



## OTORHINOLARYNGOLOGICAL MANIFESTATIONS OF EXTRAPULMONARY TUBERCULOSIS - A RETROSPECTIVE OBSERVATIONAL STUDY

### Otorhinolaryngology

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### ABSTRACT

**Background:** The aim of our study is to assess the various manifestations of extrapulmonary tuberculosis affecting in ENT, Head and Neck region. **Materials And Methods:** The study was conducted in the department of ENT, AGMC and GBP Hospital, Tripura. The study size comprised of 90 patients who were diagnosed with otorhinolaryngological extrapulmonary tuberculosis. **Results:** Out of 90 cases, 64 had TB cervical lymphadenopathy, 5 had TBOM, 5 had laryngeal TB and 16 had TB deep neck abscess. **Conclusion:** Tuberculosis should always be kept in mind as a differential diagnosis in chronic patients who are not responding to routine treatment. CB-NAAT is very effective in diagnosing extra pulmonary tuberculosis.

### KEYWORDS

Extrapulmonary TB, Cervical lymphadenopathy, TB otitis media (TBOM), Laryngeal TB, Deep neck space abscess, CBNAAT.

#### INTRODUCTION

Tuberculosis (TB) is a chronic granulomatous, infectious and communicable disease caused by *Mycobacterium tuberculosis* [1]. It is very common in developing countries such as India due to increased prevalence of immunodeficiency through HIV infection, malignancies, drug addiction, poverty and overcrowding. Tuberculosis usually affects the lungs but can also affect other parts of the body except nail, hair and teeth [2]. Tuberculosis involving organs other than the lungs is termed as 'extrapulmonary tuberculosis'.

TB of ear, nose and throat region comprises 10% of all cases of extrapulmonary TB, mainly in the form of cervical lymphadenopathy, deep neck space abscess, tubercular otitis media, tubercular laryngitis and pharyngitis, nasal TB [3,4].

Among the various diagnostic tools, cartridge based nucleic acid amplification test (CB-NAAT) is most specific. CB-NAAT is a rapid diagnostic test which provides results within 2-3 hours [5]. In cases of tubercular lymphadenitis CB-NAAT is most useful than any other diagnostic tool.

The important components of treatment strategy of extrapulmonary TB are early diagnosis with latest diagnostic tools, complete treatment with standard anti-TB regimen, treatment of comorbidities and providing patient support.

#### Aim And Objectives

The aim of our study is to assess the various manifestations of extrapulmonary TB affecting in ENT, Head and Neck region in patients attending department of ENT, AGMC and GBP Hospital.

#### MATERIALS AND METHODS

This study is a hospital based retrospective observational study. The study was conducted in the department of ENT, AGMC and GBP Hospital, Tripura. The study period was February 2023 to July 2024. The study size comprised of 90 patients who were diagnosed with otorhinolaryngological extrapulmonary tuberculosis.

#### Inclusion Criteria

1. All cases of extrapulmonary tuberculosis in the ENT, Head and Neck region attending ENT OPD and willing to participate in the study were included.
2. All age group patients were included irrespective of any sex.

#### Exclusion criteria

1. Those who did not come for follow-up and solely pulmonary tuberculosis were not included.

A detailed history was obtained from all the patients with important symptoms like painless persistent ear discharge, hemoptysis, change in voice, chronic cough, persistent neck swellings, fever and weight loss. General, systemic and complete ENT examination was carried out. Chest X-ray (PA view) was done in all patients to rule out co-

existing pulmonary TB. A complete hemogram, blood sugar, liver function, kidney function, HIV testing done in all patients. In some cases, x-ray of the cervical spine, mastoids, and soft tissue neck were performed. In every case of neck swelling,

FNAC was carried out. Inconclusive findings in FNAC were further sent for CB-NAAT. If reports still inconclusive, incision biopsy of the neck node was done.

Other investigations such as sputum, pus from draining sinuses or abscess, laryngeal secretions, and ear discharge were sent for cultures, sensitivity tests, and AFB stains.

Presence of Acid-fast bacilli (AFB) or caseation necrosis in FNAC were regarded as favourable results for the diagnosis of tuberculosis.

On confirming the diagnosis, all the patients were treated with antitubercular drugs. The patients were followed up and evaluated for response to anti-TB treatment at regular intervals.

#### Statistical Analysis

Data were recorded, entered and analysed using SPSS version 29.0 statistical software and results were depicted as percentages.

#### RESULTS

In our study, 90 patients were diagnosed with otorhinolaryngological extrapulmonary tuberculosis which include tubercular cervical lymphadenopathy, otitis media, laryngitis, deep neck space abscess. 38 patients were males and 52 were females. 37 patients had coexisting pulmonary tuberculosis and 4 patients were positive for HIV.

#### Tubercular Cervical Lymphadenopathy:

In our study, it is the most common manifestation of extrapulmonary TB accounting for 64 out of total 90 cases. There were 24 males and 40 females.

The commonest age group affected was the 4<sup>th</sup> decade. Commonest presentation was painless neck swelling (82%). Painful neck swelling (8%), ulcer (6%) and discharging sinuses (4%) are other presentations.

In majority of the cases posterior triangle lymph nodes were involved. 24 patients had coexisting pulmonary TB. HIV was positive in 4 patients.

All the patients were sent for FNAC, and if the result was inconclusive then CBNAAT was done. 56 cases were diagnosis by these investigations itself.

Conclusive diagnosis could not be made in 8 cases in whom excision biopsy was done and confirmed. According to RNTCP, the patients were placed on category I ATT for 6 months. They were kept on monthly follow up till the completion of treatment and as per requirements thereafter.



**Fig 1:** Tubercular lymphadenitis with ulceration.

**Tubercular Otitis Media (TBOM):**

In our study, there were 5 cases of TBOM. Among them 3 were male and 2 were female. The most common age group involved was 11-20 years. 2 patients had coexisting pulmonary TB.

The most common presenting symptoms were persistent otorrhoea not responding to antibiotics and hearing loss. On examination, 3 patients had single and 2 patients had multiple tympanic membrane perforation with granulation tissue formation. PTA revealed conductive hearing loss in 3 patients while mixed hearing loss in 2 patients.

These granulation tissues were sent for histopathological examination (HPE) and revealed the diagnosis of TB. The patients were then started category I ATT and then the patients were monitored on a monthly basis until the end of the ATT.



**Fig 2:** Tubercular otitis media with multiple perforations in left tympanic membrane.

**Laryngeal Tuberculosis:**

There were 5 cases of tubercular laryngitis. Among them 3 cases were male and 2 were female. 2 patients were in the age group of 31-40, 41-50 respectively, and 1 patient is in the age group of more than 50.

The common presenting symptoms were hoarseness, odynophagia, and cough with expectoration. In 4 cases hoarseness developed 1-2 months after complaints of cough with expectoration. In 1 case both complaints were reported to have developed together. All the cases had coexisting pulmonary TB with sputum for AFB was positive.

On examination, laryngeal mucosal congestion was seen in each case. Left vocal cord palsy seen in 1 patient, whitish patches over the vocal folds were seen in 2 patients and 2 patients had mouse nibbled appearance of vocal folds. Stripping was done and specimen was sent for histopathological examination in indicated cases. Diagnosis of laryngeal tuberculosis was made and patient was started on category I ATT and followed up regularly.



**Fig 3:** Tubercular laryngitis causing left vocal cord palsy.

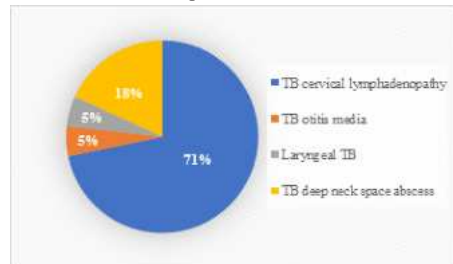
**Tubercular Deep Neck Space Abscess:**

16 patients had tubercular deep neck space abscess. There were 8 male and 8 female patients. The most common age group involved was 31-40 years. 6 patients had coexisting pulmonary tuberculosis.

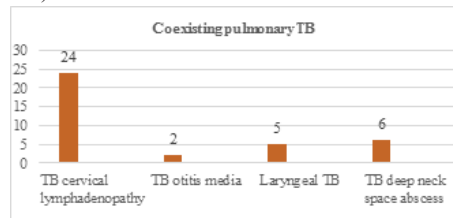
The common presenting complaints was fever, neck swelling, odynophagia, difficulty in movement of neck which was not improved after taking antibiotics. X-ray neck, CECT neck was done in all the 16 patients. Pus aspirated from the pharyngeal wall bulge and was sent for AFB and CB-NAAT and all the reports were diagnostic of tuberculosis. All patients received category I ATT and then followed up regularly till the end of treatment.



**Fig 4:** CECT scan of the neck showing collection involving prevertebral space extending to retropharyngeal space from with erosion and cortical destruction of endplate of C5 & C6 vertebral bodies.



**Fig 5:** Incidence of the various otorhinolaryngological manifestations of TB (n=90)



**Fig 6:** Incidence of pulmonary TB coexisting with extrapulmonary TB in ENT

**DISCUSSION**

It is estimated that extrapulmonary tuberculosis constitutes 15 to 20 % of tuberculosis cases among HIV-negative adults in India [4]. India is the country with the highest burden of TB, with incidence of 2.1 million out of a global incidence of 9 million [6]. A higher index of clinical suspicion is essential to diagnose extra pulmonary tuberculosis due to its lack of characteristic symptoms which often leads to misdiagnosis [7].

In our study, 90 patients of extrapulmonary TB in ENT, head and neck region were found. Higher incidence of extrapulmonary TB was seen in females (57%) than in males (43%). In a study conducted by Soumyajit Das et al and Agarwal et al female predominance is seen in 60.3% and 58% cases respectively [2,8].

In our study, the most common extrapulmonary TB affecting head and neck region was tubercular cervical lymphadenitis affecting 64 (72%) cases which is similar to a study conducted by Singhanian Ankit et al [9] where cervical lymphadenitis constitutes 95.3%. The most commonly affected nodes found were level V (posterior triangle) and level III

followed by supraclavicular neck nodes. which is similar to a study conducted by Singhania Ankit et al [9]. The most common age group involved in TB cervical lymphadenopathy is 31-40 years. Singhania Ankit et al also found the most common age group involved is the 4<sup>th</sup> decade [9]. Reshma P. Chavan et al in their study found 21-30 years as the most common age group involved [10]. In most of the cases, FNAC was the diagnostic investigation for the lymph node tuberculosis except in 8 cases in which lymph node biopsy was done which is in accordance with the study by Chakravorty S et al. [11].

Tubercular otitis media is a rare manifestation of tuberculosis which accounted for 5.5% of extra pulmonary tuberculosis cases in the present study. Shilpam Sharma et al in their study found TBOM in 1.5% of cases [12]. Many studies have documented a wide variety of ear abnormalities and varying types and severity of hearing loss, but the standard description of TBOM has is multiple tympanic membrane perforations in a patient with painless ear discharge and disproportionate sensorineural hearing loss [13-15].

In our study, there were a wide variety of presentations like refractory ear discharge, reduced hearing, granulation tissue was found. Typical multiple perforations in tympanic membrane were found in two patients. HPE report of diseased tissue from the ear is the surest way to confirm the diagnosis of TBOM. This has also been reported by other studies [15,16].

Laryngeal TB was found in 5 (5.5%) patients with hoarseness of voice as the most common presentation. In a study conducted by Apurva Raina et al laryngeal TB comprised of 15% of all cases.

In our study, tubercular deep neck space abscess is the second most common manifestation comprising of 18% of total cases. Apurva Raina et al also found in their study that tubercular deep space neck abscess is the 2<sup>nd</sup> most common manifestation with 20% of total cases [12].

## CONCLUSION

Extrapulmonary tuberculosis especially in ENT, Head and Neck region is common in a developing country like India where burden of TB is high. Tuberculosis should always be kept in mind as a differential diagnosis in chronic patients who are not responding to routine treatment. CB-NAAT is very effective in diagnosing extra pulmonary tuberculosis and ATT for extra-pulmonary TB carries a good response rate.

**Ethical Approval And Consent To Participate:** All written informed consent were obtained from the patient. All ethical principles for medical research studies established by our institution have been followed.

**Conflict Of Interest:** None

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