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Clinico-Demographic Characteristics of Cervical Tuberculous Lymphadenitis in a Tertiary Care Hospital, Dhaka, Bangladesh

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ABSTRACT:

Background: *Among many extra pulmonary manifestations of Tuberculosis (TB), Tuberculous lymphadenitis (TBLA) always being the commonest not only in Bangladesh but also in many parts of the world.*

Objective: *The aim of the study is to find out the clinical-demographic characteristics of cervical tuberculous lymphadenitis among the study group.*

Methods: *This is a hospital based cross sectional observational study done at Bangladesh Medical College Hospital, Dhanmondi, Dhaka with the study period of 3 years from January 2019 to December 2021. Total 150 patients with the age group 18 years and above with confirmed diagnosis of cervical tuberculous lymphadenitis by fine needle aspiration cytology (FNAC) reports were enrolled in this study to evaluate their clinical-demographic characteristics.*

Results: *Majority (82%) of our study population were younger females in the age group of 18-30 years (80.67%). 64.67% belonged from urban area with middle class background(55%). (92.67%) had received BCG vaccination with positive family history of TB only (22%) patients. Commonest presentation among TBLA patients were fever (82%) and fatigue (77%) although(29%)patients were asymptomatic. 116 patients out of 150 were within the normal BMI range which indicates poor nutritional status was not an predisposing factor in our study. Most (74%) patients presented with multiple lymph nodes mainly unilateral (78%), firm (90.67%), matted (90%), 3-6 cm (56%) in diameter, smooth surface (58%) and on right side predominant. Most commonly involved lymph node group was level V (48.67%) followed by level IV (34.67%). On routine laboratory investigations majority patients had raised ESR and only 2% patients also had pulmonary TB on chest x ray.*

Conclusion: *In this study we found that younger age group of females are mostly affected by the cervical tuberculous lymphadenitis.If we can create awareness regarding the common manifestations of cervical TBLA among people as well as health professionals then it will create a great impact in the prevention of tuberculosis in the long run.*

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Keywords: *Tuberculous lymphadenitis, Tuberculosis, Clinico-demographic.*

I. INTRODUCTION

Among various extra pulmonary manifestations of TB, Tuberculous lymphadenitis is one of the commonest presentation all over the world [1]. TBLA is characterised by specific, chronic granulomatous inflammation of the lymph nodes associated with caseation necrosis, mainly caused by *Mycobacterium tuberculosis* but can be also caused by other non tuberculous mycobacteria (NTM). TB is mainly prevalent among densely populated countries and Bangladesh has become the 6th highest TB burden country in the world [2]. According to the statistics in 2020, an estimated 10 million people diagnosed with TB worldwide among them 5.6 million were male, 3.3 million were female and 1.1 were children patients. A total 1.5 million people died from TB in 2020. Worldwide TB has become the 13th leading cause of death and 2nd leading infectious killer after COVID-19 [3]. TBLA is often located in the cervical group of lymph nodes. There are various differential diagnosis of TBLA that can mimic the exact presentation of it like Sarcoidosis, NTM TB, Lymphoma, Metastatic Malignancy and sometimes non specific hyperplasia. It sometimes put the clinician to the diagnostic dilemma mainly in the regions in where TB is not that much prevalent [4]. The clinical presentation of TBLA is non-specific such as fever (low grade), malaise, fatigue, night sweats and weight loss. These manifestations can be very subtle or even absent so it remains indistinguishable from other differentials. The socio-demographic features also varied country wise. Histopathological examination or Fine needle aspiration cytology (FNAC) is needed to confirm the diagnosis of TBLA. With the help of these we can reach the diagnosis at an early stage and start the treatment accordingly though to reach the final confirmation we need culture but it takes longer time. The histopathology of TBLA characteristically manifest formation of granuloma by epithelioid histiocytes, Giant cells with or without caseous necrosis. Despite of its usefulness in TB prevalent countries like us FNAC of the cervical lymph node is still main investigation to diagnose as it is minimally invasive, less time consuming and require minimal resource [5,6]. The healthcare professionals need to face many challenges regarding the management of TBLA due to its slow or paradoxical clinical responses such as enlargement of the previous lymph nodes, new appearance of lymph nodes during ongoing treatment, fluctuations, sinus tract formation and remaining residual lymph nodes after treatment completion. The standard treatment duration for TBLA is 6 months but it can be extended up to 9 months in certain circumstances [7-9].

In this study we tried to put emphasis on the Clinico-demographic characteristics of the cervical tuberculous lymphadenitis so that early diagnosis can be done along with effective preventive strategies can be implemented for the near future.

II. MATERIALS & METHODS

A. Study Design & Area:

This is a population based cross sectional observational study carried out in both outdoor and indoor Medicine department of Bangladesh Medical College Hospital (BMCH), Dhanmondi, Dhaka, Bangladesh.

B. Study Period:

The study period was 3 years from January 2019 to December 2021.

C. Study Population:

Total 150 patients with confirmed Tuberculous lymphadenitis were included in this study as the study population after fulfilling the inclusion and exclusion criteria.

D. Inclusion Criteria:

- Newly diagnosed Tuberculous lymphadenitis by FNAC

- Age 18 years and above
- Informed written consent

E. Exclusion Criteria:

- Disseminated tuberculosis
- Patients having anti-TB medications
- Pregnant women
- COVID-19 positive patients
- Patients with comorbidities like chronic liver disease, renal failure, malignancy, nephrotic syndrome or myocardial infarction
- Patients unwilling to participate in the study
- Alterations in higher psychic function in critically ill patients

F. Sampling Techniques:

Consecutive convenient (purposive) sampling method was applied in here.

G. Diagnostic Tools:

All the study subjects underwent thorough medical history, general clinical examination before enrolment. Patients provided the informed consent before they participated in the study. Once informed consent was obtained, all participants were asked to complete a questionnaire to collect basic demographics such as age, gender, area of residence, socio-economic status, relevant history, BMI and clinical characteristics of patients and lymph nodes. All the study participants visited to BMCH with features like cervical lymphadenopathy along with low grade fever, night sweats, weight loss fulling the inclusion and exclusion criteria underwent further investigations to reach the appropriate diagnosis. FNAC of the cervical lymph nodes was performed in all patients. Routine investigations were done including Complete blood count with ESR, Chest X ray, SGPT and Serum creatinine.

Characteristics of Lymph nodes:

The American Academy of Otolaryngology Head and Neck Surgery has adopted a system to describe the lymph nodes in the cervical region. It was applied in our study as well:

- Level I: Sub-mental and Sub-mandibular lymph nodes
- Level II: Cervical jugular chain nodes above the level of hyoid
- Level III: Cervical jugular chain nodes from the level of hyoid to the level of Cricoid
- Level IV: Cervical jugular chain nodes from the level of Cricoid to the supra-sternal notch
- Level V: Posterior triangle lymph nodes
- Level VI: Central compartment nodes [10].

FNAC:

FNAC was performed by using a 22G needle attached to a 10-cc syringe. Macroscopic evaluation was done to the aspirate materials to look for caseation. 2 smears were prepared from each aspirate and air dried on site. Among these 2 slides one slide was stained with Ziehl-Neelson method and examined for the presence of Acid-fast bacilli (AFB) by an experienced laboratory technician. The second smear was stained with Wright stain and cytological analysis was done by the study Pathologists at Bangladesh Medical College Hospital. Diagnosis of TBLA was done due to presence of epithelioid cell granuloma, Langerhan's giant cells with or without caseous necrosis [11-13].

H. Data Analysis:

Data was recorded into semi-structured pre-tested pro forma. It was applied into Microsoft Excel and analysed using SPSS v 16.0. Summarisation of data was done according to data types and appropriate statistical tests were done. Descriptive statistics include means, standard deviation and percentages. Here, various modes of clinical presentation and demographic profiles were expressed as the total number of patients presenting with a particular presenting feature and then calculated as a percentage of the total number of patients. Statistical analysis was done by using appropriate statistical tool like 'chi-square' test, student 't' test, where applicable. The odds ratio (OR) and 95% confidence intervals (CIs) were calculated. A p value of <0.05 was considered to be statistically significant and p value of >0.05 was considered not significant statistically.

I. Ethical Clearance and Informed Consent:

The study was carried out after obtaining approval from the institutional Ethical Committee. The participants were briefed about the purpose of the study and informed consent was obtained prior to the data collection.

III. RESULTS

A. Gender and Age wise distribution of study population:

A total number of 150 tuberculous lymphadenitis patients were recruited in this study. Among these majority (82%) were females in the age group between 18-30 years (80.67%). Prevalence of tuberculous lymphadenitis is very low among elderly patients in our study (0.67%).
(Figure 1& Table 1)

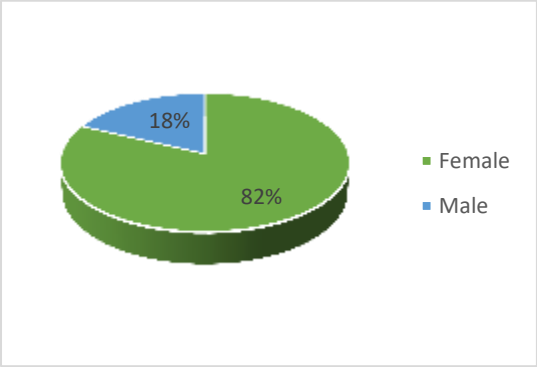

Figure 1: Gender wise distribution of study population

Age	No. Of patients (n=150)	Percentage (%)
18-30	**121**	**80.67**
31-40	13	8.67
41-50	12	8
51-60	3	2
>60	1	0.67
Total	**150**	**100**

Table 1: Age wise distribution of study group

B. Residence of the Study Group:

In this study majority (64.67%) of the younger females belonged from the urban locality and only 14.67% from the rural side. It was not found to be statistically significant as the p value 0.389.
(Figure 2).

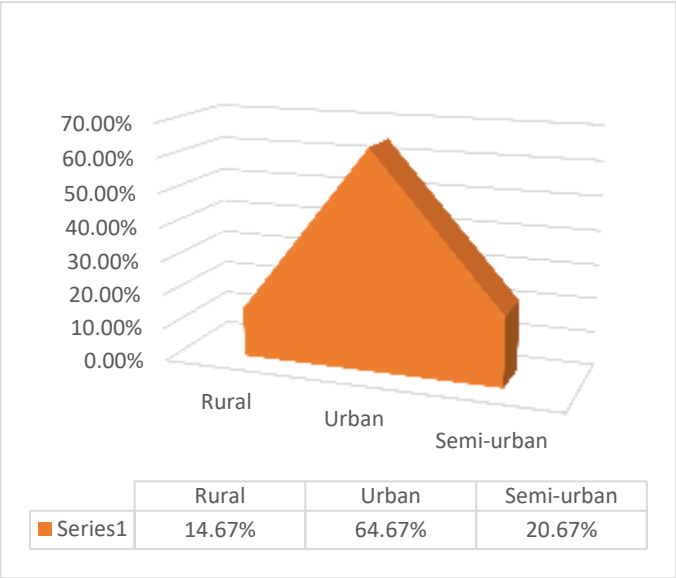

Figure 2: Residence of study group

C. Socio-economical status of TBLA Patients:

55.33% of TBLA patients are from middle class group which is not found statistically significant in our study with p value 0.332 (Figure 3).

Figure 3: Socio-economical status of TBLA patients

D. Distribution of patients by relevant history:

Majority (92.67%) of our patients have received BCG vaccination during their childhood according to our National EPI schedule.(Figure 4)

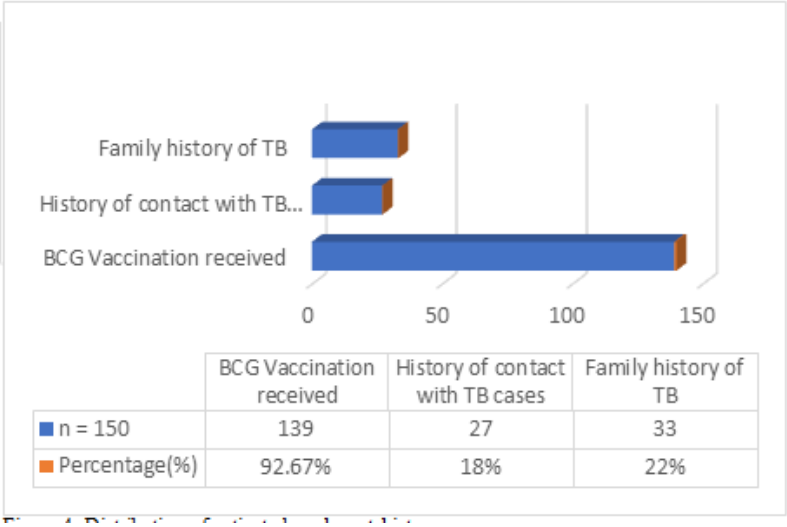

Figure 4: Distribution of patients by relevant history

E. Clinical Presentation of TBLA patients:

The commonest presentation among the study group were fever (82%) and fatigue (77%). Other presentations varied among person to person. Some of the patients were asymptomatic (29%) and presented to us only cervical lymphadenopathy.(Figure 5)

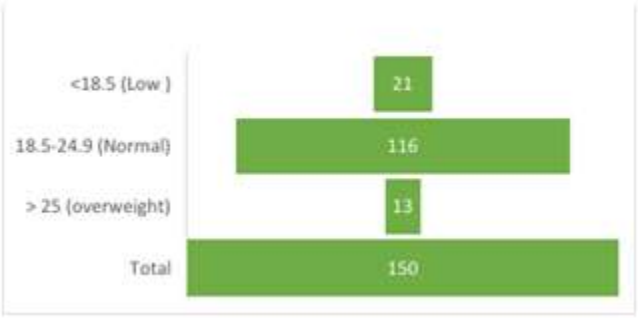

Figure 5: Clinical presentation among TBLA patients

F. Distribution Of the study group by BMI:

116 patients out of 150 were found within the normal range of BMI. Only 13 TBLA patients were overweight in this study.(Figure 6)
among study group

G. Clinical Characteristics of involved Lymph nodes:

Components	N = 150	Percentage (%)
Number of lymph nodes		
Single	39	26
Multiple	111	74
Site of Involvement		
Unilateral	117	78
Right side	87	
Left side	30	
Bilateral	33	22
Size of involved lymph nodes		
< 3 cm	19	12.67
3-6 cm	84	56
> 6 cm	47	31.33
Consistency		
Soft	9	6
Firm	136	90.67
Hard	5	3.33
Surface		
Irregular	63	42
Smooth	87	58
Type		
Mobile	131	87.33
Fixed	19	12.67

Nature		
Matted	135	90
Discrete	15	10
Level of involvement		
Level I	2	1.33
Level II	10	6.67
Level III	13	8.67
Level IV	52	34.67
Level V	73	48.67

Table 2: Clinical characteristics of involved lymph nodes

H. Investigations profile of the study population:

Haematological parameters	Mean +\- SD
Total count of WBC(per cu-ml)	11006+\- 2575.3
Neutrophils (%)	58.8 +\- 10.8
Lymphocytes (%)	27.7 +\- 8.4
Level of Hb (g/dl)	11.8 +\- 2.9
ESR (mm at the end of 1st hour)	77.3 +\- 28.7
SGPT (U/L)	22+\-7.5
Creatinine (mmol\L)	0.9+\-0.76
Chest X Ray	
Negative for TB	147(98%)
Positive for TB	3(2%)

Table 3: Investigations profile of the study group

IV. DISCUSSION

In every second people from all over the world are getting infected with TB bacilli. Currently, one-third of the world's population is infected with various forms of TB [14]. Due to certain difficulties in diagnosis and monitoring treatment response extra pulmonary TB is becoming significant health problem day by day. The proportion of extra pulmonary TB varies country to country. TB is more prevalent in low income countries like Bangladesh, India and Pakistan in comparison with the high income countries [15].

In this current study the diagnosis of TBLA was established when FNA smear microscopy for AFB and/or cytology reported positive. Though cytology usually represent low number of cells that are all in dispersion rather than organised tissue as in biopsy materials. Nevertheless, cytology becomes specific when compared against some criteria [16].

Patients with TBLA presented to Bangladesh Medical College were mainly young and previously healthy with the affection of cervical lymph nodes. Various systemic symptoms were present but mild in nature.

In current study, it was found that, the highest portion of the participants were female (82%) in comparison with males (18%). Similar findings have also been observed in other studies as well [17].

Here we have observed that 80.67% study population belonged from the age group 18-30 years followed by only 0.67% from 60 years and above. Another study found the similar findings, they collected TBLA patients ranged from 9 months to 62 years with a mean age of 23.7 years and their commonest age group was 11-20 years (41.07%) [18].

64.67% of our study population came from the urban area with 55% of middle class background which showed the different picture from the other studies done in Bangladesh, India and Pakistani where they got their patients from rural area which were 66,2%, 62.5% and 70% respectively and also from low socioeconomic backgrounds [18-20].

Patients present with various systemic manifestations in our study but most of the clinical features were mild. 82% patients presented with low grade fever followed by 77% had fatigue, although 29% patients were completely asymptomatic but presented only with cervical lymphadenopathy. Similar findings were found to another study of Bangladesh [20] although opposite findings were observed from the two similar regional studies from India and Pakistan where systemic symptoms were only 18% and 8% respectively [18,19]. 73% presentation with fever was found with another study which has got similarities with ours as well [21].

This study was carried on superficial lymph node, 48.67% was from level V category. Other studies done worldwide also found higher rates of cervical lymph nodes involvement in TB [22,23].

Raised ESR was common finding in the routine laboratory investigations of our study whereas 92.86% TBLA patients have raised ESR in the study of Jha et al. [18].

Though Bangladesh is a densely populated country but in our present study only 18% patients had contact history with TB patients. It has got some similarities with the observation done by Mohiuddin F et al and Sharada MO et al where they had 22% and 23% contact history among their study group respectively [24,25]. However, different picture has mentioned by Mazta S.R. et al. where 47% of patients gave contact history of TB [26].

It is important that all patients with TBLA are screened for pulmonary symptoms as well as examined with chest x ray specially in those countries where TB prevalence is very high like Bangladesh. Here we found 2% TBLA patients also came positive for pulmonary TB here which was also observed in various studies with different percentages.

V. CONCLUSION

Although TBLA is one of the commonest extra pulmonary TB manifestations in our country but the diagnosis is often substantially delayed due to milder form of systemic features. Screening for TBLA particularly those who has positive family history of TB should be recommended. Through our study we want to create awareness about the common manifestations of TBLA among general populations as well as healthcare professionals in world wide.

VI. LIMITATIONS

As the current study has carried out in a tertiary care teaching hospital in the urban area with a small sample size, hence the results may not be the complete reflection of TBLA cases in the whole community. Microbiological analysis through culture sensitivity need to be done in all cases of TBLA for confirmed diagnosis and treatment though it is time consuming and expensive. More researches need to be accomplished to bring a definitive conclusion in this communicable disease. Moreover, only some specific variables of interest have taken for observation in our study.

VII. ACKNOWLEDGMENT

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VIII. REFERENCES

1. Mohapatra PR, Janmeja AKet al. Tuberculous lymphadenitis. J Assoc Physicians India 2009;57:585-90.
2. Global TB Report, 2016, https://apps.who.int/medicinedocs/en/m/abstract/Js23098en/.

3. Global Tuberculosis Report. World Health Organization (WHO); 2020. Available at: https://www.who.int/newsroom/factsheets/detail/tuberculosis#
4. T.M. Habermann, D.P.Steensma et al. Lymphadenopathy England: Mayo Clin Proc, 75 (2000), pp. 723-732.
5. Maned MM, Bukhari MH. Evaluation for granulomatous inflammation on fine needle aspiration cytology using special stains. Pathology Res Int 2011;2011:851524
6. Bezabih M, Mariam DW, Selassie SG. Fine needle aspiration cytology of suspected tuberculous lymphadenitis. Cytopathology 2002;13:284-290.
7. Cook VJ, Manfreda J, Hershfield ES. Tuberculous Lymphadenitis in Manitoba:Incidence, clinical characteristics and treatment. Can Resp J 2004;11:279-86.
8. Gupta PR. Difficulties in managing lymph node tuberculosis.Lung India 2004;21:50.
9. Nahid P, Dorman SE, Alipanah N et al. Official American Thoracic Society/Centres for Disease Control and Prevention/Infectious Diseases Society of America Clinical Practice Guidelines: Treatment of Drug-Susceptible Tuberculosis. Clinic Infect Dis 2016;63:853-867.
10. Jennings CR. Surgical anatomy of the neck, Scott-Brown's Otohrhinolaryngology Head and Neck Surgery (seventh edition), Gleeson M et al (eds),Hodder Arnold, USA. 2008; pp 1748.
11. Ashfaq M, Ahmad N, Ullah I, Iqbal MJ. Cervical lymphadenopathy: diagnostic approach. J Postgrad Med Inst. 2006;20(4):374-378.
12. Khan R, Harris SH, Verma AK, Syed A. Cervical lymphadenopathy: scrofula revisited. J Laryngol Otol. 2009;123:764-767.
13. Tanwir F, Amed I, Hasmi S, Ahmed S. Tuberculosis and Cervical Lymphadenopathy-A study of 175 cases in a Tertiary Care Hospital. Oral Hyg Health. 2013;1:119.
14. Raviglione, M.C., Narain, J.P. and Kochi, A. (1992) HIV-Associated Tuberculosis in De- veloping Countries: Clinical Features, Diagnosis, and Treatment. Bulletin of the World Health Organization, 70, 515.
15. Ashfaq M, Ahmad N, Ullah I, Iqbal MJ. Cervical lymphadenopathy: diagnostic approach. J Postgrad Med Inst. 2006;20(4):374-378.
16. Iwnetu R, van den Hombergh J, Woldeamanuel Y, Asfaw M, Gebrekirstos C, Negussie Y, Bekele T, Ashenafi S, Seyoum B, Melaku K, et al: Is tuberculous lymphadenitis over-diagnosed in Ethiopia? Comparative performance of diagnostic tests for mycobacterial lymphadenitis in a high-burden country. Scand J Infect Dis 2009, 41:462–468.
17. Dandapat, M.C., Mishra, B.M., Dash, S.P. and Kar, P.K. (1990) Peripheral Lymph Node Tuberculosis: A Review of 80 Cases. British Journal of Surgery, 77, 911-912.
18. Jha BC, Dass A, Nagarkar NM, Gupta R, Singhal S. Cervical tuberculous lymadenopathy: Changing clinical pattern and concepts in management. Postgrad Med J. 2001;77:185-187.
19. Magsi PB, Jamro B, Shaikh AA, Sangi HA. An audit of 140 cases of cervical lymphadenopathy at tertiary care hospital. Golam J Med Sci. 2013;11(1):47-49.
20. Karim MM, Chowdhury SA, Hussain MM, Faiz MA. A Clinical Study on Extrapulmonary Tuberculosis. J Bangladesh Coll Phys Surg. 2006;24(1):19-28.
21. Pahwa, R., Hedau, S., Jain, S., Jain, N., Arora, V.M., Kumar, N. and Das, B.C. (2005) As- sessment of Possible Tuberculous Lymphadenopathy by PCR Compared to Non-Molecular Methods. Journal of Medical Microbiology, 54, 873-878.
22. Fontanilla, J.M., Barnes, A. and Von Reyn, C.F. (2011) Current Diagnosis and Management of Peripheral Tuberculous Lymphadenitis. Clinical Infectious Diseases, 53, 555-562.
23. Ahmed, H.G., Nassar, A.S. and Ginawi, I. (2011) Screening for Tuberculosis and Its Histo- logical Pattern in Patients with Enlarged Lymph Node. Pathology Research International, 2011, Article ID: 417635.
24. Madhi F , Fuhrman C, Monnet I, Atassi K, Poirier C, Housset B et al. Transmission of TB from adults to children in a paris suburb, PaediatrPulmonol 2002 september; 34(3): 159- 63.
25. Sharada MP et al. Profile of paediatric tuberculosis patients in Bangalore MahanagarPalike area. NTI Bulletin, 2009, Vol 45/1-4.
26. Mazta S.R.et al, Demographic profile of childhood TB cases under Revised National Tuberculosis Control Program in Himachal NTI bulletin Jan-Dec 2012 Vol 48 (1 & 4).