

Incidence of Tuberculosis in Cervical Lymphadenopathy. A Clinico-Epidemiological Study

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ABSTRACT

Introduction: Tuberculosis, one of the oldest diseases known to mankind is even today a leading cause of human suffering & loss of life in developing country like India. Tubercular lymphadenitis is the commonest form of extra-pulmonary tuberculosis and most commonly cervical lymph nodes are affected. It mimics other pathological processes & yields inconsistent physical & laboratory results. Study aimed to analyse the incidence of tuberculosis in the cases of cervical lymphnode adenopathy.

Material and methods: This hospital based prospective study was conducted in the Department of ENT, FAA Medical College and Hospital, Barpeta, Assam for a period of 1 year from May 2016 to April 2017. All cases of swelling in the neck or cervical lymphadenitis selected for the study were initially given conservative treatment in the form of antibiotics and were reviewed after 2 weeks. If neck swelling persists FNAC, USG and in some cases biopsy were performed.

Results: Out of 120 cases chosen for the study, infectious or inflammatory etiology was seen in 47.5%, tubercular lymphadenopathy in 33.33%, metastatic nodes in 13.335, lymphoma in 1.67% and non-specific lymphadenitis in 4.17% cases. Clinico-epidemiological study of the 40 cases of tubercular lymphadenopathy revealed that 15-24 age group was most commonly affected. 68% cases were female while 32% cases were male. Out of 28 cases which were more than 15 years of age, 15 cases were illiterate. Cervical lymph node level V was most commonly involved. Ultrasonography of the tubercular lymph nodes showed hypoechogenicity and necrosis in 100% cases, matted lymph nodes in 40% cases, calcifications in 27.5% cases and sharp margins in 67.5% cases. Tuberculin test was positive in only 73% cases.

Conclusion: There is very high incidence of tubercular cervical lymphadenitis in patients with enlarged neck nodes in developing countries like India. Cervical lymph node adenopathy constitutes the most common presentation of extra pulmonary form of tuberculosis. However, it mimics other pathological conditions like metastasis from other primary sites, reactive lymphadenitis, chronic non-specific lymphadenitis, lymphoma etc. Therefore, it is important that otolaryngologists are aware of tuberculosis in the head and neck region which can aid in early diagnosis with the help of simple investigations and subsequently patients can be managed promptly without delay.

Keywords: Tuberculosis, cervical lymphadenopathy, FNAC

INTRODUCTION

Tuberculosis, one of the oldest diseases known to mankind is even today a leading cause of human suffering & loss of life in developing country like India. Tuberculosis is a granulomatous inflammatory process consequent to infection by Mycobacterium tuberculosis (human or bovine type). Tuberculosis affects 1/3rd of the world's population. Tubercular lymphadenitis is the commonest form of extra-pulmonary tuberculosis.¹ TB

lymphadenitis constitutes 35% of extra pulmonary TB which comprises 15-20% of all cases of TB. In India it is roughly estimated that in general hospital OPD 10-20% of TB cases may be extra-pulmonary & its prevalence varies from 8.3-13.1% in different districts according to cohort analysis by central TB division, Ministry of Health & Family Welfare in 2002.²

Tubercular lymphadenitis most commonly affects cervical lymph nodes. Tubercular lymphadenitis mimics other pathological processes & yields inconsistent physical & laboratory results.³ The differential diagnosis of tubercular lymphadenitis includes metastasis from other primary sites, reactive lymphadenitis, chronic non-specific lymphadenitis, lymphoma, sarcoidosis etc.¹

With improvement in economic and social conditions and the use of effective anti-tubercular therapy, there has been decline in tuberculosis for several decades. It is now seen that extra-pulmonary presentations form a major proportion of new cases, especially since the advent of the acquired immunodeficiency syndrome epidemic.

Therefore, it is important that otolaryngologists are aware of tuberculosis in the head and neck region and its varied manifestations.

Various laboratory tests like - routine blood investigation with ESR, Fine needle aspiration cytology (FNAC), Ultrasonography of cervical lymphnode, Mantoux test, Excision biopsy, X-ray chest etc are done to established the diagnosis of tuberculosis in cervical lymphadenopathy.⁴ Study aimed to analyse the incidence of tuberculosis in the cases of cervical lymph node adenopathy.

MATERIAL AND METHOS

This hospital based prospective study was conducted in the Department of ENT, FAA Medical College and Hospital, Barpeta, Assam for a period of 1 year from May 2016 to April 2017.

Selection of Cases – All cases of swelling in the neck or cervical lymphadenitis attending the Out Patient Dept. & In Patient Dept. of ENT, FAAMCH Barpeta fulfilling the inclusion & exclusion criteria were included in this study as samples.

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Inclusion criteria

- Patients presenting with cervical lymphadenopathy irrespective of sex, caste, religion, socio-economic status, duration & severity of illness were included in the study.

Exclusion criteria

- Children below the 5 years of age were excluded in the study.
- Diagnosed cases of malignancies from any primaries presented with cervical lymphadenopathy.
- Patients with cervical lymphadenopathy along with suspicious features of malignancy like obvious growth or ulcer in head & neck region.
- Pregnant women

Methodology

All the patients chosen for the study after fulfilling inclusion and exclusion criteria were subjected to proper history taking, detailed clinical examination and were prescribed initial conservative management with antibiotics (tab. Amoxicillin + clavulanic acid 625 mg thrice daily for 5 days) and were followed after 2 weeks.

After two weeks patients were subsequently followed up. If the swelling underwent resolution, then cases were excluded. If the swelling persisted then investigations like FNAC and USG of the cervical lymph nodes were advised. If results were inconclusive biopsy and HPE of the lymph node was advised. Some ancillary investigations like X-ray chest, tuberculin test, sputum for AFB, blood investigation like ESR were also advised.

Diagnosis was achieved with FNAC report primarily. All the cases were reported from the department of Pathology FAAMCH Barpeta Assam. Diagnosis of tuberculosis was confirmed if pus / aspirate from node shows- ZN stain positive for AFB &/or granulomatous changes with langhans giants cell. If FNAC report was inconclusive, excision biopsy was advised for confirmation. Patients diagnosed with cervical node TB were prescribed anti-tubercular treatment (ATT) regiment as per the WHO guidelines.

Patients with reactive nodes or acute bacterial infection were subsequently improved after receiving conservative treatment in the form of antibiotics and anti-inflammatory drugs. Patients with metastatic nodes on cytology underwent further investigation for the site of primary tumour and managed accordingly. Those with lymphoma were managed with chemotherapy accordingly.

STATISTICAL ANALYSIS

Microsoft office 2007 was used for the statistical analysis. Mean and percentages were calculated for the interpretation of results.

RESULTS

This hospital based prospective study was conducted in the

Department of ENT, FAA Medical College and Hospital, Barpeta, Assam for a period of 1 year from May 2016 to April 2017 on 120 patients presented with cervical lymph node adenopathy to study and analyse the incidence of tuberculosis in such patients.

All the cases chosen for the study after fulfilling the inclusion and exclusion criteria were managed according to the methodology as described. Subsequently results were documented in the following tables.

All the 120 cases underwent FNAC of the cervical lymph node according to the study protocol. 57 case (47.5%) had infective or inflammatory pathology, 40 cases (33.33%) had tuberculosis, 16 cases (13.33%) had metastatic node, 2 cases (1.67%) had lymphoma while 5 cases (4.17%) had non-specific lymphadenitis. these 5 cases underwent biopsy and histopathological examination and results found out to be non-specific or inconclusive (table-1).

Following FNAC and HPE report of the 120 cases selected for the study, it was found that 57 cases (47.5%) had infective or inflammatory lymphadenopathy, 40 cases (33.33%) had tuberculosis, 16 cases (13.33%) had metastatic node, 5 cases (4.17%) had non-specific lymphadenitis and 2 cases (1.67%) had lymphoma.

Table-2 shows that 15-24 years was most commonly involved age group followed by the age group 0-14 years, 25-34 years, 35-44 years, 45-54 years and 55-64 years.

Epidemiological analysis of our study showed that 13 cases (32%) were male while 27 cases (68%) were female.

In our study out of 28 cases which were more than 15 years of age, 15 cases were illiterate (5cases were male and 10 cases were female) followed by 9 cases of under matriculation (4 males and 5 females) and 4 cases were matriculate (1 case of male and 3 cases of female). In our study 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) (table-3).

All the 40 cases of tubercular lymphadenopathy underwent ultrasonography of the lymph nodes. It was found that all the 40 cases had hypoechogenicity and necrosis. Matted lymph nodes were seen in 16 cases (40%). While calcifications were seen in 11 patients and sharp margins were found in 27 patients (table-4).

Tuberculin test was performed in all the diagnosed 40 cases of tubercular lymphadenopathy but only 73% cases showed positive tuberculin test. Of the 40 cases with tubercular lymphadenitis, 52% cases had family history of tuberculosis. Investigations revealed that 16% patients had positive chest X-ray findings suggesting of concurrent pulmonary tuberculosis. Sputum for AFB stain was positive in 14% cases and ESR was elevated in

DIAGNOSIS	FNAC diagnosis		HPE diagnosis		Final diagnosis	
	No. of patients	% of patients	No. of patients	% of patients	No. of patients	% of patients
Infective/ inflammatory lymphadenopathy	57	47.5	-	-	57	47.5
Tuberculosis	40	33.33	-	-	40	33.33
Metastatic node	16	13.33	-	-	16	13.33
Non-specific lymphadenitis	5	4.17	5	5	5	4.17
Lymphoma	2	1.67	-	-	2	1.67

Table-1: Correlation in FNAC diagnosis and histopathology diagnosis.

Age group	No. of cases (n =40)	% of cases
0-14	12	30
15-24	16	40
25-34	5	12.5
35-44	3	7.5
45-54	2	5
55-64	2	5
>65	-	-

Table-2: Age group wise distribution of tuberculous cervical nodes

CLN level	No. of patients	% of patients
Level I	3	7.5
Level II	1	2.5
Level III	11	27.5
Level IV	3	7.5
Level V	21	52.5
Level VI	1	2.5

Table-3: Distribution of tubercular lymphadenopathy on the basis of level of lymph node involvement.

USG findings	No. of patients	% of patients
Hypoechoogenicity	40	100
Necrosis	40	100
Matting	16	40
Calcification	11	27.5
Sharp margins	27	67.5

Table-4: USG findings of cases of tubercular lymphadenopathy

74% cases.

DISCUSSION

This study was conducted in the department of ENT FAAMCH Barpeta from May 2016 to April 2017 to evaluate the incidence of tuberculosis in patients with cervical lymphadenopathy. The spectrum of differential diagnosis of cervical lymphadenopathy is wide making it rather a challenge to the clinician to reach a definite diagnosis and treatment. With betterment in economic and social conditions and the use of effective DOTS program, the developed nations, and most developing nations, have enjoyed a decline in pulmonary tuberculosis for several decades. With advent of the acquired immunodeficiency syndrome epidemic, it is now seen that extra-pulmonary presentations form a major proportion of new cases. Tubercular lymphadenopathy is the most common extra pulmonary form of tuberculosis and cervical lymph nodes are the most commonly affected group of nodes.

In our study 120 cases were chosen after fulfilling the inclusion and exclusion criteria. On the basis of FNAC and HPE results it was concluded that 47.5% cases had infective or inflammatory lymphadenopathy followed by tubercular lymphadenopathy in 33.33% cases, metastatic nodes in 13.33% cases and lymphoma in 1.67% cases. 5 cases in FNAC and HPE showed non-specific lymphadenitis.

Sharma et al in their study found that lymph node TB forms 35% of extra-pulmonary TB of which two-third have cervical lymph nodes⁵ this study is similar to our findings.

However Sarda et al⁶ reported very high incidence of

tuberculous lymphadenitis in their study, 86% of the enlarged nodes revealed to be tuberculous in origin. This could be due to good clinical screening of nodes. Similar high incidence was reported by Dandapat et al⁷ 41.5%, Jha et al⁸ 63% and Castro et al⁹ 46%.

In a study carried out by Haque et al¹⁰, the incidence of tubercular lymphadenitis in enlarged neck nodes was very low, 3.5%. This could be because of examination of all the nodes regardless of its duration of enlargement of nodes, resulting in high incidence of inflammatory features, 87.18%. Similarly Gallesio et al¹¹ reported relatively low incidence, 21% in his 20 years study.

Our study showed that 15-24 years was most commonly involved age group with 40% of cases. Khajanchi et al¹² in their study found that cervical lymphadenopathy more commonly affects the young and middle aged adult group and its occurrence decreases as age advances.

In our study we observed that female were more commonly affected by tubercular lymphadenopathy then male. 68% cases were female while 32% cases were male.

This observation is similar to the study by Abdullah et al (59.3% females and 40.7% males giving a sex ratio of 0.69.)¹³

This high proportion of females being affected by tubercular lymphadenopathy may be due to their work particularly cooking in close rooms in lower socioeconomic groups. This can be further attributed by poor health care facilities for females in rural areas.

However Male to female ratio is found to be minimal with no obvious preponderance as in studies like Dandapat et al⁷, Bezabih et al¹⁴, and Pandit et al¹⁵

Our study showed that out of 28 cases which were more than 15 years of age, 15 cases were illiterate followed by 9 cases of under matriculation and 4 cases were matriculate. Epidemiological analysis of the cases reveals illiteracy and lack and awareness is directly associated with higher prevalence of extra-pulmonary tuberculosis in the form of tubercular lymphadenopathy.

In our study it was found that CLN level V (52.5) was most commonly involved followed by level III, level I, level IV, level II level VI. Involvement of the cervical groups of nodes were found to be the most commonly in the posterior triangle group of node in the study by Maharajan et al.¹ Similar result is also reported by Prasad et al¹⁶, Baskota et al¹⁷, Haque et al¹⁰, Seth et al¹⁸ and Dandapat et al⁷

Fine needle aspiration cytology (FNAC) is widely accepted as the accurate, sensitive, specific and cost-effective procedure in the diagnosis of lymphadenopathy. In our all the cases underwent FNAC and in the 40 cases of tubercular lymphadenopathy 82% cases showed epitheloid granuloma and langhen's cell with or without necrosis. 32.5% cases showed positive ZN stain for AFB. Similar experience is observed in studies carried out by Weiler et al¹⁹, Jha et al⁸, Al- Mullhim et al²⁰, Bezabih et al¹⁴, and Dandapat et al⁷.

In our study all the cases underwent ultrasonography (USG) of cervical lymph nodes. It was found that all the 40 cases (100%) had hypoechoogenicity and necrosis. Matted lymph nodes were seen in 16 cases (40%). While calcifications were seen in 11 patients (27.5%) and sharp margins were found in 27 patients (67.5%). Similarly Gupta et al²¹ in their study found hypoechoogenicity in 100% cases, calcification in 29.6% cases, nodal matting in 37% cases and sharp border in 29.6% cases.

Tuberculin test was performed in all the diagnosed 40 cases of tubercular lymphadenopathy but only 73% cases showed positive tuberculin test. However in the study by Abdullah et al¹³ Mantoux test was positive in 73 of 79 patients with tuberculosis (92.4%). Comparatively lower proportion of positive tuberculin test may be due to failure of patients to turn up after 48-72 hours for interpretation.

Of the 40 cases with tubercular lymphadenitis, 52% cases had family history or exposure history of tuberculosis. Investigations revealed that 16% patients had positive chest X-ray findings suggesting of concurrent pulmonary tuberculosis. Sputum for AFB stain was positive in 14% cases and ESR was elevated in 74% cases. Study conducted by Maharajan et al¹ also found similar results with family history in 50% case, positive chest X-ray findings in 14% cases and positive sputum for AFB in 13% cases.

Subsequently all the 40 cases of tubercular lymphadenopathy were managed by anti-tubercular treatment (ATT) under DOTS where drugs isoniazide, rifampicin, pyrazinamide and ethambutol thrice weekly schedule for 2 months (intensive phase) and isoniazide and rifampicin thrice weekly schedule for 4 months(continuation phase).

CONCLUSION

There is very high incidence of tubercular cervical lymphadenitis in patients with enlarged neck nodes in developing countries like India. With improvement in economic, social conditions and the use of effective DOTS program, there is decline in pulmonary tuberculosis in developing countries but there is increase in incidence of extra-pulmonary form of tuberculosis. 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. Tubercular lymphadenitis mimics other pathological conditions like metastasis from other primary sites, reactive lymphadenitis, chronic non-specific lymphadenitis, lymphoma etc.

Therefore, it is important that otolaryngologists are aware of tuberculosis in the head

and neck region. If the otolaryngologist maintains a high index of suspicion, an early diagnosis can be made with the help of simple investigations and subsequently patients can be managed promptly without delay.

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