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Original Research Article

Role of selective neck dissection over anti-TB therapy in retreating patients

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ABSTRACT

Background: Tuberculous cervical lymphadenopathy (TCL) remains a significant public health challenge, particularly in developing countries. This study aimed to analyze the demographic characteristics, treatment responses, and management outcomes in patients with TCL, focusing on the effectiveness of standard anti-TB medication and the role of surgical interventions in non-responsive cases.
Methods: This retrospective comparative analysis was conducted at the Department of Otolaryngology, Dhaka Medical College Hospital, Bangladesh, from July 2019 to July 2023. The study included 189 patients diagnosed with TCL. Patients were categorized based on their response to standard anti-TB medication over a period of one year and the subsequent management strategies adopted for non-responsive or slow-responsive cases.
Results: The study predominantly involved younger individuals (71.43% aged 15-30 years) with a higher representation of females (68.25%). A significant majority (61.38%) reported symptoms for more than one month. After six months of treatment, 33.86% showed a response to medication, increasing to 46.56% after one year. However, 19.58% exhibited slow or no response. Among non-responsive or slow-responsive cases, 18.92% opted for neck dissection, while 59.46% eventually showed a complete response to medication. The incidence of TB relapse was 6.35%, with the majority occurring at the primary infection site.
Conclusions: The study underscores the effectiveness of standard anti-TB medication in most TCL cases, with surgery as a secondary option for specific non-responsive or complicated cases. These findings highlight the need for early detection and individualized treatment strategies, emphasizing medical management as the cornerstone of TB treatment, with surgical interventions reserved for select scenarios.

Keywords: Anti-TB therapy, Neck dissection, Retreatment, Treatment failure, Tuberculosis

INTRODUCTION

Tuberculosis remains a major global health problem, with over 10 million new cases and 1.5 million deaths annually worldwide according to the World Health Organization.[1,2] Cervical lymphadenitis, characterized by swelling of the lymph nodes in the neck, is one of the most common clinical manifestations of extrapulmonary tuberculosis.[3] While anti-tubercular drug therapy forms the mainstay of treatment, residual infected lymph nodes can lead to recurrence and complications if not adequately addressed.[4,5] Selective neck dissection has emerged as a supplementary surgical approach but its precise role when combined with medication requires further evaluation.[6,7] The management of cervical tuberculosis poses unique challenges due to the complex interplay between drug efficacy and residual disease. Anti-TB drugs achieve high cure rates for pulmonary tuberculosis but extrapulmonary forms involving lymph nodes present difficulties in

ensuring complete sterilization with medication alone.[8,9] Inadequate drug penetration or noncompliance may allow dormant bacilli to persist, placing patients at risk of relapse even after initial treatment success.[10] At the same time, surgery for cervical lymphadenitis aims to remove infected nodes but risks damage to vital neck structures if performed without adequate pre-treatment downsizing.[11,12] Controversy thus remains regarding the optimal sequencing and integration of drug therapy and selective neck dissection for retreating patients with a history of cervical tuberculosis. While some studies have evaluated selective neck dissection as an adjunct to initial treatment, the specific role of this procedure in retreating patients with prior anti-TB exposure has been less frequently addressed.[6,13] The complexity of retreatment is heightened by unique host and pathogen factors, such as drug-resistant strains and impaired immunity, which significantly impact treatment outcomes.[14,15] Clinicians often grapple with the decision of whether to continue drug therapy alone for residual adenopathy or to incorporate adjunctive surgery to enhance sterilization and prevent future complications.[16] The absence of large randomized controlled trials contributes to a wide variance in practice, with a lack of robust evidence to guide the integrated medical and surgical management of retreated cases. The current study aims to bridge this knowledge gap through a retrospective comparative analysis of selective neck dissection versus prolonged anti-tubercular drug therapy in retreated patients with residual cervical lymphadenopathy despite prior treatment. By assessing recurrence rates, complication profiles, and long-term control achieved with each strategy, this study endeavors to shed light on their relative effectiveness and safety. Additionally, it explores immunological and microbiological factors that may predict treatment response. The findings from this study are anticipated to enhance multidisciplinary management protocols, providing clarity on the most effective sequencing and integration of drug treatment and selective surgery for retreated cervical tuberculosis cases. Given the ongoing global challenge of tuberculosis, improving outcomes for this high-risk subgroup is crucial for reducing disease burden and enhancing patient wellbeing.

METHODS

This retrospective comparative analysis was conducted over a four-year period, from July 2019 to July 2023, at the Department of Otolaryngology, Dhaka Medical College Hospital, Dhaka, Bangladesh. The study initially identified 199 patients diagnosed with Tuberculous Cervical Lymphadenopathy (TCL) during this timeframe. The inclusion criteria were patients of any gender, aged 15 and above, presenting with neck swelling and diagnosed with TCL based on clinical examination, laboratory investigations, and histopathological confirmation. This study included both primary TB cases and those with recurring TB. Exclusion criteria were applied to omit patients who were on continuous anti-tuberculous treatment for other forms of TB at the time of admission to the study hospital, those diagnosed with concurrent chronic or infectious diseases, and children with TB. Patients showing resistant TB strains, unable to provide informed consent, or lost to follow-up were also excluded from the study. After applying these criteria, the final sample size was adjusted to 189 patients. This included a mix of patients who were experiencing their first episode of TB as well as those with a history of the disease. Informed consent was obtained from all participants or their legal guardians (in the case of minors) before their inclusion in the study. The consent process involved explaining the study's purpose, procedures, potential risks, and benefits in a language understandable to the participants. Participants were assured of their right to withdraw from the study at any point without any impact on their treatment. The study was approved by the Ethical Review Committee of Dhaka Medical College Hospital. All data collected were anonymized to ensure the confidentiality of the participants. The primary aim was to analyze the outcomes of patients with TCL, focusing on recurrence rates, complication profiles, and long-term disease control, to provide insights into the effectiveness of different treatment strategies.

RESULTS

The majority of the participants were in the younger age group, with 135 individuals (71.43%) aged between 15 and 30 years. The age group of 31-45 years comprised 40 participants (21.16%), while the oldest age group (>45 years) included 14 individuals (7.41%). In terms of gender distribution, the study had a higher representation of females, accounting for 129 participants (68.25%), compared to 60 male participants (31.75%). Regarding the residence of the participants, a significant majority resided in urban areas, with 132 individuals (69.84%), while the rural population in the study was represented by 57 participants (30.16%). The occupation of the participants varied, with students forming the largest group at 70 individuals (37.04%). This was followed by housewives, who accounted for 64 participants (33.86%). Service workers were represented by 23 individuals (12.17%), businessmen by 14 (7.41%), and other occupations by 18 participants (9.52%). When considering the socioeconomic status of the participants, the majority fell into the middle-class category, with 116 individuals (61.38%). The lower-class group comprised 68 participants (35.98%), and the upper-class group was the smallest, with only 5 individuals (2.65%) (Table 1).

A small fraction of the participants, 11 individuals (5.82%), reported symptoms of TB for less than 2 weeks. A larger group, consisting of 62 participants (32.80%), experienced TB symptoms for a duration ranging from 2 weeks to 1 month. The majority of the participants, 116 individuals (61.38%), had TB presentations for more than 1 month (Table 2).

After 6 months of treatment, 64 patients, representing 33.86% of the study population, showed a response to the standard TB medication. A larger proportion of patients,

88 individuals (46.56%), demonstrated a response after 1 year of treatment. However, there was a notable group of 37 patients (19.58%) who exhibited a slow or no response to the standard medication even after 1 year of treatment (Table 3).

Table 1: Distribution of participants by socio-demographic characteristics (n=189).

Characteristics	Frequency	Percentage
Age (in years)		
15-30	135	71.43
31-45	40	21.16
>45	14	7.41
Gender		
Male	60	31.75
Female	129	68.25
Residence		
Urban	132	69.84
Rural	57	30.16
Occupation		
Student	70	37.04
Housewife	64	33.86
Service worker	23	12.17
Businessman	14	7.41
Others	18	9.52
Socioeconomic status		
Lower class	68	35.98
Middle class	116	61.38
Upper class	5	2.65

Table 2: Distribution of participants by duration of TB presentation (n=189).

Duration of TB presentation	Frequency	Percentage
<2 weeks	11	5.82
2 weeks to 1 month	62	32.80
>1 month	116	61.38

Table 3: Distribution of patients by response to standard medication at different follow-ups (n=189).

Response rate	Frequency	Percentage
After 6 months treatment	64	33.86
After 1 year treatment	88	46.56
Slow/no response after 1 year	37	19.58

At the outset, about half of the patients (51.32%, n=97) presented with neck node swellings of size ≤3 cm, while the remaining 48.68% (n=92) had larger swellings exceeding 3 cm. In terms of the number of swollen nodes, a majority (62.43%, n=118) had multiple level nodes involved, compared to 37.57% (n=71) with a single level node swelling. After six months of treatment, the group size reduced to 125 patients, where the proportion of those with smaller swellings (≤3 cm) decreased to 42.40% (n=53), and those with larger swellings (>3 cm) increased to 57.60% (n=72). The trend of more patients having multiple level nodes swelling persisted, with 64.80% (n=81) showing this characteristic, compared to 35.20% (n=44) with single level node swelling. At the one-year follow-up mark, among the 37 non-responsive or slow-responsive patients, the trend towards larger swelling sizes became more pronounced. A significant 70.27% (n=26) had swellings larger than 3 cm, while only 29.73% (n=11) maintained swellings of ≤3 cm. The prevalence of multiple level nodes swelling remained high at 64.86% (n=24), compared to 35.14% (n=13) with single level node involvement (Table 4).

Table 4: Neck node related characteristics after different follow-ups among non/slow-responsive cases.

Variable	Initial record (n=189)		After 6-months treatment (n=125)		After 1-year treatment (n=37)	
	N	%	N	%	N	%
Swelling size						
≤3 cm	97	51.32	53	42.40	11	29.73
>3 cm	92	48.68	72	57.60	26	70.27
Swollen node						
Single level node	71	37.57	44	35.20	13	35.14
Multiple level nodes	118	62.43	81	64.80	24	64.86

Table 5: Management of slow/non-responsive cases after 1-year of standard treatment.

Outcome	Frequency	Percentage
Opted for neck dissection instead of medication	7	18.92
Complete response	22	59.46
Treatment failure	8	21.62

A select group of 7 patients, representing 18.92% of the slow/non-responsive cases, opted for neck dissection as an alternative to continuing medication. This decision was predominantly made for patients with single node involvement, localized on one side, which facilitated a more straightforward surgical approach. The preference for neck dissection in these cases was influenced by the feasibility and potential effectiveness of the surgical procedure in comparison to continued medication. In contrast, the majority of the patients in this group, specifically 22 individuals or 59.46%, exhibited a complete response to the ongoing standard TB treatment. This significant proportion indicates that, despite initial slow or non-responsiveness, a considerable number of patients can eventually respond positively to the standard treatment regimen. However, there were 8 patients, accounting for 21.62% of the group, who were classified as treatment failure cases. These patients did not show improvement with the standard treatment over the

extended period and were subsequently considered for surgical intervention (Table 5).

Table 6: Incidence and characteristics of TB relapse cases among the total participants (n=189).

Relapse	Frequency	Percentage
Relapse case	12	6.35
Normal case	177	93.65
Relapse location (n=12)		
Primary location	10	83.33
New area	2	16.67
Abscess (n=12)		
Present	2	16.67
Absent	10	83.33

Out of the total participants, 12 cases, accounting for 6.35%, were identified as relapse cases. This contrasts with the majority of the participants, 177 individuals (93.65%), who did not experience a relapse and were categorized as normal cases. Among the relapse cases, the majority (10 out of 12, or 83.33%) experienced the relapse at the primary location of their initial TB presentation. In contrast, a smaller fraction, 2 patients (16.67%), had a relapse in a new area different from the initial site of infection. Additionally, the presence of an abscess was noted in the relapse cases. Only 2 of the 12 relapse cases (16.67%) presented with an abscess, while the majority, 10 cases (83.33%), did not have an abscess. It is noteworthy that among the 12 relapse cases, 10 were initially retreated with medication, resulting in the resolution of 9 cases, while 1 required surgical intervention. The remaining 2 cases, initially treated with surgery, were subsequently managed with anti-TB therapy (Table 6).

DISCUSSION

In the study, the majority of participants were young, with 71.43% aged between 15 and 30 years, and a higher representation of females (68.25%). This demographic trend is consistent with global TB patterns, where the disease often affects younger populations and varies in gender distribution.[17] The duration of TB presentation varied among participants, with 61.38% reporting symptoms for more than one month. This prolonged symptom duration aligns with findings that delayed diagnosis and treatment initiation can contribute to extended disease courses in TB.[18,19] The response to standard TB medication was gradual, with 33.86% showing improvement after six months and 46.56% after one year. However, 19.58% exhibited a slow or no response to the standard medication even after one year of treatment. This slow response rate is consistent with the case reported by Kimura et al, where a patient experienced a relapse of cervical TB lymphadenitis after completing effective TB chemotherapy.[4] Regarding neck node characteristics, initially, 51.32% of patients presented with neck node swellings of size ≤3 cm, while 48.68% had larger swellings. After six months of treatment, the proportion of patients with larger swellings (>3 cm) increased to 57.60%. At the one-year follow-up, among the 37 non-responsive or slow-responsive patients, 70.27% had swellings larger than 3 cm. This progression suggests the complexity of TB management in such cases, where standard medication may not suffice, necessitating alternative approaches. However, the preference for initial anti-TB treatment is supported by the fact that a significant number of patients (59.46%) eventually showed a complete response. This finding is crucial as it underscores the effectiveness of medical management in most TB cases, aligning with the general consensus that surgical intervention, such as neck dissection, should be reserved for specific scenarios.[20] Among the slow/non-responsive cases, a small subset of 7 patients (18.92%) opted for neck dissection as an alternative to continuing medication. This selective approach towards surgery is in line with the understanding that surgical interventions, while effective, should be cautiously considered due to the risks and complications associated. The study's approach reflects a careful balance between medical management and surgical intervention, emphasizing the importance of individualized treatment plans based on patient response and disease characteristics. The incidence of TB relapse was 6.35%, with the majority occurring at the primary infection site. This relapse rate, although relatively low, highlights the need for vigilant follow-up and possibly more aggressive initial treatment in certain cases to prevent recurrence. The management of relapse cases in the study, predominantly through medication with minimal surgical intervention, aligns with the broader trend of prioritizing medical treatment for TB. In conclusion, the study's findings emphasize the effectiveness of standard anti-TB medication in most cases, with surgery as a secondary option, reserved for specific non-responsive or complicated cases. This approach is consistent with current best practices in TB management, where medical therapy remains the cornerstone of treatment, and surgical interventions are considered based on individual patient needs and disease progression.

This study has few limitations. The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

The study conducted on Tuberculous Cervical Lymphadenopathy (TCL) provides critical insights into the epidemiology, treatment response, and management of TB in a specific demographic. The majority of participants were young, predominantly female, and primarily from urban areas, reflecting the demographic most affected by TB. The prolonged duration of TB symptoms in 61.38% of participants underscores the chronic nature of the disease and the challenges in its early detection and treatment. The response to standard TB medication, although gradual, was effective for a significant portion of the study population, with 46.56% showing improvement after one year. However, the study also highlighted the complexity of managing TB, particularly in 19.58% of patients who showed slow or no response to standard treatment. The progression in the severity of neck node

involvement over time in these cases emphasizes the need for individualized treatment strategies. The study's findings on the incidence of TB relapse, at 6.35%, and the effectiveness of medical management in most cases, with minimal surgical intervention, align with current best practices in TB treatment. These results contribute valuable knowledge to the field of TB management, particularly in the context of cervical lymphadenopathy.

Recommendations

Based on the findings of this study, it is recommended that TB management should prioritize early detection and initiation of standard anti-TB medication, considering the effectiveness observed in a significant proportion of patients. For patients showing slow or no response to medication, a careful evaluation is necessary to determine the need for alternative treatment strategies, including surgical intervention in select cases. The study suggests that surgery, such as neck dissection, should be reserved for specific non-responsive or complicated cases, particularly those with less complicated node involvement. Additionally, given the incidence of TB relapse, vigilant follow-up and possibly more aggressive initial treatment are recommended for certain cases to prevent recurrence. Future research should focus on exploring individualized treatment plans based on patient response and disease characteristics, and on developing strategies to address the challenges in managing TB in patients who do not respond to standard treatment protocols.

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REFERENCES

1. World Health Organization. Global TB progress at risk. Available at: https://www.who.int/news/item/14-10-2020-who-global-tb-progress-at-risk. Accessed 05 December 2023.
2. World Health Organization. Regional Office for Africa. Tuberculosis (TB). Available at: https://www.afro.who.int/health-topics/tuberculosis-tb. Accessed 18 June 2023.
3. Sharma SK, Mohan A. Extrapulmonary tuberculosis. Indian J Med Res. 2004;120(4):316-53.
4. Kimura Y, Shimada M, Kawashima M, Yamane A, Nagai H, Matsui H. Relapse of cervical tuberculous lymphadenitis immediately after completion of effective anti-tuberculosis treatments. Respirol Case Rep. 2020;8(4):e00555.
5. Lee JY. Diagnosis and treatment of extrapulmonary tuberculosis. Tuberc Respir Dis (Seoul). 2015;78(2):47-55.
6. Gaikwad P, Samuel VM, Rupali P. Tb or not Tb: Paradoxical response and the role of selective lymphadenectomy in tuberculous cervical lymphadenitis. India J Appl Res. 2018;6(10).
7. Cheng LHH, Bothamley G, Douglas A. Neck dissection for tuberculous suppurative cervical lymphadenitis. Brit J Oral Maxillof Surg. 2007;45(7):e16.
8. Dheda K, Barry CE, Maartens G. Tuberculosis. The Lancet. 2016;387(10024):1211-26.
9. Frieden TR, Sterling TR, Munsiff SS, Watt CJ, Dye C. Tuberculosis. Lancet. 2003;362(9387):887-99.
10. Lange C, Abubakar I, Alffenaar JWC, Bothamley G, Caminero JA, Carvalho ACC, et al. Management of patients with multidrug-resistant/extensively drug-resistant tuberculosis in Europe: a TBNET consensus statement. Eur Respir J. 2014;44(1):23-63.
11. Spinelli G, Mannelli G, Arcuri F, Venturini E, Chiappini E, Galli L. Surgical treatment for chronic cervical lymphadenitis in children. Experience from a tertiary care paediatric centre on non-tuberculous mycobacterial infections. Int J Pediatr Otorhinolaryngol. 2018;108:137-42.
12. Prasad R, Arthur LG. Cervical Lymphadenopathy. Fundam Pediatr Surg. 2010;213-9.
13. Asaduzzaman A, Uddin MK, Azad MA, Safi A, Haque WS. Evaluation of tubercular cervical lymphadenopathy: diagnostic and therapeutic utility. Bangl J Otorhinolaryngol. 2020;23(2):127-32.
14. Peddireddy V. Quality of life, psychological interventions and treatment outcome in tuberculosis patients: the Indian Scenario. Front Psychol. 2016;7:1664.
15. Dedefo MG, Sirata MT, Ejeta BM, Wakjira GB, Fekadu G, Labata BG. Treatment outcomes of tuberculosis retreatment case and its determinants in West Ethiopia. Open Respir Med J. 2019;13:58-64.
16. Kanjanopas K, Siripan N, Phoophitphong R. Tuberculous cervical lymphadenopathy and the role of surgical treatment. Southeast Asian J Trop Med Public Health. 2014;45(6):1419-24.
17. Laycock KM, Enane LA, Steenhoff AP. Tuberculosis in adolescents and young adults: emerging data on TB transmission and prevention among vulnerable young people. Trop Med Infect Dis. 2021;6(3):148.
18. Gebreegziabher SB, Bjune GA, Yimer SA. Total delay is associated with unfavorable treatment outcome among pulmonary tuberculosis patients in West Gojjam Zone, Northwest Ethiopia: a prospective cohort study. PLOS ONE. 2016;11(7):e0159579.
19. Nkosi D, Janssen S, Padanilam X, Louw R, Menezes CN, Grobusch MP. Factors influencing specialist care referral of multidrug- and extensively drug-resistant tuberculosis patients in Gauteng/South Africa: a descriptive questionnaire-based study. BMC Heal Serv Res. 2013;13(1):268.
20. Guo B, Liu W, Shao B. Radical neck dissection in treating cervical lymph node tuberculosis. Zhonghua Jie He He Hu Xi Za Zhi. 1998;21(6):352-4.

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