

Original Article

## Unveiling The Enigma: Tuberculous Lymphadenopathy - A Global Health Challenge.

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### ABSTRACT

Tuberculous Lymphadenopathy (TBL) poses a significant challenge in global health, necessitating a comprehensive understanding of its manifestations and impact. This study, conducted at a tertiary care teaching hospital in Delhi, India, aimed to elucidate the clinical characteristics and epidemiological features of TBL. A total of 102 cases were analyzed, revealing a higher prevalence among females (60.78%) compared to males (39.21%). The mean age of patients was 29.47 years, with the majority falling within the 21–30 age group. Swelling (100%) and fever (27.4%) were the most commonly reported symptoms. Cervical lymph nodes were predominantly involved (88.23%), with upper jugular lymph nodes being most commonly affected. Notably, Mycobacterium tuberculosis was detected in 50.90% of aspirated samples. These findings underscore the complexity of TBL diagnosis and emphasize the need for tailored management strategies in combating tuberculosis globally. Comparisons with previous studies highlight variations in demographics and clinical presentations, shedding light on the multifaceted nature of this disease.

**Keywords:** Tubercular, Lymphadenopathy, Tuberculosis

### INTRODUCTION:

Tuberculous Lymphadenopathy (TBL) stands as a formidable challenge in the realm of global health, with its intricate manifestations posing a persistent threat to populations worldwide. As we navigate the complexities of this disease, it is imperative to recognize its profound impact on individuals, communities, and healthcare systems. According to the World Health Organization (WHO)<sup>1</sup>, tuberculosis (TB) remains a major global health concern, with an estimated 10 million new cases reported in 2020 alone. Among these cases, a substantial proportion comprises Tuberculous Lymphadenopathy, underscoring the need for a deeper understanding of this particular manifestation.

To comprehend the gravity of TBL, it is essential to delve into its historical context. Tuberculosis, caused by *Mycobacterium tuberculosis*, has been a formidable adversary throughout human history. Records of tuberculous infections date back to ancient times, with evidence suggesting its presence in ancient Egypt and Greece<sup>2</sup>. However, it wasn't until the 19th century that scientific advancements allowed for a more comprehensive understanding of the disease. The advent of microbiology, pioneered by luminaries such as Robert Koch, paved the way for identifying the causative agent and developing diagnostic tools.

Despite these strides, Tuberculous Lymphadenopathy remains a challenging facet of tuberculosis, characterized by the involvement of lymph nodes and often leading to diagnostic complexities. The interplay between the bacterium and the host's immune response adds layers of intricacy to the disease, necessitating a nuanced approach in both diagnosis and management. As we stand at the intersection of medical history and contemporary healthcare, a critical examination of Tuberculous Lymphadenopathy is not only an academic pursuit but a crucial step towards refining global strategies in the fight against tuberculosis.

In this article, we embark on a journey to unravel the intricacies of Tuberculous Lymphadenopathy, drawing insights from historical perspectives and contemporary statistics provided by the WHO. By illuminating the challenges posed by TBL, we aim to contribute to the collective knowledge that informs public health policies and shapes the way forward in the quest to eradicate tuberculosis from our communities.

## **MATERIALS AND METHODS**

This study was conducted at the Department of Respiratory Medicine, Hamdard Institute of Medical Sciences, Delhi, India. It is a tertiary care teaching hospital. It was a prospective and descriptive study conducted during the time span of 1 year from Oct 2022 to Oct 2023. Ethical clearance was taken from the Ethical Committee of the College. All the patients of age more than 12 years who were referred or diagnosed at our Department of Respiratory Medicine with tuberculous peripheral lymphadenitis were included in the study. Consent from the patients was taken before inclusion in the study. History was taken in full detail regarding the particulars of the patient and complaints including cough, chest pain, weight loss, fever, hemoptysis, and anorexia, history of contact with TB, and past history of tuberculosis were also noted. Local examination was done to assess size, number, the site of lymph nodes were noted. Any local abscess, discharging sinus, fistulous tract was also noted on local examination. Cervical lymph nodes were classified using American Academy of Otolaryngology-Head and Neck Surgery classification criteria<sup>11</sup>. USG neck was done to confirm the local examination findings and to assess any deep-seated abscess or fistulous tract. CBNAAT of Pus Aspirate was also done to determine MDR-TB cases. All patients were also subjected to FNAC<sup>3</sup>. FNAC was done by 10 cc disposable syringes with a 22-gauge needle. Alcohol-fixed slides were used for H and E and Papanicolaou stain, while the air-fixed slides were used for Ziehl-Neelsen (ZN) stain. In case of two or more than two-site involvement, FNAC was done from one site only. The cytology smears revealing features of tuberculous lymphadenitis were grouped into three factors: Epithelioid granulomas, multinucleate giant cells, caseous necrosis. HIV testing was performed in all the cases. All the diagnosed cases of TB were undergone treatment under NTEP<sup>4</sup> (National tuberculosis elimination program). Aspirated Pus was also subjected to CBNAAT (Cartridge based nucleic acid amplification test), and data was recorded.

## **EXCLUSION CRITERIA**

1. Age < 12 Years
2. No other causes of lymphadenopathy other than Tubercular Lymphadenopathy
3. No concurrent pulmonary tuberculosis, as seen on chest X-ray.

### Statistical analysis

Patient's data were entered in Microsoft Access 2007. The data were analyzed by exporting into Microsoft Excel 2007. Descriptive analysis of demographic data, clinical parameters was carried out. Quantitative variables were summarized by mean and standard deviation.

### IMAGES



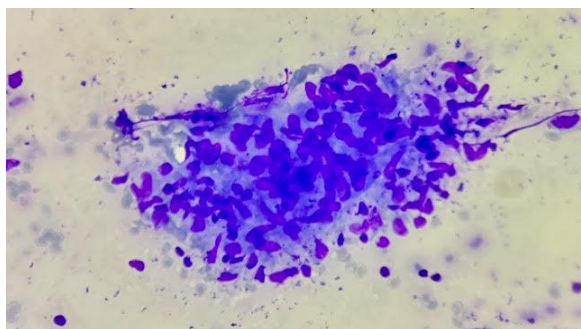
**Image 1 :** Axillary Lymphadenopathy showing fistulous tract



**Image 2 :** Axillary lymphadenopathy (Note : swollen reddish pink lymph nodes)



**Image 3 :** Cervical lymphadenopathy



**Image 4:** Cytological Smear showing giant cell with epithelioid cell granuloma and Langhans giant cells, without necrosis(Giemsma Stain ,40x10X)

## RESULTS

A total of 102 cases were assessed at the Department of Respiratory Medicine for tubercular lymphadenopathy. Among these cases, females (60.78%) were more affected compared to males (39.21%). The ratio of males

Age	Male (40)	Female (62)	Total (102)
12-20 years	14	14	28
21-30 years	16	26	42
31-40 years	4	18	22
41-50 years	2	2	4
>51 years	2	1	1

to females in peripheral lymphadenopathy was observed to be 1:1.55. The mean age of the patients was 29.47 years. The majority of patients belonged to the age group of 21–30 years, irrespective of gender.

The most commonly reported symptom by patients was swelling (100%), followed by fever (27.4%). Approximately 31.37% of patients had a past history of tuberculosis. The cervical group of lymph nodes was the most frequently involved (88.23%), followed by the axillary group (22.54%). Among the cervical lymph nodes, the upper jugular lymph nodes (23.5%) were most commonly affected. Bilateral lymph node involvement was observed in 23.5% of patients.

On local examination, the most common findings were a palpable mass (72.54%) followed by fluctuant swelling (19.6%). Mycobacterium tuberculosis (MTB) was detected in 50.90% of aspirated PUS samples tested using the cartridge-based nucleic acid amplification test (CBNAAT). The most common finding on cytology was epithelioid granuloma (66.66%) & caseous necrosis (66.66%) followed by multinucleate giant cells (33.33%). The overall AFB positivity was seen in 55.7% cases.

These findings highlight the clinical characteristics and epidemiological features of tubercular lymphadenopathy in our patient population.

PARTICULARS	MALE	FEMALE	TOTAL
<b>SYMPTOMS</b>			
COUGH	NIL	2	2/102
SWELLING	40/40	62/62	102/102 (100%)
FEVER	16/40	16/62	28/102 (27.4%)
WIGHT LOSS	12/40	4/62	16/102 (15.6%)
<b>PAST HISTORY</b>			
TUBERCULOSIS	12/40	20/62	32/102 (31.37%)
BCG VACCINATION			102/102
<b>LOCAL EXAMINATION</b>			
<b>CONDITION</b>			

PALPABLE SWELLING	32/40	42/62	74/102 (72.54%)
FLUCTUANT SWELLING	7/40	13/62	20/102 (19.6%)
DISCHARGING SINUS	5/40	3/62	8/102 (7.8%)
<b>SIDES</b>			
UNILATERAL	34	44	78/102 (76.47)
BILATERAL	6	18	24/102 (23.5)
<b>NUMBER</b>			
SINGLE	32	44	76/102 (74.5%)
MULTIPLE	12	14	26/102 (25.4%)
<b>SITES</b>			
<b>CERVICAL</b>	35	55	90 (88.23%)
MID JUGULAR	6	11	17
UPPER JUGULAR	10	14	24
LOWER JUGULAR	3	9	12
LATERAL SUPRACLAVICULAR	3	6	9
MEDIAL SUPRACLAVICULAR	4	3	7
SUBMADIBULAR	3	2	5
SUBMENTAL	4	4	8
UPPER POST TRIANGLE	2	4	6
LOWER POST TRIANGLE	0	2	2
<b>AXILLARY</b>	10	13	23 (22.54%)
<b>INGUINAL</b>	5	7	12 (11.76%)
<b>PUS FOR CBNAAT</b>			
MTB DETECTED	18	34	52/102 (50.90)
MTB LOAD	Low-6, Med-10, High-2	Low-20, Med-12, High-2	Low-26, Med-22, High-4
RIFAMPICIN RESISTANCE	05	02	7/102(6.8%)
<b>CYTOLOGY</b>			
EPITHELOID GRANULOMA	20	48	68 (66.66%)
MULTINUCLEATE GIANT CELLS	24	10	34(33.33%)
CASEOUS NECROSIS	24	44	68(66.66%)
SMEAR FOR AFB	24	25	49(48.03%)
<b>HIV</b>	NR	NR	NR

## DISCUSSION

Our study shows some similarities to previous works in relation to presenting features but also important differences. Thus, an awareness of the range of presentations is essential if the diagnosis is to be considered and for the appropriate tests to be requested<sup>5</sup>. The male to female ratio for peripheral lymphadenopathy in our study was found to be 1:1.55. Singh et al<sup>6</sup> in their study had found 1:14. A similar Male: female ratio of 1:1.2 was noted by Purohit et al<sup>7</sup> in the Indian population. In contrast to the above, male predominance was noted by Bezabih et al<sup>8</sup>, where they found the male to female ratio to be 1.3:1.

In our study, most of the patients were between the ages of 12 to 40 years, with the peak age from 20 to 30 years. A similar peak age of patients was also found in the study by Singh et al. In our study, we found 31.37% of patients had a past history of TB. This is in contrast to the findings of

Singh et al<sup>6</sup>, which found 9.8% of patients having a past history of tuberculosis. Our findings were consistent with Nidhi et al<sup>3</sup>, which found 27.3% having a past history of tuberculosis.

In our study, we found the most common lymph nodes involved to be the cervical lymph nodal group. Other studies also found similar results. In other studies like that of Singh et al<sup>6</sup>, supraclavicular lymph nodes (29.4%) were among the cervical lymph nodes, the most common lymph nodal groups. But in our study, we found the upper jugular lymph nodal (26.66%) group to be most commonly involved. Single lymph node was found in 74.5% of patients. In contrast, Singh et al<sup>6</sup> found single lymph nodes in 59.3% of patients, whereas Agarwal et al<sup>9</sup> found single lymph nodal enlargement in 48.6% of patients. The most common histopathological findings were epithelioid granuloma with caseous necrosis (66.66%) followed by multinucleate giant cells (33.33%). Singh et al<sup>6</sup> found epithelioid granuloma with caseous necrosis in 32.84% followed by epithelioid granuloma without caseous necrosis.

CBNAAT was positive for Mycobacterium tuberculosis in 50.90% in our study. It is in contrast to a study by Sachdeva et al<sup>10</sup>, which found CBNAAT to be positive in 77.7%. The overall AFB positivity was seen in 48.03% cases. A similar findings in a study by Masilamani et al<sup>12</sup> found AFB positivity rate to be around 55.80 %.

## CONCLUSION

In conclusion, this research sheds light on the intricate landscape of tubercular lymphadenopathy, revealing its gender predilection and diagnostic nuances. FNAC emerges as a pivotal diagnostic modality, especially in resource-constrained settings, facilitating timely interventions. These findings offer valuable insights into optimizing management strategies for this prevalent extrapulmonary tuberculosis manifestation, contributing to the global efforts in combating tuberculosis and enhancing patient outcomes.

## FINANCIAL SUPPORT AND SPONSORSHIP

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## CONFLICTS OF INTEREST

There are no conflicts of interest.

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