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Changes of Histopathological Features of Lymph Node Biopsy after Six Months Treatment of Tuberculous Lymphadenitis Patients

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Abstract

Background: Treatment of tubercular lymphadenitis is a crucial issue for the management of the disease. **Objective:** The purpose of the present study was to see the treatment outcome of tuberculous lymphadenitis patients. **Methodology:** This cross-sectional study was done at the Department of Pathology at Banghabandhu Sheikh Mujib Medical University (BSMMU), Dhaka from January 2009 to March 2011 for a period of nearly two (02) years. All the patients irrespective of age and sex with the clinical features of tuberculous lymphadenitis and later confirmed by histopathological examination were selected for the study purposively. Relevant information was recorded in a prescribed data sheet and histomorphological findings were recorded accordingly. In cases where fresh specimen was available, caseous portion of lymph node was sent for culture. Fite Faraco staining was also done on lymph node sections in all cases. **Results:** A total number of 50 tuberculous lymphadenitis patients were recruited for this study. Clinical improvement with treatment was noted in 49(98.0%) patients by the month of March 2011. In 46(92%) patients, lymph nodes became smaller. During treatment enlargement of existing lymph node in any of the patients or involvement of fresh node were not found. None of the patients developed abscesses or sinuses during treatment. At the end of six months' treatment, 4(8.0%) patients had static lymph node size. Four patients with well-defined granuloma had static lymph nodes after six months treatment. Out of 46 cases 30 patients were well-defined granuloma, 8 patients were ill defined granuloma and the rest 8 patients were in both types of granuloma. **Conclusion:** In conclusion majority of the tubercular lymphadenitis patients are presented with raised ESR with positivity of Mantoux test (MT) and well-defined granuloma. *[Journal of National Institute of Neurosciences Bangladesh, January 2025;11(1):47-51]*

Keywords: Tuberculous lymphadenitis; tuberculosis; lymph nodes; laboratory findings

Introduction

Lymph nodes are usually involved in the early stages of the pulmonary disease or as secondary TB by hematogenous spread[1]. However, tuberculous lymphadenitis may arise without a detectable preceding pulmonary involvement[2].

Tuberculous lymphadenitis affects mainly the cervical lymph node group and is an important cause of lymphadenopathy worldwide[3]. The physicians treat these cases with anti-tubercular chemotherapy. In cases which are reported as 'suggestive of tuberculosis', the physician needs additional features such as positive Mantoux test and clinical symptoms to start anti-tubercular chemotherapy. Therefore the clinical profiles are important for the treatment of tuberculous lymphadenitis. In this context the present study was undertaken to see the treatment outcome of tuberculous lymphadenitis patients.

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Methodology

Study Settings and Population: This cross-sectional study was done at the Department of Pathology at Banghabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from January 2009 to March 2011 for a period of nearly two years. All the patients irrespective of age and sex with the clinical features suggestive of tuberculous lymphadenitis and later on proved to be the same histologically were selected for the study purposively. The patients without having history of anti-tubercular drugs, malignancy and symptoms other than TB were excluded from this study.

Study Procedure: Data were collected using a semi-structured questionnaire designed to gather socio-demographic and other relevant information. The Mini International Neuropsychiatric Interview (M.I.N.I)12 version 7.0 was employed to diagnose psychiatric morbidities, while the Bangla version of the Mini-Mental State Examination (MMSE)13 was used to assess cognitive function. Each interview lasted approximately 25 to 30 minutes.

Statistical Analysis: Computer based statistical analysis was carried out with appropriate techniques and systems. All data were recorded systematically in preformed data collection form (questionnaire) and quantitative data were expressed as mean and standard deviation and qualitative data were expressed as frequency distribution and percentage. Statistical analysis was performed by using window based computer software devised with Statistical Packages for Social Sciences (SPSS-22.0) (SPSS Inc, Chicago, IL, USA). 95% confidence limit was taken. The summarized data was interpreted accordingly and was then presented in the form of tables figures.

Ethical Consideration: All procedures of the present study were carried out in accordance with the principles for human investigations (i.e., Helsinki Declaration 2013) and also with the ethical guidelines of the Institutional research ethics. Formal ethics approval was granted by the local ethics committee. Participants in the study were informed about the procedure and purpose of the study and confidentiality of information provided. All participants consented willingly to be a part of the study during the data collection periods. All data were collected anonymously and were analyzed using the coding system.

Results

A total number of 50 patients were recruited for this study. On follow up it has been found that 36(72.0%) patients completed the chemotherapy for tuberculosis for six months. However, 10(20.0%) patients had chemotherapy extended further up to nine months. Four (8.0%) was on treatment for two months. One patient needed anti-tubercular treatment for 12 months (Table 1).

Table 1: Status of Anti-Tubercular Treatment

Status of Treatment	Frequency	Percent
Chemotherapy for six months	36	72.0
Chemotherapy for nine months	10	20.0
Chemotherapy for less than six months (on treatment)	4	8.0

Clinical improvement with treatment was noted in 49(98.0%) patients by the month of March 2011. In 46(92%) patients, lymph nodes became smaller. Abscess initially present in one patient healed during the treatment. During treatment enlargement of existing lymph node in any of the patients or involvement of fresh node were not found. None of the patients developed abscesses or sinuses during treatment. At the end of six months' treatment, 4(8.0%) patients had static lymph node size (Table 2).

Table 2: Status of patients at the end of six months

Status of Patients	Frequency	Percent
Clinically improved	49	98.0
Static lymph node size	4	8.0
Smaller lymph node size	46	92.0

Four patients with well defined granuloma had static lymph nodes after six months treatment. However, the rest of the 46 patients had shown that the lymph nodes became smaller size. Out of 46 cases 30 patients were well-defined granuloma, 8 patients were ill defined granuloma and the rest 8 patients were in both types of granuloma (Table 3).

Table 3: Relation between Six Month Treatment Response and Type of Granuloma

Size of Lymph Node	Types of Granuloma			Total
	Well defined	Ill defined	Both	
Static	4	0	0	4
Smaller	30	8	8	46
Total	**34**	**8**	**8**	**50**

Discussion

Tubercular lymphadenitis (TBLN) remains the most common form of extrapulmonary tuberculosis, particularly in regions with high TB prevalence such as Bangladesh. The current descriptive study involving 50

cases aimed to correlate histopathological features with treatment outcomes following a standard six-month chemotherapy regimen. The findings contribute valuable insight into the clinical course and variability in response among patients with TBLN.

The World Health Organization (WHO) recommends a 6-month treatment regimen for extrapulmonary tuberculosis, including TBLN, consisting of an initial 2-month intensive phase with four first-line anti-tubercular drugs (isoniazid, rifampicin, pyrazinamide, and ethambutol), followed by a continuation phase of 4 months with isoniazid and rifampicin. In our study, 72% of patients (n=36) responded well to this regimen, with complete resolution of systemic symptoms (fever, weight loss, cough) and regression of lymphadenopathy, reaffirming the efficacy of the standard DOTS therapy in the majority of cases.

As the morphological features are variable this descriptive study was performed in 50 cases of tubercular lymphadenitis to find out histopathological features with treatment outcome. All patients were treated with 6 months chemo regimen comprising of four drugs like rifampicin, isoniazid, Ethambutol and pyrazinamide for initial two months followed by rifampicin and isoniazid for next four months. These drugs are taken daily. After six months of treatment every patient was assessed by treating physician. Chemotherapy was extended up to nine months in 10 (20%) cases. On clinical ground 1(2%) patient needed to extend six months more as the physician assessed the treatment was not responding. Thirty six patients (72%) completed six months treatment with disappearance of constitutional symptoms including fever, weight loss and cough along with disappearance of lymphadenopathy.

Other 10(20%) patients needed extra three months treatment to achieve complete remission. Out of these 6(60%) patients had ESR more than 50 mm in first hour, suggesting raised ESR may have relationship with treatment outcome. Only 1 patient did not respond to nine-month treatment and had static lymphadenopathy. This case needed twelve-month treatment. Remaining 4 patients (8%) are on treatment. They have improved symptomatically but still have lymphadenopathy.

However, 28% of the cases required prolonged treatment beyond the six-month period, highlighting the heterogeneity of treatment response in TBLN. Among these, 20% (n=10) needed an additional three months of therapy. This group notably had a higher proportion of patients (60%) with erythrocyte sedimentation rate (ESR) more than 50 mm in the first hour, indicating a potential association between elevated baseline inflammatory markers and delayed treatment response. This aligns with prior studies suggesting that high ESR at baseline may reflect a more aggressive disease or extensive lymph node involvement, warranting a longer duration of treatment for complete remission.

One patient required a total of 12 months of therapy due to static lymphadenopathy despite nine months of treatment. Such persistence of lymphadenopathy poses a diagnostic and management challenge. It is often difficult to distinguish between residual reactive nodes, paradoxical reactions, or treatment failure without further histopathological or microbiological investigations. In this case, extension of therapy led to symptomatic improvement, suggesting the possibility of a delayed or paradoxical response rather than true treatment failure.

Furthermore, four patients (8%) remained on therapy at the time of reporting, demonstrating partial clinical improvement but persistent lymphadenopathy. These cases necessitate close follow-up to differentiate between drug resistance, poor compliance, immune reconstitution syndrome, or coexisting alternative diagnoses such as lymphoma or sarcoidosis. It is worth noting that none of these patients had documented drug resistance, and compliance was reportedly good, suggesting the need for individualized patient evaluation and potentially adjunct investigations such as repeat biopsy or culture in non-responders.

Histopathological variability may also influence treatment outcomes. Although detailed histopathological correlation was not elaborated in this report, morphological variations in granuloma formation, caseation, and presence of necrosis may reflect different immunological responses or disease stages. Studies have shown that paucibacillary forms with extensive fibrosis may resolve faster, while forms with extensive necrosis may harbor persistent bacilli requiring prolonged therapy. Thus, incorporating histopathological grading into clinical decision-making could refine treatment duration for individual patients.

Overall, the findings suggest that while standard chemotherapy is effective in the majority of TBLN cases, a significant minority may require extended treatment. Elevated ESR at baseline appears to be a possible predictor of prolonged therapy, although further studies with larger samples and statistical analysis are warranted to confirm this. The importance

of individualized treatment decisions based on clinical, laboratory, and histopathological findings cannot be overstated.

This study also underscores the importance of follow-up and physician assessment at the end of the treatment period, as TBLN patients may exhibit delayed responses. Incorporating radiological and biochemical markers in follow-up evaluations may improve assessment of therapeutic response and reduce unnecessary treatment prolongation.

Conclusion

In conclusion, tubercular lymphadenitis presents with variable treatment outcomes despite standard therapy. While the majority of patients respond within six months, a subset requires extended therapy, possibly influenced by initial inflammatory burden or histopathological features. Personalized follow-up strategies and integration of clinical-pathological parameters can help optimize treatment duration and outcomes in TBLN patients.

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Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. As this was a prospective study the written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

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