Research Paper

Volume : 3 | Issue : 3 | March 2014 • ISSN No 2277 - 8179

Recent Trends in Head and Neck Tuberculosis And Review of Literature

Medical Science

KEYWORDS : head and neck tuberculosis, varied presentstions ,literature review

*** Gangwar N**	Associate Professor, Department of ENT, Kasturba Medical College, Manipal University, Karnataka, India-576104. * correspondent author
Mahesh SG	Associate Professor, Department of ENT, Kasturba Medical College, Manipal University, Karnataka, India-576104.
Pillai S	Professor, Department of ENT, Kasturba Medical College, Manipal University, Karnataka, India-576104
Nayak DR	Professor, Department of ENT, Kasturba Medical College, Manipal University, Karnataka, India-576104
Sibin MA	Junior Resident, Department of ENT, Kasturba Medical College, Manipal University, Karnataka, India-576104

ABSTRACT

Objective:-As extra pulmonary tuberculosis is rising we want to highlight the presentations of head and neck tuberculosis, discuss the difficulty in diagnosis and treatment.

Materials and methods: - 5 year retrospective analysis of patients with tuberculosis of head and neck.

Results:- 43 patients were studied. Most had cervical lymphadenopathy (29), five tuberculous otitis media, six laryngeal, one patient each of paranasal sinus, oropharyneal and retropharyngeal involvement. Eight had pulmonary tuberculosis, two had potts spine and five gave history of previous tuberculosis. Fine needle aspiration cytology (FNAC) was effective in nodal disease. PPD test positive in 20% . Biopsy and histopathological examination used to make diagnosis in other types.

Conclusions:-Diagnosing TB requires high index of suspicion. Cervical lymphadenitis is the commonest, followed by larynx and ear. FNAC is reliable and easy way to diagnose lymphadenitis, histopathological examination needed for confirmation and for other sites. Investigations are needed to exclude pulmonary or systemic TB.

INTRODUCTION-

Tuberculous infections has been synonymous with pulmonary tuberculosis, and extrapulmonary manifestations were rare earlier. According to WHO data, there are approximately eight million cases each year and it is the leading cause of death secondary to infectious diseases .[1] India contributes one fifth of the global burden. Around 1.8 million affected every year with over 400,000 deaths. [2] The present study explores the varied presentations and discusses the various diagnostic and treatment modalities.

Study design- Five year retrospective analysis of patients who presented to us with tuberculosis of head and neck region.

RESULTS-

The data analysis of patients with head and neck tuberculosis is shown in Table 1.

Forty three patients presented with head and neck manifestations of tuberculosis . Majority (29,62.74%) had cervical lymphadenopathy. Age range 9 - 68 years, 22 males and 21 females.

Cervical tuberculosis (29) cases:-

The details of patients with cervical tuberculosis (TB) are shown in Table 2. Fifteen males and 14 females. 23 presented with unilateral neck mass , 2 with bilateral neck masses and another 2 with fistulae in neck. There was no difference in side of neck 14 right and 13 left. Anterior group lymph nodes

Table 1
Data analysis of patients with head and neck tuberculosis

	No. Of patients
SITE	
Cervical Lymph Nodes	29(67.4%)
Larynx	6
Ear	5
Oropharynx	1
Paranasal sinus	1
Retropharyngeal abscess	1
SEX	
Male	22
Female	21
Chest X-ray	
Positive	8
Clear	18
Not done	17
Sputum AFB	
Positive	4
Negative	8
PPD Test	
Positive	6
Negative	24
Associated tuberculosis	
Pulmonary	8
Spine	2
Previous tuberculosis history	5

(jugulodigastric) were commonest. Three patients had both anterior and posterior group. We had two patients with pre-auricular lymph node swelling, not responding to conventional treatment, the excisional biopsy came as tuberculosis. X-ray of the chest revealed pulmonary tuberculosis. The patients presented with discrete, non tender, single / multiple matted lymph nodes of small to moderate size, not more than 3 cm in diameter. Figure (1) Four patients had positive chest x-ray findings.

Eighteen patients (66.6%) were diagnosed by FNAC examination, the remaining by tissue biopsy. Two patients presented with fistula in neck. One of them, a young male, had undergone incision and drainage several times outside. Neck exploration revealed a fistulous tract involving the internal jugular vein,

which was ligated. Second case was a young female, who had fistula in neck. Diagnosed as a case of tubercular lymphadenitis and already on ATT, she had to undergo fistulectomy. There was no recurrence after surgery

Table 2
Data analysis of patients with tuberculous cervical lymph nodes

	No. Of patients
SEX	
Male	15
Female	14
PRESENTATION	
Neck mass	25
Pre-auricular swelling	2
Fistula	2
SITE OF NODE	
Anterior triangle	15
Posterior triangle	7
Both anterior and posterior triangle	3
Preauricular	2
Not mentioned	2
SIDE	
Right	14
Left	13
Bilateral	2
FNAC	
Done	27
Positive	18 (66.6%)

Laryngeal tuberculosis(6) cases:-
The presenting symptoms were hoarseness and odynophagia. Two patients had previous history of pulmonary tuberculosis. Vocal cords were the most commonest site, 5 out of six cases. The findings were moth eaten appearance, granulation tissue, warty growth, a whitish patch and irregularity in the anterior one third. Left vocal cord was involved in four cases. Other laryngeal presentations included granulation tissue on arytenoids and ventricular band hypertrophy with a deformed epiglottis**.** None of our patients had active pulmonary tuberculosis. Diagnosis was made by biopsy and histopathological examination.

Tuberculous otitis media(5):-
The presenting complaints were ear discharge and loss of hearing. First case, a young female, presented with post aural subperiosteal swelling. She underwent cortical mastoidectomy. The mastoid was filled with abundant granulation tissue and biopsy revealed tuberculosis. Two patients underwent myringoplasty, for a central perforation and other for multiple perforations. Both had tuberculous granulations in the middle ear. The first patient, had a history of spinal tuberculosis. Fourth patient had a post aural lymph node, discovered during myringoplasty which came tuberculous on biopsy. Fifth patient had a marginal perforation and cholesteatoma, underwent modified radical mastoidectomy, the granulation tissue was tuberculous on histopathology. All the patients had moderate conductive hearing loss. None of our patients could be diagnosed pre operatively by AFB staining or culture of the ear swab.

Orapharyngeal tuberculosis(1)case:-
60 year old male presented with voice change and odynophagia for two months. On examination, there was an ulceroproliferative growth involving the left tonsil, base of tongue and extending into left pharyngo epiglottic fold, ventricular band and arytenoid. Figure(2) He underwent left tonsillectomy for biopsy. To our surprise the report came as tuberculosis. Sputum examination was positive for acid fast bacilli.

Para-nasal sinus tuberculosis(1):-
50 year old female patient presented to us with right side facial pain, nose block, blood stained nasal discharge, swelling and watering of right eye. There was proptosis, restricted eye movements, fullness and tenderness in right maxillary region. Nasal endoscopy revealed slough covered mass in right middle meatus. Biopsy report was tuberculosis. The patient did not have pulmonary focus.

Retropharyngeal abscess(1):-
38 year male presented with breathing difficulty, odynophagia and neck pain. He had stridor and large posterior pharyngeal wall bulge. Emergency drainage of retropharyngeal abscess was done. Radiological investigations revealed cervical spine tuberculosis. The patient expired post operatively.

Antitubercular treatment- All patients received a regimen of two months of isoniazid, rifampicin, pyrazinamide and ethambutol, followed by four months of isoniazid and rifampicin



A-CERVICAL LYMPHADENOPATHY
B-LARYNGEAL TUBERCULOSIS
C-AURALTUBERCULAR GRANULATIONS
D-OROPHARYNGEAL TUBERCULOSIS

DISCUSSION-
The usual route of TB infection is by inhalation of infected droplets resulting in a primary complex which resolves spontaneously. Complication arise due to failure of resolution with pulmonary, bronchial or lymphnode spread. Post primary disease is due to reactivation of previous infection or reinfection. If untreated it spreads by blood or lymphatics causing extrapulmonary TB. The most common site is lymphnodes.

The rapid resurgence of tuberculosis prompted the WHO to call for the universal adoption of its directly observed therapy strategy ('DOTS') for managing drug resistance.[3,4] The extrapulmonary form of TB has been classified, at anatomical and clinical level, into three types.[5]

1. Clinically primitive: processes which appear in extrapulmonary regions as the first clinical expression of tubercular disease, completely lacking in any previous morbid outbreak in the pulmonary area.
2. Clinically secondary: extrapulmonary morbid conditions, either in the short- or long-term, following clinically overt pulmonary processes.
3. Late phenomena of earlier tubercular processes either ignored, or remaining latent or previously occurring in a more or less manifest form.

In our study tubercular cervical lymphadenopathy was the commonest (62%), followed by laryngeal involvement (16%) and aural involvement in 11.6%. Our results are similar to most of

the earlier published studies[3,5,8,9]. Al Sherhani [3] did not find any laryngeal or aural involvement but found more of nasal and nasopharyngeal involvement. Details of the different regional involvement are described below.

Tuberculous cervical lymphadenopathy: The cervical lymphnodes are commonest location for peripheral TB.[6,7] Approximately 5% of TB patients develop cervical lymphadenitis. The portals of entry for the tubercle bacilli to the cervical lymphnodes include lung, tonsils and nasopharynx. TB of cervical lymph nodes are of clinical significance in both patients from endemic, developing countries and immunocompromised patients, particularly HIV infection [6]. Unilateral involvement prevailed in 86.9 % of our cases as in other series.[5] The anterior triangle was the most commonly affected, similar to the result by Wang et al. [8] Posterior triangle lymphnodes were the most commonly affected in other studies. [9] Matting and fixation to the surrounding structures was seen in 50%. Associated acute active pulmonary TB affects 5% of patients with cervical lymphnode disease[7] and in our study it was 13.8%.

Laryngeal tuberculosis:- In last century TB was the commonest condition to affect larynx. In 1905 Haberson found 48% laryngeal involvement in autopsy specimens and in 1947 Auerbach noted 37.5% incidence. Laryngeal TB has declined and accounts for less than 1%. There is predominance of males in 4th to 6th decade[10] , similar to our findings. Hoarseness was the commonest symptom. Odynophagia was seen as a prominent symptom in some studies. [10] Other symptoms include cough, stridor and referred otalgia. Earlier, posterior part of larynx was mostly affected but now it is vocal folds (50-70%), closely followed by ventricular bands (40-50%).[11] Other sites are epiglottis, aryepiglottic fold, arytenoids, posterior commissure and subglottis. There can be multiple ulcerations, hypertrophic lesions or granulomatous and polypoidal lesions. [11, 12, 13] Our study had 83% vocal cord involvement(5/6). The appearance of laryngeal TB can be misleading, diagnosis can only be made by biopsy. None of our cases had co-existant carcinoma. The route of spread is proposed to be direct endobronchial [12]or hematogeneous, in cases where pulmonary lesions are minimal. [10] Only two of our cases had history of old pulmonary TB. Response to ATT is evident in 1-2 weeks and hoarseness and lesions disappear unless fibrosis has occurred. The persistance of a suspicious lesion may be due to non compliance, resistant organism or a concomitant carcinoma which should be excluded by biopsy. [10]

Aural tuberculosis This can be secondary to active pulmonary tuberculosis and bacilli reach middle ear via hematogenous route or eustachian tube, or primary, where there is no previous focus. Infection can be contracted by drinking infected cow's milk, through the eustachian tube. Spread may occur along the lymphatics or mucosa of the tube, and an undetected focus of infection may be present in the tonsils or adenoids. Occasionally, bacilli may enter the middle ear through a persistant perforation in the tympanic membrane. There are three stages acute, chronic and necrotic. Acute stage has moderate congestion of tympanic membrane, swollen blood vessels, followed rapidly by reddening and thickening of tympanic membrane, then tubercle formation and perforation. Chronic form is slow, painless with perforations and pink granulations. Necrotic form destroys the bone which appear as fragments in discharge. [14] The classic clinical features of TOM (tubercular otitis media) were described by Wallmer in 1953, as painless otorrhoea, multiple tympanic membrane perforations, pale granulations, ipsilateral facial nerve paralysis, early severe hearing loss, and bone necrosis. Recent reviews have revealed that such findings are rare now.[15,16,17] Facial palsy is more common in pediatric population. Perforations are generally single. Widespread use of neomycin and gentamicin ear drops, having weak anti-tuberculous action, can mask the presentation. Histopathologic examination of middle ear and mastoid mucosa shows three types of tuberculosis- miliary, granulomatous and caseous. Culture is difficult as organism is slow growing, other faster growing organism may be present. Repeated samples are needed. Recently PCR and molecular gene probe techniques have been proposed for faster identification. CT imaging is best suited for diagnosis. Mastoid x-ray usually show increased density of soft tissues in antrum. All authors believe that medical management is best. Surgery is indicated to provide histologic material for diagnosis, drainage of a subperiosteal abscess, removal of sequestrum and according to some, for decompression of facial nerve.[14,17,18] The surgery group has better outcome perforation closure.[17] Our patients had non specific presentations, similar to chronic otitis media. Only one patient had multiple perforations. Since a preoperative diagnosis was not made they underwent surgery and ATT was started after surgery. So we are unable to comment whether ATT alone is sufficient.

Nasal tuberculosis. First described by Giovanni Morgagni in 1761 in autopsy of a tubercular patient with ulcerations of nose, soft palate and nasopharynx . Primary disease is caused by inhalation of infected particles or traumatic digital inoculation. It is rare because of the protection afforded by ciliary movement, bactericidal action of nasal secretions, and the filtering by the nasal vibrissae. Nasal mucosa is inherently resistant to mycobacterial growth. It generally affects female in fourth decade. Symptoms are nasal obstruction, discharge, epistaxis, crusting and ulceration. Lesions may be ulcerative, infiltrative, or proliferative and most cases are unilateral. The most common sites involved are cartilaginous septum and inferior turbinate. Paranasal sinus tuberculosis is mostly secondary to pulmonary or extra-pulmonary tuberculosis which reaches the maxillary sinus by blood stream or direct extension of nasal infection. Maxillary and ethmoids are commonly affected. Pathologically, it is of three types. First is mucosal infection with polypi and thickened mucosa. Second has bony involvement and fistula formation, and is more common. Third is hyperplastic type with tuberculoma formation. Diagnosis is best made by histopathological examination or culture of the involved tissues. Nasal swab or secretions have very low yield.[19,20] Our patient didn't have any pulmonary focus, so we conclude that it was primary nasal tuberculosis which is very rare. He was managed by ATT.

Oral tuberculosis This occurs in 0.05% to 1.5 % of patients with pulmonary tuberculosis. Primary tuberculous involvement is rare because of inhibitory effect of saliva and resistance of oral cavity mucosa. It presents as painless ulcers, nodules, fissures and granulomas. The tonsil was a common portal of entry for milk-borne tuberculosis earlier. Primary tuberculosis of the palatine tonsil is now extremely rare, presenting usually with persistant sore throat and dysphagia.[21] The frequent recurrence of upper respiratory tract infection which prove resistant to adequate antibiotic therapy should raise suspicion of an underlying tuberculous nasopharyngitis, especially if a history of previous tuberculosis is found.[22] Our patient had a pulmonary focus of tuberculosis which may be the cause of oropharyngeal and laryngeal involvement. He was managed with ATT .

Pott's spine: The commonest vertebra to be affected by mycobacterium tuberculosis in adults is the tenth thoracic vertebra, and the cervical spine in less than one fifth of the cases.[23] Pain is the commonest symptom resulting in stiffness, followed by dysphagia, dyspnoea and stridor due to pressure effects. Abscess is initially behind the prevertebral facia. Later it may present as a retropharyngeal abscess commonly or rarely as sternomastoid abscess. Sometimes it can present as a parotid mass.[24] Unfortunately our patient presented very late and fatal cervical complications couldn't be avoided.

CONCLUSIONS

Tuberculosis is a challenging disease and making a diagnosis requires a high index of suspicion because of its varied and atypical presentations especially in developing countries. Tuberculosis of the cervical lymph nodes is the commonest presentation of head and neck followed by larynx. Newer diagnostic tests can increase the yield of positive cases within a shorter span of time and should be used whenever required, but cost and availability is a limiting factor. In the larynx, the vocal cords were the commonest site affected, which is contrary to earlier findings and laryngeal TB need not be associated with pulmonary TB or positive sputum test always. Patients who have TB of head and

neck must be investigated to exclude pulmonary or systemic TB. Extrapulmonary TB is fairly common in the developing world and otolaryngologist should keep TB in mind when dealing with head and neck lesions.

Acknowledgements: Nil

REFERENCE

[1] Epidemiology of tuberculosis module. Atlanta: CDC National Centre for HIV, STD, TB Prevention, Division of TB prevention, 2004. | [2] Park K. Tuberculosis. In: Park's Text Book of Preventive and Social Medicine, 20th edition. Jabalpur, India: Banarsidas Bhanot Publishors, 2007; p.159. | [3] Al Serhani AM. Mycobacterial infection of the head and neck: presentation and diagnosis. Laryngoscope 2001; 111: 2012-16. | [4] Dye C, Garnett GP, Sleeman K, et al. Prospects for worldwide tuberculosis control under the WHO DOTS strategy. Directly observed short-course therapy. Lancet 1998; 352: 1886-91. | [5] Ricciardiello F, Martufi S, Cardone M, et al. Otorhinolaryngology-related tuberculosis. Acta Otorhinolaryngol Ital 2006; 26: 38-42. | [6] Fain O, Lortholary O, Djouab M, et al. Lymph node tuberculosis in the suburbs of Paris: 59 cases in adults not infected by the human immunodeficiency virus. Int J Tubec Lung Dis 1999; 3: 162-5. | [7] Dandapat MC, Mishra BM, Dash SP, et al. Peripheral lymph node tuberculosis: a review of 80 cases. Br J Surg 1990; 77: 911-2. | [8] Menon K, Ben C, Gouldesbrough D, et al. A clinical review of 128 cases of head and neck tuberculosis presenting over a 10 year period in Bradford, UK. The Journal of Laryngol and Otol.2007; 121 :362-368. | [9] Bhat N, Vunayak S. Tuberculosis in ear, nose and throat practice: its presentation and diagnosis. American Journal of Otolaryngol Head and Neck Medicine and Surgery.2006; 27: 39-45. | | [10] Hunter AM, Millar JW, Wightman AJA, et al. The changing pattern of laryngeal tuberculosis. Journal of Laryngology and Otology.1981; 95: 393-398. | [11] Bailey MC, Windle-Taylor PC. Tuberculous laryngitis: a series of 37 patients. Laryngoscope .1981; 91: 93-99. | [12] Rupa V, Bhanu TS. Laryngeal tuberculosis in the eighties-an Indian experience. The Journal of Laryngology and Otology.1989; 103: 864-868. | [13] Wang CC, Lin CC, Wang CP, et al. Laryngeal Tuberculosis: A review of 26 cases. Otolaryngol Head and Neck Surg. 2007; 137; 582-588. | [14] Chmielik LP, Ziolkowski J, Koziolek R, et al. Ear tuberculosis: Clinical and surgical treatment. International Journal of Pediatric Otorhinolaryngology.2008; 72: 271-274. | [15] Vaamonde P, Castro C, Garcia-Soto N, et al. Tuberculous otitis media: A significant diagnostic challenge. Otolaryngol Head Neck Surg 2004; 130: 759-666. | [16] Lisa MC, Ahmed K, Spinner W, et al. Tuberculous otitis media: Report of 2 cases on Long Island, N.Y., and a review of all cases reported in the United States from 1990 through 2003. Ear, Nose and Throat Journal; Aug 2005; 84, 8: 488-497. | [17] Cho YS, Lee HS, Kim SW, et al. Tuberculous Otitis Media: A Clinical and Radiologic Analysis of 52 Patients. Laryngoscope 2006; 116: 921-927. | [18] Saunders NC, Albert DM. Tuberculous mastoiditis: when is surgery indicated? Int. J. Pediatr. Otorhinolaryngol.2002; 65: 59-63. | [19] Nayar CR, Kaabi JA, Ghorpade K. Primary nasal tuberculosis: a case report. Ear Nose Throat J 2004; 83: 188-91. | [20] Page JR, Jash DK. Tuberculosis of the nose and paranasal sinuses. J Laryngol Otol 1974; 88: 579-83. | [21] Hajioff D, Snow MH, Thaker H, et al. Primary tuberculosis of the posterior oropharyngeal wall. The Journal of Laryngology and Otology.1999; 113: 1029-1030. | [22] Bath AP, Flynn KP, Gibbin KP. Nasopharyngeal tuberculosis. The J ournal of Laryngology and Otology 1992; 106: 1079-1080. | [23] Williams RG, Jones TD. Mycobacterium marches back. J Laryngol Otol 1995; 109: 5-13. | [24] Dilkes M, McGilligan J, Chapman J. A rare presentation of tuberculosis of the cervical spine. J Laryngol Otol.1991; 105: 786-7. |