

“Socio-demographic Status and Features of Patients with Tuberculous Lymphadenitis”

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Abstract

Background: There are very few data we have regarding the socio-demographic status as well as features and presentations of patients with tuberculous lymphadenitis. Tuberculosis which is a severe bacterial infection caused by *Mycobacterium tuberculosis*, compromises the immune system. Inadequate intake of micronutrients alters the immune response of the host predisposing to infection.

Aim of the study: The aim of this study was to assess the socio-demographic status and features of patients with tuberculous lymphadenitis.

Methods: This was an observational study. The study was conducted in the Department of Internal Medicine of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, during the period from January 2016 to March 2017. The study included 25 freshly diagnosed tuberculous lymphadenitis patients as study people obeying inclusion and exclusion criteria. All the patient data were collected through a pre-designed questioner.

Result: The highest number of participants of the study was from monthly 10,000-25,000 Tk. Income group which was 36%. On the other hand, only 4% participants were from poor families and their monthly income was below 5,000 taka per month. In this study it was observed that, majority (68.0%) patients had fever, 15 (60.0%) had anorexia, 12 (48.0%) had weight loss. Regarding general examination of the study patients, it was found that, more than three fourth (76.0%) patients had documented fever and more than two third (68.0%) patients had anaemia. It was also observed that, almost three fourth (72.0%) patients had received BCG vaccination.

Conclusion: In this study we did not find any potential socio-demographic factor as potential in the treatment arena of patients with tuberculous lymphadenitis. These findings may be helpful for the future researchers in selecting their intervention regarding the same issue.

Key words: Tuberculosis, Socio-demographic, Features, Lymphadenitis.

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I. Introduction

Tuberculous lymphadenitis is a chronic, specific granulomatous inflammation of the lymph node with caseation necrosis, caused by infection with *Mycobacterium tuberculosis* or related bacteria. In 2015 an estimated 10.4 million new cases occurred globally and 1.4 million people died of TB. Bangladesh is the sixth highest TB-burden country in the world¹. Despite of effective treatment regimen for tuberculosis (TB), it remains a major source of morbidity and mortality throughout the world in developing countries, including Bangladesh. In Bangladesh, the prevalence of reported active TB in 2015 was 362 (Range: 234-517) per 100,000 population with a mortality of 45 (Range: 27-68) per 100,000 population (WHO 2015). TB-lymphadenitis is the most common comprises 68%² of all extra-pulmonary tuberculosis patients. The association between poverty and TB is well-recognized, and the highest rates of TB were found in the poorest section of the community³. TB occurs more frequently among low-income people living in overcrowded areas and persons with little schooling⁴. Poverty may result in poor nutrition which may be associated with alterations in immune function. Nutritional status is one of the most important determinants of resistance to infection, and it is well-established that, nutritional deficiency is associated with impaired immune functions⁵. Undernutrition increases the risk of tuberculosis and in turn tuberculosis can lead to malnutrition. Undernutrition is therefore highly prevalent among people with tuberculosis. It has been demonstrated that undernutrition is a risk factor for

progression from tuberculosis infection to active tuberculosis disease and that undernutrition at the time of diagnosis of active tuberculosis is a predictor of increased risk of death and tuberculosis relapse. However, the evidence concerning the effect of nutritional supplementation on tuberculosis prevention and health outcomes among people with tuberculosis had not previously been systematically reviewed. Recent reviews have shown that deficiency in the micronutrients and trace elements may have adverse effects on the immune status⁵ and micronutrient supplementation can lead to boosting of the immune system, which may help improve the response to TB treatment. A great deal of research supports the fact that the impairment of the immune system due to trace element deficiency can be sufficient to increase the risk of mortality and morbidity due to infections. It is also stated that the supplementation of trace elements restore immune competence⁶. Lymph nodes are usually involved in the early stages of the pulmonary disease or as secondary TB by hematogenous spread⁷. However, tuberculous lymphadenitis may arise without a detectable preceding pulmonary involvement⁸. Tuberculous lymphadenitis affects mainly the cervical lymph node group and is an important cause of lymphadenopathy worldwide⁹. The clinical as well as the demographic characteristics are varied. To confirm the cases, histopathological examination or FNAC is needed. These help to arrive at an early diagnosis of tubercular lymphadenitis and institution of treatment before a final diagnosis is made by culture¹⁰. Previously, the neutrophil count in TB has been positively correlated with increased bacillary count¹¹. Nevertheless, in this study neutrophilia was positively associated with CXR abnormalities including bilateral infiltrations and cavitory lesions representing active TB likewise justified by Lyadova¹² where increased neutrophil count represents progression of infection to active TB. The aim of this study was to assess the socio-demographic status and features of patients with tuberculous lymphadenitis. All the parts of this study were carried out aiming to fulfill the main objectives of this study.

II. Objective

The general objective of this study was to assess the socio-demographic status and features of patients with tuberculous lymphadenitis.

III. Methodology & Materials

This prospective study was conducted in the Department of Internal Medicine of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, during the period from January 2016 to March 2017. The study included 25 freshly diagnosed tuberculous lymphadenitis patients as study people obeying inclusion and exclusion criteria. Data were collected by using pre-designed data sheet prepared for the study with face to face interview, relevant clinical examinations and investigations. The data sheet was pre-tested and face validated by consulting with experts. According to the inclusion criteria patients with newly diagnosed tuberculous lymphadenitis, and patients of any gender aged between 15-60 years were included in the study. On the other hand, according to the exclusion criteria of this study, patients already on anti-tuberculous therapy, disseminated tuberculosis, diabetic, and women with pregnancy or taking oral contraceptives, patients with chronic liver disease or renal failure and cases with myocardial infarction, carcinoma or nephritic syndrome were excluded from this study. Patients with FNAC or biopsy proven newly diagnosed untreated tuberculous lymphadenitis patients were selected as cases. For collecting of patients I used to go to OPD of Internal Medicine and ENT and also to DOTS (directly observed treatment, short course) center, BSMMU. I also used to search newly diagnosed patients with tubercular lymphadenitis admitted in IPD, Internal Medicine, BSMMU. I requested my colleagues to inform me or to send the patient with newly diagnosed tuberculous lymphadenitis to me at an allocated place and time if they found in OPD or admitted in IPD. At first study purpose was explained to the patient and informed written consent was taken, then history was taken and examination was performed to exclude contributory. BMI of the patients was calculated; MT was done. CBC, SGPT, S.Creatinine and random blood sugar was done in all cases. Chest-X-ray and Ultrasonography of abdomen were done to exclude disseminated tuberculosis or other diagnosis. Age, sex matched healthy control who were fulfill the inclusion and exclusion criteria were collected from patient's attendance, hospital staff and patients with other diagnosis that did not alter the serum biochemistry from IPD and OPD of BSMMU.

IV. Result

In this study, among total 25 participants the highest number of patients were found from ≤ 30 years' age group which was 52% and the lowest number patients were from >50 years' age group which was 8%. The mean (Mean \pm SD) age of the participants was 32.1 \pm 12.0 years. The highest portion of the participants was female and it was 52%. On the other hand male were 48%. In analyzing the educational status of the participants it was found that, the highest number of the participants was primary level educated which was 36%. On the other hand the lowest number of participants was graduate which was 8%. In analyzing the occupational status of the participants it was found that the participants were from different professions such as housewife (24%), service (24%), business (12%), study (28%) and others (12%). The highest number of participants of the study

was from monthly 10,000-25,000 Tk. Income group which was 36%. On the other hand, only 4% participants were from poor families and their monthly income was below 5,000 taka per month. In this study it was observed that, majority (68.0%) patients had fever, 15 (60.0%) had anorexia, 12(48.0%) had weight loss. Regarding general examination of the study patients, it was found that, more than three fourth (76.0%) patients had documented fever and more than two third (68.0%) patients had anaemia. It was also observed that, almost three fourth (72.0%) patients had received BCG vaccination. History of contact with TB cases was 15(60.0%) and family history of TB was 9 (36.0%) among total participants. In this study it was observed that, about one third (32.0%) patients had <18.5 kg/m² (low) among all the participants whereas in 16% participants it was higher than normal. In our study it was also found that, more than three fourth (80%) patients had neck gland. Single LN was 6 (24.0%). The mean length was 3.4±0.8 cm with ranged from 2 to 5 cm. Mean wide was 2.8±0.6 cm with ranged from 2 to 5 cm. Tenderness had in 3 (12.0%). Twenty three (92.0%) patients had firm. Smooth surface had in 15 (60.0%) participants, relation with surrounding structures 19 (76.0%) patients had mobile. Almost three fourth (72.0%) patients had matted in nature. In TB lymphadenitis patients, the mean hemoglobin was 11.1±2.1 gm/dl, mean white blood cell count (per cu-mL) was 10061.9±3634.3, mean neutrophil 59.2±11.5, mean lymphocyte 29.1±9.6 and the mean ESR was 72.4±34.7 mm in 1st hour.

Table I: Socio-demographic status of participants (N=25)

Particulars	n	%
Age (Year)		
≤30	13	52.00
31-40	5	20.00
41-50	5	20.00
>50	2	8.00
Mean±SD	32.1±12.0	
Range (min, max)	17, 60	
Gender		
Male	12	48
Female	13	52
Educational level		
Primary	9	36
SSC	8	32
HSC	6	24
Graduate	2	8
Occupational status		
House wife	6	24
Service holder	6	24
Businessman	3	12
Student	7	28
Others	3	12
(Monthly income)		
<5,000 Tk	1	4
5,000-10,000 Tk	6	24
10,000-25,000 Tk	9	36
25,000-50,000 Tk	6	24
>50,000 Tk	3	12

Table II: Presentation of the study subjects (N=25)

Parameter	n	%
History		
Fever	17	68
Anorexia	15	60
Weight loss	12	48
Diagnosis		
Fever	19	76
Anaemia	6	24

Table III: Distribution of patients by relevant history (N=25)

Relevant history	n	%
BCG vaccination received	18	72
History of contact with TB cases	5	20
Family history of TB	9	36

Table IV: Distribution of study patients by BMI (N=25)

BMI (kg/m ²)	n	%
<18.5 (Low)	8	32
18.5-24.9 (Normal)	13	52
>25 (High)	4	16

Table V: Distribution of cases by examination of lymphnodes (N= 25)

Components	n	%
Site		
Neck gland	20	80
Unilateral	15	75
Bilateral	5	25
Axillary	3	12
Others	2	8
Number of LN		
Single	6	24
Multiple	19	76
Size (cm)		
Length	3.4±0.8 (2-5)	
Wide	2.8±0.6 (2-5)	
Tenderness	3	12
Consistency		
Soft	1	4
Firm	23	92
Hard	1	4
Surface		
Irregular	10	40
Smooth	15	60
Type		
Mobile	19	76
Fixed	6	24
Nature		
Matted	18	72
Discrete	7	28

Table VI: Investigation profiles of study subjects (N=25)

Haematological parameters	Mean±SD
Total count of WBC (per cu-ml)	10061.9±3634.3
Neutrophil (%)	59.2±11.5
Lymphocyte (%)	29.1±9.6
Level of Hb (g/dl)	11.1±2.1
ESR (mm at the end of 1 st hour)	72.4±34.7

V. Discussion

The aim of this study was to assess the socio-demographic status and features of patients with tuberculous lymphadenitis. Overall, one-third of the world’s population is currently infected with the TB bacillus¹³. In our study, among total 25 participants the highest number of patients were found from ≤30 years’ age group which was 52% and the lowest number patients were from >50 years’ age group which was 8%. The mean (Mean±SD) age of the participants was 32.1±12.0 years. Studies performed found majority of cases in adolescents and young females reflecting similar features¹⁴. In current study, it was found that, the highest portion of the participants was female and it was 52%. On the other hand male were 48%. In another study the ratio was also similar such as Dandapat et al.¹⁵ In our study, regarding general examination of the study patients, it was found that, more than three fourth (76.0%) patients had documented fever and more than two third (68.0%) patients had anaemia. Dandapat et al.¹⁵ observed fever in 40.0% cases while in another study it has been found that fever is present in 73.0% cases which is similar to the present study. Although we did not studied the duration of the symptoms but Jha et al. [8] found mean duration of symptoms during presentation was 3 months. Probably patients of this country present to the physician at later stage of disease due to ignorance or other social stigma. Tuberculous lymphadenitis usually presents as a slowly progressive, painless swelling of a single group of lymph nodes. The duration of symptoms at the time of presentation is typically 1 - 2 months, varying from 3 weeks to 8 months. In a series of patients, the mean duration of symptoms was significantly longer in men than in women¹⁶. In our study we found history contact with TB patients in 36% participants. Our observation of history of contact with TB patients is similar to the findings observed by Madhi F et al¹⁷ in a Paris suburb, where they observed 22% patients with history of TB contact. Similarly Sharada MP¹⁸ et al observed

23% patients with TB contact. However in a hospital based study at Kyriakou Children's Hospital at Athens by H C Maltezou et al¹⁹, 47% of the patients gave history of contact which is not similar with our findings. In a study by Uysal G et al²⁰ in children with extra pulmonary tuberculosis in Ankara Social Security Children's Hospital Turkey between June 1995 and May 2003, a positive family history of active TB was reported in 39% of the cases.

Limitations of the study

This was a single centered study with a small sized of sample. So the findings of this may not reflect the exact scenario of the whole country.

Conclusion and recommendations

For getting more specific findings we would like to recommend for conducting more studies regarding the same issue with larger sized sample.

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