Tuberculosis in ENT

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Abstract:

Introduction: Extrapulmonary form of TB has significant challenges in its clinical identification, diagnostic confirmation and treatment. With our study we can look for various clinical and diagnostic aspects of TB in ENT which were neglected previously by major professionals also.The objective of this study is to assess the prevalence of TB in ENT patients and whether it is associated with concomitant pulmonary TB or not and to check knowledge of battery of various tests for prompt diagnosis of TB. **Objective:** The objectives of this study were to assess prevalence of TB in ENT patients, to check knowledge of battery of test for prompt diagnosis of TB, to identify reasons for low case detection, associated with HIV or not, associated risk factors, drug resistant TB. **Materials and Methods:** This is a prospective analysis of 60 patients diagnosed with tuberculosis in a simple random sampling over a period of 1 year. The period of study is from December 2018 to November 2019. Patients with complete clinical data were identified and included in the study. **Result:** Most commonly patients were from age groups of 2nd and 4th decade. In our study, males were more commonly affected than females. Cases were most commonly presented with TB lymphadenitis (most commonly cervical) followed by ear, larynx and pharyngeal region involvement. Nasal involvement in TB is very rare to be found. We also observed that the most effective method of diagnosing TB is cytopathological that is by doing Fine Needle Aspiration Cytology and histopathology. **Conclusion:** The most commonly affected age group was from 2nd and 4th decade of life. The mean age of affected patients in this study is 31 yrs. In our study, male to female ratio is 1.31:11 exhibiting male preponderance. Extra pulmonary TB is significant health problem worldwide. It poses a challenge in diagnosis and monitoring of the treatment. Early diagnosis and appropriate treatment of EPTB will prevent its progression and complication.

Keywords:- ENT, Laryngeal TB, Preauricular abscess, Tuberculosis, TB lymphadenitis.

Introduction:

Extra pulmonary TB is significant health problem worldwide. It poses a challenge in diagnosis and monitoring of the treatment. EPTB especially in high disease load countries like India is still an important disease entity[1]. Early diagnosis and appropriate treatment of EPTB will prevent its progression and complication like SNHL, facial paralysis, discharging cervical sinus etc.

Pulmonary TB being present in 25-30% population[2], concomitantly proper management is essential.Though it can affect any organ in the body

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except nail, hair, and teeth, the head and neck tuberculosis can affect the lymph nodes, larynx, middle ear, nose, oral cavity and pharynx as well.

In 2015, the world had an estimated 10.4 million new TB cases[3].Over half of these were among men (5.9 million) and women constituted over a third(3.5 million).10%ofcases were amongst children. India (23%) accounts for a third of the world's burden and ranks six regarding incidence rate. The burden of extra-pulmonary tuberculosis is high, ranging from 15-20%of all TBcases[4], while in HIV positive people, it accounts for 40-50% of all the new cases. Lymph node tuberculosis is seen in nearly 35%of EPTB.

EPTB refers to any micro-biologically confirmed or clinically diagnosed case of TB involving organs other than the lungs such as lymph nodes, pleura, bones & joints, meninges of brain, intestine, genitourinary tract[5].A high level of suspicion is essential in patients with suggestive symptoms and signs. However, when extra-pulmonary localization is evident in a patient with pulmonary tuberculosis (TBCP), these patients were taken out from pulmonary tuberculosis group according to WHO criteria.

Tuberculosis of the head and neck region provides an impressive field of research because of its varied presentations and different sites of involvement. It may often mimic malignancy and is misdiagnosed, which leads to an unnecessary delay in diagnosis. Also, it is crucial to differentiate cervical lymph node TB, which is the most frequently observed form of EPTB, from other lymph node diseases, like metastatic cancer, malignant lymphoma, non-specific hyperplasia, Kikuchi's disease, Castleman's disease, sarcoidosis, cat scratch disease.

TB affecting other sites is rarely smear-positive; the contagion potential is negligible. However, at times diagnosis of disease at other sites like larynx, middle ear cleft, thyroid and pharynx can be challenging and delayed due to its infrequent involvement. It is essential for the clinician to be aware of the condition and consider it in their differential diagnosis. Accurate and specific diagnostic tests that can detect the disease early is the need of the hour. This is more so in a country like India where the prevalence of tuberculosis is high and HIV co-infection is on the rise.

Materials and Methods:

This is a prospective analysis of 60 patients diagnosed with tuberculosis in a simple random sampling over a period of 1 year. The period of study was from December 2018 to November 2019. Patients with complete clinical data were identified and included in the study.

We included patients in this study who were either known case of TB or biopsy or FNAC proven diseases, diseases of ENT which were not responding to the routine management protocol (example: chronic ear disease, cervical lymphadenitis, laryngeal lesions, granulomatous diseases), Patients with history of contact who was proven case of pulmonary TB, clinically suspicious cases of ENT tuberculosis with symptoms such as persistent ear discharge, nasal obstruction or blood stained rhinnorhoea, cervical lymph node swelling with/without loss of weight and appetite. Immunocompromised patients, relapsers or defaulters, unwilling to take AKT, lost to follow up were excluded from this study.

Comprehensive history taking was done according to predefined proforma from the

patient , his /her guardian, parents or spouse. After collecting data, details of the background of their current and past illness, history of contact, family history and personal habits were included.

Patients underwent complete ENT evaluation which included otoscopic examination of the ear, inspection of nose using thudicum nasal speculum, oral cavity and oropharynx using lack's tongue depressor, indirect laryngoscopy to assess and visualize larynx and clinical examination of the neck for nodes. Evaluation of neck nodes included description of size, site, mobility, tenderness, consistency.

The investigations done were pus and swab taken from discharge for microbiological study (AFB and culture& sensitivity), Montoux test, HIV testing. Pathological tests included Fine Needle Aspiration Cytology, Histopathological examination and biopsy(neck node, ear, nose, larynx, tonsil) when deemed necessary, appropriate specimen from presumed sites of involvement from suspected cases for CBNAAT, smear microscopy, culture and Drug susceptibility testing (DST) were taken. Radiological tests included chest X ray, ultrasonography local part, CT scan and other investigations which have been used as supporting tools for diagnosing EPTB. Concurrent pulmonary tuberculosis was ruled out by sending 3 consecutive sputum samples for mycobacterial smear and culture.

Under RNTCP, two methods of microscopy are currently employed viz. ZN stain based microscopy using conventional microscope and Light Emitting Diode based Fluorescent Microscopy (LED FM)[6].The smears were classified as tuberculous, reactive or malignant. The diagnosis of tuberculous lymphadenitis were put forth if one of the patterns were found- Tuberculoid/ cell granuloma, epitheloid cell granuloma with or without casseous necrosis. Drug susceptibility testing were done either by M. tuberculosis isolates by 1% proportion method on LJ medium against Isoniazid, Rifampicin, Streptomycin, and Ethambutol or CBNAAT testing.

Results:

A diagnosis of tuberculosis was based on the suspicious clinical features and investigations.The presenting symptoms of laryngeal tuberculosis were typically hoarseness, odynophagia, and dysphagia. Indirect laryngoscopy / fibroptic laryngoscopic examination commonly reveals diffuse erythema and granulomatous or polypoidal changes of the vocal cords. Specimens were sent for histopathology examination, mycobacterial culture, and susceptibility testing. In our study 4 patients presented with hoarseness of voice and 2 patients came with difficulty in swallowing and stridor. Also TB should be kept in mind when there is laryngotracheal stenosis with granulations and HPE should be done.

The symptoms of tuberculosis of the Middle Ear were typically otorrhoea which is persistent despite of multiple courses of antibiotics, otalgia, hearing loss, and in extreme cases facial palsy.The chief complaint of 2 patients was pre auricular abscess as shown in Image 2, reduced hearing in 2 patients and ear discharge in other 10 with tympanic membrane multiple perforation as shown in Image 3. Physical examination findings include abundant polypoid or avascular pale granulation tissue. The patients with exuberant pale middle ear and mastoid granulations underwent histopathology examination and mycobacterial culture

and susceptibility testing of which two patients had coexisting pulmonary disease. Also we had a patient with intracranial extension involvement in CSOM who was diagnose with TB in pus culture as well as from specimen sent in ear surgery in HPE.

Image 1 Laryngeal TB as seen on direct laryngoscopy

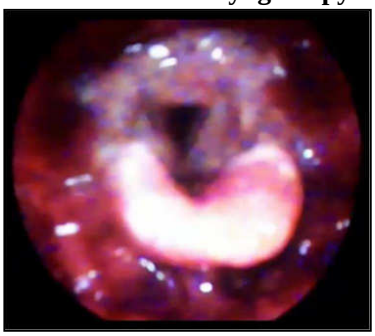


Image 2. Preauricular abscess

Image 3 TB of tympanic membrane showing double perforation

Image 4 TB lymph node in level 2A

Image 5 TB in cervical region with burst open abscess

Image 6 Apple jelly nodules

Image 7 Gender distribution of patients with EPTB

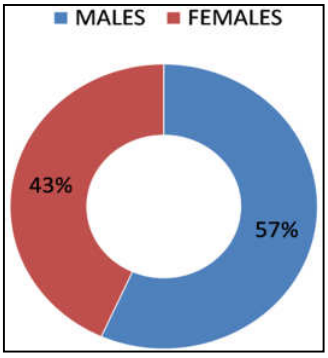


Image 8 Association with pulmonary TB

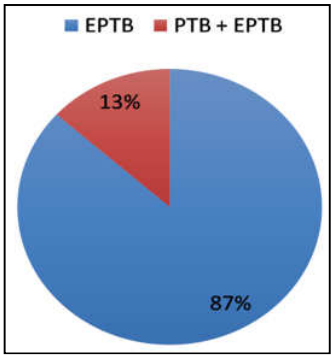
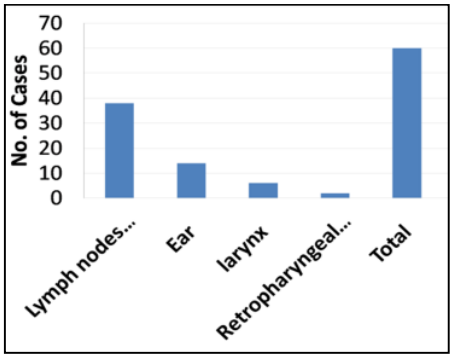


Image 9 Involvement of EPTB according to location



In our study, the presenting symptoms of pharyngeal or retropharyngeal TB was difficulty and pain on swallowing, fever, cough, severe pain in throat, swelling in neck and stiffness; and muscle spasm in neck.The patients suspected to have TB were subjected to a microlaryngoscopy and biopsy. Specimens were sent for histopathology examination, mycobacterial culture, and susceptibility testing.

A very rare presentation of TB apple jelly nodule that is skin involvement in TB of vestibule of nose was also observed.

Table 1 Age distribution of patients with EPTB

Age in range{yrs}	No. of cases
6-10	8
11-15	0
16-20	2
21-25	10
25-30	6
31-35	10
36-40	10
41-45	0
45-50	2
51-55	0
56-60	6
61-65	6
total	60

Table 2 Involvement of EPTB in head and neck region according to anatomic location

Site	No of cases
Lymph nodes cervical region	38
Ear	14
larynx	6
Retropharyngeal region	2
Total	60

Table 3 Various Cytological features of patients with tuberculous lymphadenopathy

	Males	Females
Epitheloid cell granuloma	6	10
Chronic non specific lymphadenitis	4	4
Langerhans giant cell granuloma	2	2
Benign reactive lymphadenopathy	2	4
Koch's abscess	2	2
Total	16	22

Table 4 Chief clinical presentation of patients with EPTB according to site

Site of involvement	Chief clinical Symptoms	Presentation / Signs
Lymph nodes	Neck swelling, discharge from sinus, ulcers	Matted lymph node enlargement, sinus formation, undermined edges of ulcer, pale granulations
Pharynx	Difficulty and pain on swallowing	Turban epiglottis, pale edematous mucosa
Ear	Persistent otorrhoea	Pale granulation, multiple perforation
Larynx		
a) Vocal cords	Change of voice	Pale granulation in vocal cord
b) Trachea	Difficulty in breathing	Multiple granulations in trachea

Discussion:

Tuberculosis, "captain of all these men of death", as referred by John Bunyan in the

18th century is still the biggest health challenge of the world[7]. It is known that 1.5% of India's population is affected with Tb[8]. Extra pulmonary involvement can occur in isolation or along with a primary focus as in the case of patients with disseminated tuberculosis. EPTB constitutes about 15-20% of all cases of tuberculosis in immune-competent patients[9].

The study included 60 patients. The patients coming to ENT OPD with signs and symptoms of TB were included in the study and subjected to various diagnostic evaluations, the results of which are extrapolated to an assortment of bio statistical analysis. The most commonly affected age group was from 2nd and 4th decade of life. The mean age of affected patients in this study is 31 yrs. In our study, male to female ratio is 1.31:11 exhibiting male preponderance.

Tb lymphadenitis of the cervical region is the most typical manifestation of EPTB. In our study 63% of the cases presented with TB lymphadenitis. The commonest site was cervical lymph nodes, followed by ear(23%), larynx(10%) and retropharyngeal region(0.03%).

Classical description of TBOM is multiple tympanic membrane perforation with painless ear discharge and disproportionate hearing loss. In our study we found very much similar findings and alongside patient with preauricular abscess formation. The diagnosis was done when pus was sent for AFB staining and culture and sensitivity testing and granulations sent for histpoathological examination.

Dysphonia is the most typical presenting complain with pain being prominent in laryngeal TB. In our study we found 10% of the patients with laryngeal TB who had associated vocal cord palsy.AKT has 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.

Among all investigating modalities used in our study, FNAC was proven to be more consistent way of diagnosing TB lymphadenitis. In patients with negative FNAC but symptoms highly suspicious of EPTB biopsy and tissue CBNAAT was proven to be more sensitive test to diagnose TB. Advantage of CBNAAT over other investigations were that it includes sensitivity test along with initial diagnosis so that early treatment according to sensitivity could be started which was more beneficiary over empirical AKT. CBNNAT also takes shorter time (app. one week) for diagnosis comparative to microbiological cultural testing (6 weeks)[10]. Also, serial pure tone audiograms are done in patients of AKT so that SNHL can be monitored.

Conclusion:

Extra pulmonary TB is significant health problem worldwide. It poses a challenge in diagnosis and monitoring of the treatment. EPTB especially is high disease load countries like india is still an important disease entity. In the present study, the incidence of ENT TB is 2 cases out of 1000 patients attending OPD. Male predilection is more than females. The ear, nose, PNS, pharynx, larynx and cervical nodes are very important anatomical sites of extrapulmonary affliction. The symptoms of EPTB in ENT are varied; hence, all otolaryngologists should be aware of the manifestations of EPTB. Peripheral lympadenopathy is the most common site of of EPTB. In our study most of them were

presented with tuberculoid lymphadenitis. Only a high index of suspicion with a proper tissue diagnosis can detect these cases. Patients usually respond well to category I AKT. Surgery may be required in some cases. Early diagnosis and appropriate treatment of EPTB will prevent its progression and complication like SNHL, facial paralysis, discharging cervical sinus etc.

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