressed patients. Of all the forms of tuberculosis the incidence of tuberculous peritonitis (TBP) varies from 0.1% to 0.7% worldwide.[4] In Pakistan, small bowel tuberculosis accounts for 16-21% of all the cases.[5] This is one of the highest frequencies reported in literature.[6] Despite this grave picture the condition can be treated with antituberculous therapy and good outcome is expected. However, a mortality of 10.6% has been reported in a study.[5]

Tuberculosis has declined in developed countries. Differences exist among gender and found more frequently in males with advancing age and in females at younger age. Altogether males being affected more than females (M:F=2:1).[6] A data spanned over 10 years, showed increased frequency among males compared to females.[6] Although the overall rate of

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infection is declining but still male preponderance was found in studies done on patients with tuberculous peritonitis.[7] However, on the contrary, some studies showed a female preponderance among patients with acute tuberculous peritonitis.[8,9] This study was aimed to determine if there was any sex predilection in patients affected by tuberculous peritonitis and its associated mortality.

METHODOLOGY:

This cross sectional study was conducted at Abbasi Shaheed Hospital and Civil Hospital Karachi, from June 2015 to November 2019 after getting institutional approval. All patients of both gender and ages above 13 years, who were diagnosed as cases of abdominal tuberculosis on the basis of history were included. Patients who had positive acid fast bacilli (AFB) smear, culture positive for tuberculous bacilli and histopathology suggestive of tuberculosis, were also included. TBP was diagnosed on the basis of generalized abdominal pain, generalized abdominal tenderness, and evidence of free fluid and/or free gas in peritoneal cavity on CT scan. Cases of peritonitis as an outcome of trauma, intestinal perforation due to other infections, anastomotic leak after surgery, those with corrosive injury and ovarian malignancy, were excluded. Patients who had recurrence of tuberculosis were also excluded. The consecutive, non-probability sampling technique was used for enrollment of patients. A sample size of 144 was determined by WHO calculator taking prevalence of mortality of TBP as 10%.[5, 9]

Informed written consent was taken from all patients. All the demographic information and outcome in terms of mortality within one month of admission were entered in a pre-designed form. Data were analyzed by statistical software package SPSS version 20.0. Mean + SD was calculated from age of patients and duration of symptoms, and family monthly income. Frequencies and percentages were computed for educational status, sex predilection (M/F) and mortality. Stratification was done with regards to age, sex predilection, family monthly income, educational status and duration of symptom to see the effect of these on mortality. Chi-square test was applied, and $p < 0.05$ was considered as significant.

RESULTS:

Out of 144 patients enrolled, 81 (56.25%) were females and 63 (43.75%) males the with mean age of 45.94±9.19 year. The mean age of the patients among females was 45.80 year and 46.13 year in males.

Most of the patients were undergraduate (n=104) while 40 were attending higher education classes. Most of the females (n=60) were undergraduates while only 21 females had higher education. Nineteen males had higher education. The monthly income of most patients was >15000 rupees (n=95). The monthly income of the males and females was nearly on same. The duration of symptoms of abdominal tuberculosis was 2-4weeks in 76 patients. The duration of symptoms was nearly the same in both genders as given in table I.

The patients presenting with peritonitis suspected for tuberculosis and turned out to be culture positive were 47. Of these 31 were females and 16 males. The female predominance over males in culture

Table I: Demographic and Clinical Details (n=144)

Variables		Count (n)
Duration of symptoms	2-4 weeks	68
	1-2months	76
Monthly income (Rupees)	>15000	95
	<15000	49
Education	Higher education	40
	Undergraduate	104
Family history (yes/ no)		75/ 69
Mortality		12

Table II: Sex Predilection In Culture Positive TBP Patients		
Gender	**Culture Positive TB peritonitis (n=47)**	**P-value**
Female	31	0.029*
Male	16	

***P-value <0.05 denoting statistical significance**

Table III: Analysis of Mortality		
Variable	**Mortality (n=12)**	**P-value**
Age (Year)		
20-30	3	0.469
31-40	2	
41-50	3	
50- 60	4	
Gender		
Female	10	0.048*
Male	2	
Family income		
<15000 Rupees	7	0.686
>15000 Rupees	5	
Educational status		
under graduation	9	0.314
Higher education	3	
Duration of symptoms		
1-2 months	6	0.969
2 weeks - 2 months	6	

***P-value <0.05 denoting statistical significance**

positive cases was statistically significant (p=0.029) as given in table II.

Mortality in TBP cases was 8.3% (n=12). Of these 10 were females and 2 males and the difference between the gender groups with regard to mortality was statistically significant (p=0.048). The difference between mortality amongst age group and monthly income strata was not significant. The mortality was more in undergraduates but the difference was not statistically significance (p=0.314). The mortality was not statistically different amongst patient groups with different duration of symptoms (p=.0.969). Details are given in table III.

DISCUSSION:

Pakistan ranks among fifth most tuberculosis burdened area worldwide.[11] It continues to be the major public health issue. In Pakistan, its prevalence is nearly around 364 per 100,000 of population.[11] The World Health Organization (WHO) is trying to fill the funding gaps for TB prevention and control efforts. The delay in presentation, treatment non-adherence and social stigma are the important factors contributing to failure of control of this major public health problem. This study also highlighted number of patients who presented with advanced stage of disease in a metropolitan city of Pakistan.

Extra-pulmonary tuberculosis accounts for 17% to 52% of cases.[12] Abdominal and/or pelvic TB may complicate into tuberculous peritonitis, amounting to 1-2% of all the cases, in which the peritoneum, bowel, solid organs, and lymph nodes may be affected. It may be a result of spread from nearby abdominal or genital tuberculous disease and in other cases may be a ramification of hematogenous extension of miliary pulmonary TB.[13] Acute abdominal tuberculosis is amongst the most frequent reason

for acute abdominal emergent presentation to hospital in endemic areas.[14]

In our study the frequency of tuberculous peritonitis was 32.6%. This was comparatively lower than the frequency (67.38%) reported in other study.[8] In index study the frequency of tuberculous peritonitis was more in female gender and also the mortality. Previous studies have shown varying results among gender distribution. Afridi et al in their study found overall male dominance (68.3%) but female predilection (31.7%) in peritonitis as a result of intestinal perforation.[5] Another study reported that males developed perforation peritonitis twice as frequently than the females.[6] However, some studies revealed that tuberculous peritonitis was often found in females by a factor of 1.4.[15] This observation is not contrary to our study. In Western literature too, there has been a wide variation, in some cases female predominance while in others male preponderance has been reported in peritoneal tuberculosis.[15,16] In our study too, there was female preponderance, the possible reason may be an extension of infective process through tubal infection, more so during active reproductive life.[17]

In our study there was increased frequency of tuberculous peritonitis among patients who belonged to low-income class and patients also were undergraduates. This is consistent with literature where tuberculosis is reported as a disease of low and middle income population.[18] Yeh, H et al in his study of tuberculous peritonitis found out that duration of illness was usually one month which is almost the same as in our study.[19] There were twelve patients with tuberculous peritonitis who died and most them were females. The overall mortality was around 25% which is lower as compared to international literature that showed 35% mortality.[20]

CONCLUSIONS:

There was female preponderance as compared to male in tuberculous peritonitis as well as in mortality. It was more common in lower socio-income group and undergraduates.

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