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Tuberculous lymph node in neck chain: A study of common entity at a tertiary care level in south Gujarat, Surat

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ABSTRACT

Background: The microbiological diagnosis of extrapulmonary tuberculosis (TB) is quite difficult because of paucibacillary load and required radiological, cytohistopathological tests for confirmation along with clinical suspicion in case of cervical TB lymph node, body fluid examination such as pleural fluid, cerebrospinal fluid, ascitic fluid in cases of TB pleurisy, TB meningitis, and abdominal Koch's and was quiet challenging before inclusion of CBNAAT. **Aims and Objectives**: The aim of the study was to study epidemiological, clinical profile and pathological diagnosis and management of TB cervical lymph node patients coming to a tertiary care center where, 60 patients were enrolled during a 2.5-month period and were followed up for 8 months. Data were entered in Microsoft Excel and analysis was done by in EP Info (version 7.0). Descriptive statistics was applied in the form of percentage, proportion, and measures of central tendency. Test of significance was applied. **Materials and Methods**: To study epidemiological, clinical profile and pathological diagnosis and management of TB cervical lymph node patients coming to a tertiary care center where, 60 patients were enrolled during a 2.5-month period and were followed up for 8 months. Data were entered in Microsoft Excel, and analysis was done by in EP Info (version 7.0). Descriptive statistics was applied in the form of percentage, proportion, and measures of central tendency. Test of significance was applied. **Results**: In this study, 23 cases (38.3%) were male and 37 cases (61.7%) were females, with a female preponderance. The mean age was 27.33 years, with a SD of 93. In this study, maximum number of cases, i.e., 44 cases (73.3%) were seen in the age group of 19–28 years. Neck swelling was the chief presenting complaint among them followed by fever, 36 patients (60%), weight loss 31 (51.7%), anorexia in 28 (46.7%), and cough in 7 patients (11.7%). 75% patients improved after taking antitubercular therapy for 6 months and 5% patients not responded to the treatment till 8 months. **Conclusion**: There is high incidence of TB cervical lymphadenopathy in developing countries like India.

Key words: Cervical lymphadenopathy; Extrapulmonary tuberculosis; CBNAAT; Developing countries

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INTRODUCTION

Estimation of tuberculosis (TB) incidence during the COVID-19 pandemic is much more difficult than previously. An estimated global total of 10.6 million people (95% uncertainty interval [UI]: 9.9–11 million) fell ill with TB in 2021, equivalent to 134 cases (95% UI: 125–143) per 100,000 population. Geographically, most TB cases in 2021 were in the WHO regions of South-East Asia (45%), Africa (23%), and the Western Pacific (18%), with smaller shares in the Eastern Mediterranean (8.1%), the Americas (2.9%), and Europe (2.2%).[1]

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The WHO TB statistics for India for 2021 give an estimated incidence figure of 2,590,000 million cases.[2] Among the 30 high TB burden and 3 global TB watchlist countries, the largest relative reductions in annual notifications between 2019 and 2020 were (ordered according to the size of the relative reduction) in Philippines, Lesotho, Indonesia, Zimbabwe, India, Myanmar, and Bangladesh (all >20%). In 2021, there was considerable recovery in India, Indonesia, and the Philippines, although not to 2019 levels.[1]

The National TB Elimination Programme (NTEP) is one of the national flagship components of the National Health Mission, Ministry of Health and Family Welfare (MOHFW) of India. The Central TB Division (CTD) under The MOHFW is the nodal agency for implementing the NTEP for coordinating the response to eliminating TB in India. The NTEP has a vision of achieving a "TB-free India" and aims to provide universal access to TB control services.[3]

Mycobacterium tuberculosis (MTB) causes two type of clinical manifestation of TB, pulmonary TB, and extrapulmonary TB. The microbiological diagnosis of extrapulmonary TB is quiet difficult because of paucibacillary load and required radiological or histopathological tests such as fine-needle aspiration cytology (FNAC)/histopathological examination for confirmation along with clinical suspicion in case of cervical TB lymph node, body fluid examination such as pleural fluid, cerebrospinal fluid, ascitic fluid, in case of TB pleurisy, TB Meningitis, abdominal Koch's and was quiet challenging before inclusion of CBNAAT.[4]

Cervical TB lymph node found to be most common extrapulmonary TB. The king's evil[5] is another name for the disease known as scrofula, scrophula,[6] or struma. Scrofula is a common name for tuberculous cervical lymphadenitis, the condition in which a TB infection occurs in the lymph nodes of the neck. Here, we did a study on cervical tuberculous lymph node at a tertiary care center with following study objective:

Aims and objectives

1. To study the involvement of different groups of cervical lymph nodes
2. To determine the efficacy of clinical investigation, FNAC, and Biopsy
3. To correlate pathological findings with clinical Diagnosis
4. To study management and outcome of cervical tuberculous

MATERIALS AND METHODS

The approval was obtained from the institute ethical committee to perform the study at Department of Respiratory Medicine, New Civil Hospital, Surat under letter number GMCS/5678/EC-ProtocolNo.141/19. It was hospital-based, observational prospective follow-up study.

Sampling method

Patients who came to Respiratory Medicine OPD with cervical tuberculous lymphadenopathy and proven by FNAC/Biopsy/Culture. Such patients (n=60) were enrolled during a 2.5-month period and were followed up for 8 months.

Sample size

Sample size was 60 patients.

Study tool

Pre-designed and pre-tested study tool including demographic and clinical profile was used.

Statistical analysis

Data will be entered in Microsoft Excel and analysis will be done by in EPInfo (version 7.0). Descriptive statistics will apply in the form of percentage, proportion, and measures of central tendency. Test of significance will be applied.

Inclusion criteria

1. Age >18 years
2. Patient's with enlarged cervical nodes of more than 2 weeks duration
3. Cases which are regular for post treatment follow-up
4. Patients willing to be part of the study.

Exclusion criteria

1. Age <18 years
2. Cases which will not come for regular follow-up
3. Patients who will not complete or receive any medical or surgical treatment
4. Patients not willing to be part of this study.

Consent

Written informed consent was obtained from all the patients included in the study. For patients who could not give consent, it was obtained from the close attenders of the patient.

Study process: After a detailed history and clinical examination, FNAC was performed in patients with tuberculous cervical lymphadenopathy. Routine tests, X-ray of chest, ultrasonography of neck, sputum for Acid-fast bacilli (AFB), erythrocyte sedimentation rate (ESR) was done in all these patients. Excision biopsy of cervical lymph node was performed if FNAC was inconclusive in patients who had high suspicion of tuberculous lymphadenopathy. After confirmation of diagnosis, all patients were treated with anti-tuberculous treatment as per NTEP program. All

the patients were followed up at 2 monthly intervals up to 8 months and progress assessed by clinical examination and radiological investigations.

RESULTS

All the patients who came to Respiratory Medicine OPD of New Civil Hospital, Surat with cervical tuberculous lymphadenopathy, proven by FNAC/Biopsy/Culture were included in this study and were enrolled for 2.5 months and followed for a period of 8 months and assessed at every 2 months. Following were the results that were obtained during this study.

In this study of 60 cases, 23 cases (38.3%) were male and 37 cases (61.7%) were females. The male-to-female ratio was 1:1.6, with a female preponderance. The mean age of the cases was 27.33 years, with a SD of 9.3. A maximum number of cases, i.e. 44 cases (73.3%) were seen in the age group of 19–28 years, followed by 9 cases (15%) in the age group of 29–38 years, 7 cases (11.7%) in the group of >39 years of age. In this study, most cases of cervical tuberculous lymphadenopathy were from urban area, n=40 (66.6), whereas 20 cases (33.3%) were from rural areas. In this study, 41 cases (68.3%) were married and 19 cases (31.7%) were unmarried. In this study, majority people were illiterate, i.e., 25 cases (41.7%), 21 patients (35%) had taken primary education, 5 patients (8.3%) had taken secondary education, and only 9 patients (15%) had attended college for higher education. In this study, 46 cases (76.7%) were unskilled, whereas 14 patients (23.3%) were skilled in some profession.

In this study, neck swelling was the chief presenting complaint in all 60 patients (100%). The next most common complaint was fever, seen in 36 patients (60%), followed by weight loss and anorexia in 31 (51.7%) and 28 (46.7%) cases, respectively. Only 7 patients (11.7%) presented to us with cough.

In this study, it was seen that the majority of the patients with cervical tuberculous lymphadenopathy presented with an ESR >30 mm/h (73.3% patients) and only 5 patients had a value <20. In this study, only 4 patients (6.7%) had a past history of TB, but majority patients, i.e., 56 (93.3%) did not have any history of TB in the past.

In this study, majority of our patients, 53 (88.3%) did not have any associated comorbidities. Out of the remaining patients, 4 were diabetic, 2 were having OAD and 1 was hypertensive. It was seen that 9 patients (15%) were alcohol abusers, 5 (8.3%) were tobacco chewers, and only 1 patient was a smoker. The remaining 45 patients (75%) did not have any addiction or substance abuse.

In this study, majority of the patients, i.e., 21 (35%) were having level V involvement of cervical lymph nodes. The next most common level was II, which was seen in 14 (23.3%) patients. Level III, I, VI, IV, and VII were involved in decreasing frequency of patients in this study, with the least patients 3 (5%) presenting with the involvement of level VII nodes (Figure 1).

In this study, it was observed that 25 patients (41.7%) had presented with lymph nodes of the size 31–40 mm. 19 and 11 patients had lymph nodes ranging between 21 and 30 mm and >40 mm, respectively. Only 5 patients' lymph node size was <20 mm. In this study, it was observed that, in patients with cervical tuberculous lymphadenopathy, most patients had unilateral involvement (88.3%), most commonly on the right side (55%), and 33.3% patients with left sided involvement, 7 patients (11.7%) presented with bilateral involvement of lymph nodes. In this study, it was seen that the affected lymph nodes were firm in consistency in 47 patients (78.3%), whereas they were soft in the remaining 13 patients (21.7%).

In this study, majority of the patients in whom FNAC was done, were diagnosed as granulomatous lymphadenitis (55%), whereas 32% showed tuberculous lymphadenitis and rest 13% were inconclusive (Figure 2).

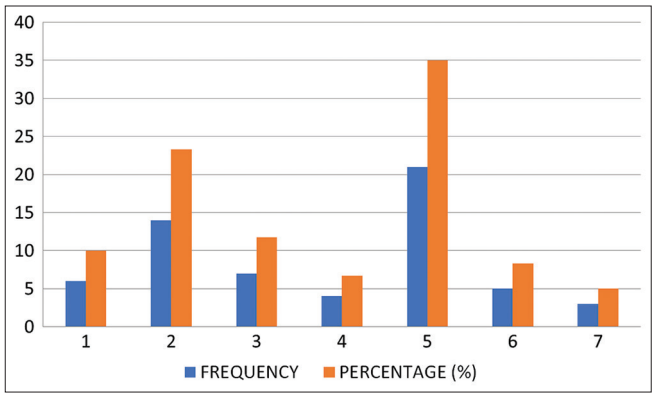

Figure 1: Different level of lymph nodes involved in patients with cervical tuberculosis lymphadenopathy

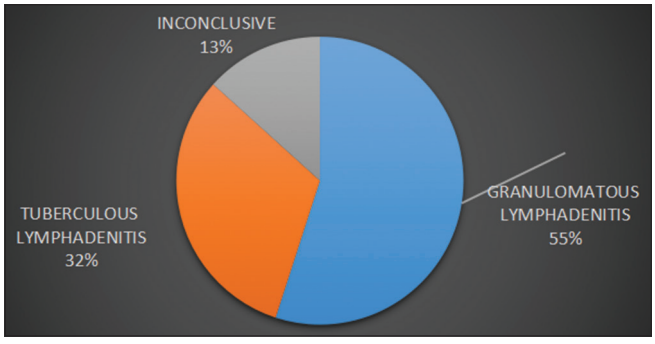

Figure 2: Different level of cervical lymph nodes involved in patients

In this study, the follow-up visit at 2 months of starting antitubercular therapy (ATT) showed clinicoradiological improvement in 35 patients (58.3%) in the form of reduction of lymph node swelling and decrease in symptoms such as fever and anorexia. 11 patients (18.3%) showed deterioration in clinicoradiological findings. However, 14 patients (23.3%) showed no change despite 2 months of treatment.

In the study, the follow-up visit at 4 months showed clinic radiological improvement in 52 patients (86.7%) in the form of reduction of lymph node swelling and decrease in symptoms such as fever and anorexia, compared to 53.8% at the end of 2 months. 2 patients (3.3%) showed deterioration in clinicoradiological findings. However, 6 patients (10%) showed no change despite 4 months of treatment.

It was observed in this study that, after taking a 6-month course of ATT, 45 patients (75%) were declared to have ATT completed. 11 patients (18.3%) were partial responders, who were advised to continue ATT and follow-up at 8 months and among them 5 patients were declared to have ATT completed, but 3 patients did not show improvement and considered treatment failure. 2 patients each were lost to follow-up and transferred out, at our 6-month follow-up visit. No deaths were reported. Among 3 cases of treatment failure, pus/tissue from the lymph node of such patients was taken and sent for CBNAAT. In all 3 patients, RIF-resistant MTB was detected and was started on DR TB regimen. 2 patients were transferred out at the end of 8 months, whereas 1 patient was lost to follow-up. No deaths were reported (Table 1).

Our study reveals that, on comparing the pre-treatment lymph node size and the final outcome of patients with cervical tuberculous lymphadenopathy, 6 out of 8 patients in whom ATT was extended beyond 6 months and who came for follow-up, had an initial lymph node size >40 mm, suggesting a possible role in determining the outcome of the disease. P<0.00 which shows that this correlation of final outcome with size of lymph nodes is statistically significant (Table 2).

Table 1: Final outcome in patients with cervical TB lymphadenopathy with ant TB treatment

Final outcome	Frequency	Percentage
First line AKT completed (complete responder) at 6 months	45	75
First line AKT completed (complete responder) at 8 months	5	8.3
First like failure (Non responder)	3	5
Lost to follow-up	4	6.7
Transfer out	3	5
Death	0	0
Total	60	100

TB: Tuberculosis

On comparing the final outcome of patients with the side of lymphadenopathy involved, it was seen that 5 out of 8 patients had bilateral involvement of lymph nodes before treatment, in whom ATT was extended beyond the 6-month period and came for follow-up visit in our setup. This suggests that the side of lymphadenopathy can affect the final outcome as well. This P<0.00 which suggests that this correlation is statistically significant (Table 3).

DISCUSSION

In this study, the mean age of the cases was 27.33 years, with a SD of 9.3. In this study, maximum number of cases, i.e., 44 cases (73.3%) were seen in the age group of 19–28 years. In a study by Shah et al., the majority of patients included in the study were in age group between 10 and 30 years.[7] A study by Jha et al., a mean age was 23.7 years.[8] The most common age group affected by the disease in this study was 11–20 years (23 patients), followed by 21–30 years (20 patients). This was also noted in the study by Subrahmanyam.[9] In a study by Das et al., 15–24 years was most commonly involved age group.[10]

In this study of 60 cases, the male-to-female ratio was 1:1.6, with a female preponderance. In a study by Jha et al., M: F ratio was 1:1.3 which is similar to our study.[8] which is similar to that found by Dandapat et al., (1:1.2)[11] and Subrahmanyam (1:1.3).[9] Dandapat et al., thought that this may be because females are more conscious of their appearance and in the male dominated society, they have a low nutritional status.

In this study, neck swelling was the chief presenting complaint in all 60 patients (100%). The next most common complaint was fever, seen in 36 patients (60%), followed by weight loss and anorexia in 31 (51.7%) and 28 (46.7%) cases, respectively. Only 7 patients (11.7%) presented to us with cough. In a study conducted by Shah et al., 100% patients presented with neck swelling, 63.6% weight loss, and fever in 52.7% which is almost comparable to our study.[7] In a study by Jha et al., 94.6% of patients presented with neck swelling, 10.7% presented with fever, and 14.3% with weight loss.[8] Although in a series of 100 patients, Patel and Mehta observed weight loss in 77% and fever in 73% cases.[12] Similarly, Dandapat et al., also noted weight loss in 85% and fever in 40% of their patients.[11] In a study by Polesky et al., (98%) presented with an enlarging mass. A history of fever and cough occurred in 19% and 18% of patients, respectively. Other symptoms reported by patients were weight loss (16%) and anorexia (8%).[13]

Table 2: Cross tabulation between final outcome and size of lymph nodes at start of treatment

Side of lymph node	ATT at 6 months	ATT at 8 months	ATT failure	Lost to follow up	Transfer out	Death	Total
<10	1	0	0	0	0	0	1
11–20	3	0	0	0	1	0	4
21–30	18	0	0	0	1	0	19
31–40	18	2	0	4	1	0	25
>40	5	3	3	0	0	0	11
Total	45	5	3	4	3	0	60

Table 3: Cross tabulation between final outcome and side of lymph nodes at start of treatment

Side of lymph node	AKT at 6 months	AKT at 8 months	Lost to follow up	Transfer out	Death	Total
Right	29	1	0	1	2	33
Left	13	2	0	3	1	19
Bilateral	3	2	3	0	0	8
Total	45	5	3	4	3	60

In this study, only 4 patients (6.7%) had a past history of TB, but the majority of patients, i.e., 56 (93.3%). In a study by Polesky et al., 13 patients (12%) of 106 were treated for active TB previously (6 in the United States).

In this study, 4 were diabetic, 2 were having OAD, and 1 was hypertensive. In a study by Polesky et al., 9% of Diabetic patients, who are at a significant risk for pulmonary TB.[13] In a study by Seok et al., 15% patients were hypertensive and 11% patients were diabetic.[14] In a study by Madegedara et al., hypertension (6.57%) was the most common comorbidity identified in the group followed by bronchial asthma (5.26%) and diabetes mellitus (2.63%).[15]

In this study, it was observed that 25 patients (41.7%) had presented with largest lymph nodes of the size 31–40 mm. In a study by Seok et al., mean size were 24.5 mm.[14]

In this study, the majority of the patients, i.e., 21 (35%) were having level V involvement of cervical lymph nodes. In the study by Jha et al., the most common group of lymph nodes involved was the upper deep jugular (level 2), followed by jugulo-omohyoid and submandibular.[8] This is similar to the finding of Dandapat et al.[11] In a study from Khartoum by Kheiry and Ahmed, the most affected nodes were in the posterior triangle.[16] In a study by Das et al., it was found that CLN level V was most commonly involved (52.5%), followed by level III (27.5%), level I (7.5%), level IV (7.5%), level II, and level VI 2.5% each.[10] In the study by Jha et al., lymph nodes were involved on one side in 67.8% of patients, and bilateral involvement was present in 32.2% of patients.[8] In the study by Seok et al., 55.8% had right side, whereas 35.8% had left side involvement. Only 8.5% patients had bilateral involvement.[14]

In this study, it was seen that the majority of the patients with cervical tuberculous lymphadenopathy presented with an ESR >30 mm/h (73.3% patients). In a study by Polesky et al., ESR was elevated in 74% of cases.[13] In a study by, Madegedara et al.,[13,15] mean ESR was 45.2.

In this study, it was observed that only 6.7% of patients (n=4) had positive chest X-ray findings. In the study by Jha et al., associated chest lesions on radiography were evident only in 16% of cases.[8] These figures are quite low compared with the 40–50% described in the text book, Clinical TB.[17] In a study by Polesky et al., 40 (38%) of 106 patients had abnormal chest radiographs consistent with TB.[13] In a study by Das et al., at 16% patients had positive chest X-ray findings suggesting of concurrent pulmonary TB.[10]

In this study, FNAC suggestive as granulomatous lymphadenitis (55%), while 32% showed tuberculous lymphadenitis. In a study by Polesky et al., granulomas (with and without necrosis) were seen on 62% and while 26% were stained positive for AFB.[13] In this study, it was observed that only 6.7% patients (n=4) were sputum smear AFB positive. In a study by Polesky et al., sputum for AFB stain was positive in 14% cases.[13]

It was observed in this study that, after taking a 6-month course of ATT, 45 patients (75%) were declared to have ATT completed. 11 patients (18.3%) were partial responders, who were advised to continue ATT and follow-up at 8 months, and among them, 5 patients were declared to have ATT completed but 3 patients did not show improvement and considered treatment failure. 2 patients each were lost to follow-up and transferred out, at our 6-month follow-up visit. No deaths were reported. Among 3 cases of treatment failure, Pus/tissue from the lymph node of such patients was taken and sent for CBNAAT. In all 3 patients, RIF-resistant MTB was detected and was started on DR TB regimen. 2 patients were transferred out at the end of 8 months, whereas 1 patient was lost to follow-up. No deaths were reported.

Limitations of the study

Study was done during covid pandemic times limiting the number of study participants.

CONCLUSION

Lymph node involvement constitutes the most common presentation of extra pulmonary form of tuberculosis and cervical lymph nodes are the most commonly affected group of nodes. Cervical tuberculous lymphadenitis usually presents with unilateral, multiple, matted neck swelling in young adults. Female and low income group people affected more. FNAC could be a reliable tool for diagnosis. Anti-tuberculous chemotherapy is the mainstay of treatment. Surgical treatment is more useful in selected cases. Early diagnosis and treatment is critical in lowering the overall prevalence. Therefore, it is essential to have awareness regarding common presentations of CTL among the general populations as well as healthcare professionals.

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Author's Contribution:
SSJ- Definition of intellectual content, literature survey, prepared first draft of manuscript, implementation of study protocol, data collection, data analysis, manuscript preparation and submission of article; **BDP**- Concept, design, clinical protocol, manuscript preparation, editing, and manuscript revision; **GPT**- Design of study, statistical analysis and interpretation; **PKV**- Review manuscript; **CRP**- Review manuscript; **SMA**- Literature survey and preparation of figures; **RNP**- Coordination and manuscript revision.

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