Incidence Of Tuberculosis In Otorhinolaryngology - Our Experience From A Tertiary Care Centre In Western India

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Abstract: Background: Tuberculosis (TB) is a worldwide leading public health problem even today. It affects all tissues of the body, but pulmonary tuberculosis is the most common type of tuberculosis (80% total tuberculosis cases). Extrapulmonary TB (EPTB) has major challenge for its clinical detection, definitive diagnosis and treatment. Out of all extrapulmonary cases, TB occurring in head and neck region is uncommon. Material And Methods: A prospective analytical study of 50 patients who presented to ENT OPD setup of our tertiary care hospital with extra pulmonary TB**.** We look at the various clinical and laboratory aspects of tuberculosis of the otorhinolaryngeal region that would help to diagnose this uncommon but important form of extra pulmonary tuberculosis. Result: Male: Female ratio was 1.8:1 exhibiting male preponderance. Majority of the patients belonged to the age group of 20-40 years. Our study included patients with tuberculous cervical lymphadenopathy (84%), laryngeal TB (2%), tuberculous otitis media (12%), and retropharyngeal abscess (2%). FNAC seems to be definitive and easier mode to diagnose TB of cervical nodes and Excision Biopsy can be done when FNAC is inconclusive. Conclusion: Extra pulmonary TB is significant health problem worldwide. It presents as a challenging task for diagnosis and overall surveillance of the treatment. The ear, nose, PNS, pharynx, larynx and cervical nodes are very important anatomical sites of extra pulmonary affliction. Its early diagnosis and definitive management will seize its sequence and further complications. The practical implications of an awareness of ENT tuberculosis are a benefit of anti-tubercular therapy and hence conservative management usually suffices. [Rathod K Natl J Integr Res Med, 2021; 12(6): 48-52]

Key Words: Tuberculosis, TB lymphadenitis, Extrapulmonary TB

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Introduction: Tuberculosis is very oldest diseases in man, but even today remains a leading cause of human suffering and mortality worldwide. Tuberculosis (TB) is a chronic granulomatous infectious and communicable disease caused by Mycobacterium tuberculosis[1].

Though Mycobacterium tuberculosis infection can occur in all tissues of the body, pulmonary tuberculosis infection is the most common type approximately 80% of all cases of tuberculosis(TB)[2]. Tuberculous infection that occurs in organ systems other than the lungs is called 'extra pulmonary tuberculosis' (EPTB).

Extra pulmonary TB is notable health issue globally. It presents a definitive diagnostic challenge and demands monitoring of its treatment. Among the extrapulmonary tuberculosis, the most common manifestation is lymphadenitis[3]. Tuberculosis of otorhinolaryngeal region is an infrequent, but not a rare, clinical problem. It can affect the lymph nodes, larynx, middle ear, nose, oral cavity and pharynx as well. The clinical features of tuberculosis of this region may mimic malignancy and is misdiagnosed; hence, an early diagnosis is essential for proper comprehensive treatment. Previous reports state that around 25–30% of patients with otorhinolaryngeal TB have concomitant pulmonary TB[4].

Most frequently observed form of EPTB is cervical lymphadenitis, therefore it becomes necessary to differentiate from other lymph node diseases, like metastatic cancer, malignant lymphoma, nonspecific hyperplasia, Kikuchi's disease, Castleman's disease, sarcoidosis, cat scratch disease.

Most of clinicians do not consider TB in the differential diagnosis of various otorhinolaryngeal symptoms, resulting in misdiagnosis and inappropriate treatment.

Also, concomitant HIV and other immunosuppressive diseases pose a challenge by increasing the incidence and spectrum of tuberculosis in developing country like India[5].

The present study was conducted to assess the different manifestations of tuberculosis affecting the ear, nose and throat in patients attending the outpatient department of a tertiary care hospital in central Gujarat.

Material & Methods: A prospective analysis of patients who presented to opd setup of our tertiary care hospital, primarily with TB of Head and neck was done from July 2019 to January 2021.

Our study included patients who were either known case of TB or biopsy or FNAC proven diseases, common ENT diseases like chronic ear disease, cervical lymphadenitis, laryngeal lesions, granulomatous diseases, not responding to the routine treatment protocol.

Immunocompromised patients, relapsers or defaulters, unwilling to take AKT, lost to follow up were excluded. The patients were analyzed for epidemiological data with clinical features and all investigations and management done was recorded.

All patients were kept in follow-up for 6 months to analyze the outcome of AKT treatment and prognosis of TB.

Our study focuses to raise awareness of various manifestations in head and neck TB, to consider its diagnostic challenges, and to make awareness of the impending complications.

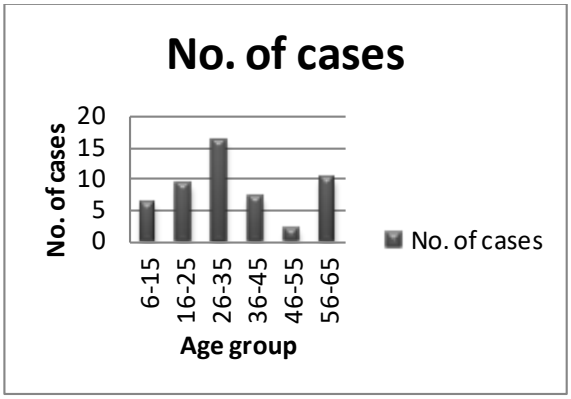
Results: The study included 50 patients with primary head and neck TB. The patients coming to ENT OPD with extrapulmonary TB were included in the study and subjected to various diagnostic evaluations, the results of which were analysed. . Most of these 42 (84%) had cervical lymphadenopathy. Male:female ratio was 1.6:1(Table 1).

Table 1: Gender Distribution Of Patients

Gender	No. Of Cases
Male	31 (62%)
Female	19 (38%)
Total	50

Age ranged from 10 to 65 years (Figure 1).

Figure 1: Age Distribution Of Patients



In our study, the presenting symptoms of TB lymphadenitis were low grade fever, swelling in neck and stiffness; and muscle spasm in neck. The patients suspected to have TB were subjected to Ultrasonography and FNAC. Specimens were sent for histopathology examination, mycobacterial culture and susceptibility testing. There was no significant difference in the side of neck involvement, but the posterior triangle was the commonest site involved (66%). 29 patients (70%) were diagnosed by FNAC examination. 10(24%) patients required biopsy and histopathologic confirmation. 3 patients was diagnosed by culture. Evidence of lung disease was found in 28% of patients in whom a chest x-ray examination was done (Table 2a & 2b).

Table 2a: Association With Pulmonary TB / Past History Of TB

TB Association	No. Of Cases
Pulmonary TB+ EPTB	14
History of TB/Subsequent TB	6
Only EPTB	30

Table 2b: Incidence Of EPTB In Pulmonary TB / Past History Of TB

Pulmonary TB/Past History of TB	EPTB		Total
	Yes	No	
Yes	20	0	20
No	30	0	30
Total	50	0	50

*TB patients who were not having EPTB were excluded from study.

All patients were treated with 2(HR) ZE/ 4 (HR) regimens, that is, isoniazid and rifampicin, and pyrazinamide and etambutol in the first phase for 2 months. The drug treatment was given daily.

Rifampicin and Isoniazid were prescribed in combination. Pyrazinamide and etambutol advised as separate formulations. Post initial phase, only isoniazid-rifampicin fixed drug combination was given in continous phase for 4 months. Clinical manifestations of other sites are mentioned as in below (Table 3).

Table 3: Chief Clinical Manifestation Of Patients With EPTB According To Location

Location	Symptoms	Signs
Lymph Nodes	Neck Swelling, Discharge From Sinus, Ulcers	Matted Lymph Node Enlargement, Sinus Formation, Undermined Edges Of Ulcer, Pale Granulations
Ear	Persistent Otorrhoea	Pale Granulation, Multiple Perforation
Larynx (Vocal Cords)	Change Of Voice	Pale Granulation With Vc Palsy
Retropharyngeal Region	Difficulty In Swallowing, Dyspnoea, Fever, Neck Stiffness, Neck Muscles Spasm, Loss Of Weight	Fullness In Posterior Oropharyngeal Wall On Microlaryngoscopy, Culture And Hpe Done For Confirmation

Discussion: Tuberculosis is global burden and it is known that 1.5% of India's population is affected with TB[17]. Extra pulmonary involvement can occur in isolation or along with a primary focus as in the case of patients with disseminated tuberculosis. Extra Pulmonary TB constitutes about 15-20% of all cases of tuberculosis in immune-competent patients[18].

TB is more common in males. Our study observed male preponderance with the male- female ratio was 1.6:1. Most of the patients were adults belonging to the age group of 20-40 years. The mean age of affected patients in this study is 32.5 yrs (Figure 1).

Male young adults, being the breadwinners of the family are thus more vulnerable while young females likely to have iron deficiency anemia increases the risk for catching MTB. Other studies in contrast show more incidences in females[6,7].

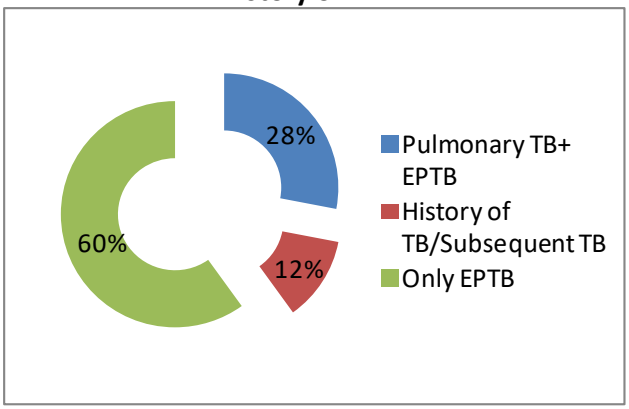
Lymphadenitis is the commonest extrapulmonary manifestation of TB occurring in more than 25% of all cases of TB[8], and of these, the cervical LNs are most often involved[9] .Cervical lymphadenitis is the most common head and neck presentation of TB followed by laryngeal TB. In the neck, the posterior triangle nodes are most commonly involved[9]. This study had similar findings, and the supraclavicular LN was the commonest node to be involved[10,11]. In our study 84% of the cases presented with TB lymphadenitis. The commonest site was cervical lymph nodes (84%), followed by Ear (12%), Larynx (2%) and retropharyngeal region (2%) (Table 4).

Table 4: Incidence Of EPTB In Head And Neck Region According To Anatomic Location

Location/ Site	No. Of Patients
Cervical Ln's	42
Ear	6
Larynx	1
Retropharyngeal Abscess	1
Total	50

Pulmonary involvment is common with cervical TB, and the ipsilateral lung as the neck node is commonly involved. (Figure 2)

Figure 2: Association with Pulmonary TB / Past History of TB



The commonest radiological findings were nodular shadows in the upper and middle zones as reported by William and Douglas-Jones[10]. Most often the treatment of the Tuberculosis cervical LN is mainly medical. Surgical intervention is considered only when excision is needed for biopsy purposes or when a node remains enlarged after antimicrobial therapy [11].Residual disease in the nodes after complete AKT is uncommon.

In present study, most patients presented with matted LNs. 10% percent are reported to present with fluctuant mass, and 5% are reported to present with a draining sinus.

Around 75% of total patients were diagnosed with Fine needle aspiration cytology examination. Most studies have found that FNAC has a high diagnostic yield of more than 80%[12,13].

Memish et al[14] have reported a much lower diagnostic yield of 46%. FNAC is the first line of investigation because of its diagnostic accuracy and it is easy as well simple. Excision Biopsy should be considered after FNAC.

In 20% of cases, culture will be positive when histopathology is negative[10]. In present study,for patients with negative FNAC but symptoms highly suspicious of EPTB, excision biopsy was done and tissue was sent for CBNAAT which increases the diagnostic yield.

CBNAAT was proven to be more sensitive test to diagnose TB. Benefit of CBNAAT over other investigations is more as a sensitivity test along with initial diagnosis so that early treatment according to sensitivity could be started which was more beneficiary over empirical AKT.

Also CBNNAT takes shorter time (~1 week) for diagnosis comparative to microbiological cultural testing (6 weeks)[15].

Laryngeal Tb: Vocal folds are the commonest site to be affected (50%-70%) in laryngeal TB, and hoarseness is the commonest symptom.

Associated symptoms can be odynophagia or total dysphagia, cough referred otalgia and stridor[6]. Incidence is less than 1% of all cases of TB[16]. In our study we found patient with laryngeal TB had associated vocal cord palsy. AKT have been proven to be affective but surgery may be required in cases of airway compromise due to active disease process or scarring in cured regions.

TB otitis media/aural TB classically presents with multiple perforation in tympanic membrane with painless ear discharge, pale granulations in mastoid, disproportionate hearing loss, facial palsy, and foci of TB elsewhere[19]. It typically does not respond to routine treatment for chronic otitis media. We found very similar findings in our study .The diagnosis were done after pus for AFB staining and culture and sensitivity testing and granulations sent for histpoathological examination.

Ramages and Gertler[20], has the largest series of aural TB cases reported so far, have found 50% of patients have evidence of pulmonary disease on x-ray chest. And aural TB occurs through middle ear with route of infection from nasopharyngeal spread.

12 % of the patients had a history of previous TB infection or developed the infection again later.

In such cases culture and drug sensitivity should always be done. This will facilitate management of multidrug resistance TB upto particular extent.

Conclusions: Tuberculosis has significant diagnostic challenge. Clinical diagnosis requires a high index of suspicion. TB Cervical lymphadenopathy is the most common presentation of head and neck Tuberculosis. The ear, nose, PNS, pharynx, larynx and cervical nodes are very important anatomical sites of extrapulmonary affliction.

FNAC is best and reliable investigation to confirm TB of cervical lymphnodes and Excision Biopsy is advisable when FNAC is indeterminate or inconclusive. In highly suspicious cases, if biopsy is negative, then culture and newer diagnostic modalities (CBNAAT) should be considered to increase the diagnostic yield.

A high percentage (40%) of patients was found to have associated TB; hence, patients who have TB of head and neck must be investigated to exclude pulmonary or other systemic TB.

Though we need larger studies to understand association of pulmonary TB with EPTB in head and neck region,We believe that this descriptive research can motivate larger studies to enable analyses of determinants of outcomes in patients with both involvement.

The symptoms of extra pulmonary TB in ENT are diverse; hence, all Otolaryngologists should be aware of the manifestations.

References:

1. Wang WC, Chen JY, Chen YK, Lin LM.Tuberculosis of head and neck: a review of

20cases.Oral Surg Oral Med Pathol Oral RadiolEndo. 2009; 107(3): 381-86.
2. World Health Organization, Global tuberculosis control,Geneva, Switzerland, WHO Report 2010, WHO/CDS/TB/ 2010.275.
3. N. S. Kulkarni, G. S. Gopal, S. G. Ghaisas, and N. A. Gupte,"Epidemiological considerations and clinical features of ENT tuberculosis," Journal of Laryngology and Otology.2001;115(7): 555–558.
4. M. Harney, S. Hone, C. Timon, and M. Donnelly, "Laryngeal tuberculosis: an important diagnosis," Journal of Laryngology and Otology. 2001;114(11):878–880.
5. M. P. Golden and H. R. Vikram, "Extrapulmonary tuberculosis: an overview," American Family Physician. 2005;72(9):1761–1768.
6. Al-Sherhani AM. Mycobacterial infections of the head and neck: presentation and diagnosis. Laryngoscope 2001; 111:2012 - 6.
7. Ammari FF, Bani Hani AH, Ghariebeh KI. Tuberculosis of the lymph glands in the neck: a limited role for surgery. Otolaryngol Head Neck Surg 2003; 128(4):576 - 80.
8. Ravilgone CM, O'Brien RJ. Tuberculosis. Harrison's Principles of Internal Medicine. 15th ed.McGraw Hill—Medical Publishing Division; 2001.1024-35.
9. Kheiry J, Ahmed M. Cervical lymphadenopathy in Khartoum. J Trop Med Hyg 1992; 95(6):416-9.
10. Williams RG, Douglas-Jones T. Mycobacterium marches back. J Laryngol Otol 1995; 109:5- 13.
11. Penfold CN, Revington PJ. A review of 23 patients with tuberculosis of the head and neck. Br J Oral Maxillofac Surg1996; 34(6):508 - 10.
12. Dandapat M, Mishra B, Das SP, et al. Peripheral lymphnode tuberculosis: a review of 80 cases. Br J Surg 1990; 77(8):911- 2.
13. Weller Z, Nelly P, Baruchin AM, et al. Diagnosis and treatment of cervical tuberculous lymphadenitis. J Oral Maxillofac Surg 2000; 58(5):477 - 81.
14. Memish ZA, Mah MW, Mahmood SA, et al. Clinico-diagnostic experience with tuberculous lymphadenitis in Saudi Arabia. Clin Microbiol Infect 2000; 6(3):137 - 41.
15. Horne DJ, Kohli M, Zifodya JS, et al. Xpert MTB/RIF and Xpert MTB/RIF Ultra for pulmonary tuberculosis and rifampicin resistance in adults. Cochrane Database Syst Rev. 2019; 6(6):CD009593.
16. doi:10.1002/14651858.CD009593.pub4.
17. Galietti F, Georgis GE, Oliaro A, et al. Tuberculosis of the larynx. Panminerva Med 1989; 31(3):134- 6.
18. Bhargava S, Jain M, Jain M. In tuberculosis,"one size does not fit all". Lung India:official organ of Indian Chest Society. 2019 Jan; 36(1):1.
19. Sharma SK, Mohan A, Kadhiravan T. HIV-TB co-infection: epidemiology, diagnosis & management. Indian J Med Res. 2005 Apr 1; 121(4):550-67.
20. Ma K, Tang P, Chan KW. Am J Otol 1990; 11(3):174 - 7.
21. Ramages MB, Gertler R. Aural tuberculosis. J Laryngol Otol 1985; 1999:1073 - 80.

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