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Original Research Article

Diagnostic dilemmas of head and neck tuberculosis: our experience and review of literature

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ABSTRACT

Background: The aim of the study was to highlight the varied and changing presentations of head and neck tuberculosis, discuss the difficulties in diagnosis and treatment.
Methods: This was a 5 years retrospective analysis of patients with extrapulmonary tuberculosis (EPTB) of the head and neck region.
Results: 54 patients with EPTB were studied. Most had cervical lymphadenopathy (35), 9 had laryngeal, 7 tuberculous otitis media, and one patient each of PNS, oropharyngeal and retropharyngeal involvement. 8 patients had pulmonary TB, 2 had Potts spine, and 5 gave history of previous TB. FNAC was effective in nodal disease, PPD test positive in 11% and HPE was used to make the diagnosis in other types.
Conclusions: TB is re-emerging as a significant cause of morbidity. Diagnosing EPTB requires high index of suspicion. Cervical lymphadenopathy is the commonest presentation, followed by larynx, and then ear. FNAC is a reliable and convenient way to diagnose lymphadenopathy. Hitopathological examination needed for confirmation, and for other sites. Further investigations are needed to exclude pulmonary or systemic TB. All patients should be categorised into proper category of anti-tuberculous treatment (ATT) and treated according to ATT regimen.

Keywords: Extrapulmonary tuberculosis, Head and neck, Larynx, Lymph nodes, Ear, Mastoiditis

INTRODUCTION

Tuberculosis (TB) is one of the oldest diseases known to mankind.[1] After the development of various treatment regimens in the 1940s, the incidence of pulmonary Tb had decreased. However, in the last four decades, due to the global emergence of AIDS as an epidemic, and the development of multidrug resistant strains of TB, the number of cases of the disease has been increasing progressively, and it has re-emerged as a significant cause of morbidity and mortality.[2]

Though tuberculosis (TB) primarily affects lungs, extra pulmonary tuberculosis (EPTB) is also common, and mainly manifests in ENT region.[2] The presentations are varied and present a diagnostic challenge. We report our experience with the different manifestations of tuberculosis in ENT region in terms of presentation, disease process, treatment and outcome.

METHODS

This was a 5 years retrospective analysis of patients with Tuberculosis of head and neck region who presented to the department of ENT and head and neck surgery, AJ Institute of Medical Science, Mangalore, between October 2014 and September 2019.

Selection criteria

All patients with histopathologically proven tuberculosis of the head and neck were retrospectively analysed. As it was a retrospective study, ethical approval was not required. The data was analysed using microsoft excel and presented in number and percentages.

RESULTS

The data analysis of patients with head and neck TB is shown in Tables 1 and 2.

Table 1: Site of involvement with head and neck TB.

Site	Number of patients N (%)
Cervical lymph nodes	35 (64.81)
Larynx	9 (16.66)
Ear and mastoid	7 (12.96)
Oropharynx	1 (1.85)
Paranasal sinuses	1 (1.85)
Retropharynx	1 (1.85)

Table 2: Investigations done.

Chest X-ray	N (%)
Positive	11 (20.37)
Clear	43 (79.63)
Sputum AFB	
Positive	8 (14.81)
Negative	46 (85.19)
PPD test	
Positive	6 (11.12)
Negative	24 (44.44)
Not done	24 (44.44)

54 patients presented with head and neck manifestations of TB. Majority (35), 64.81% had cervical lymphadenopathy. The range of the participants age was 9-76 years. There were 31 males, 23 females. Cervical TB cases was 35 which includes 19 males and 16 females, 29 presented with unilateral neck mass, 4 had bilateral neck masses, and another 2 with fistulae in the neck. There was no difference with the side of neck. Jugulodigastric lymph nodes were the commonest. 3 patients had both anterior and posterior group. There were 2 patients with pre auricular lymph nodes, not responding to conventional treatment, whose biopsy was reported as TB. 7 patients had positive chest X-ray findings. Patients presented with discrete, non tender, single or multiple, matted lymph nodes of small to moderate size, not more than 3 cm in diameter.

23 patients (66%) were diagnosed by FNAC, the remaining by biopsy. One patient with fistula had h/o I&D done outside several times, excision revealed fistulous track involving the IJV. The second patient of fistula was a young female on ATT, underwent fistulectomy. There was no recurrence after surgery.

Laryngeal TB was noted in 9 cases. The presenting symptoms were hoarseness and odynophagia. 2 patients had previous history of pulmonary TB. 6 out of 9 patients had vocal cord involvement. Findings were moth eaten appearance, granulation tissue, warty growth, whitish patch and irregularities of the anterior 1/3rd. Other laryngeal presentation included granulation tissue on arytenoids and ventricular band hypertrophy with a deformed epiglottis. None of the patients had active pulmonary TB. Diagnosis was made by biopsy and HPE.

Tuberculous otitis media was observed in 7 patients. First case, a young female presented with post aural subperiosteal swelling. She underwent cortical mastoidectomy, biopsy from granulation tissue in the mastoid revealed TB. 2 patients underwent myringoplasty for a central perforation and another had multiple perforations. Both had tuberculous granulations in the middle ear. The first patient had history of spinal TB. The fourth patient had post auricular lymph node which came as tuberculous on biopsy. 3 patients had marginal perforation, underwent MRM, granulation from mastoid came as TB. One of these patients had presented with facial palsy. All patients had moderate, mixed HL. The sensory neural component of hearing loss, and the facial palsy persisted post operatively.

Oropharyngeal TB cases was observed in 1 case. 76 years old male patient, presented with change of voice and odynophagia of two months duration. O/E there was an ulcero proliferative growth involving left tonsil, BOT, left pharyngoepiglottic fold up to arytenoids. Biopsy came as TB, and sputum was positive for AFB.

PNS was noted in 1 case. 52 years old female patient, presented with right facial pain, nose block, blood stained nasal discharge, swelling and watering of right eye. Examination showed restricted eye movements, and swelling over right maxillary region. Anterior rhinoscopy revealed slough covered mass in the right nasal cavity. Biopsy was reported as TB. There was no pulmonary focus.

Retropharynx was seen in 1 case. A 38 years old male patient who presented with breathing difficulty, pain on swallowing and neck pain. On examination he had stridor, and a large post pharyngeal wall bulge. Emergency drainage of the abscess was done. Radiological investigation showed cervical spine TB.

All patients received 6 months of ATT. Two months of isoniazid, rifampicin, pyrazinamide, and ethambutol, followed by four months of isoniazid and rifampicin.

DISCUSSION

The usual route of TB infection is by inhalation of infected droplets, resulting in a primary complex which resolves spontaneously. Complications arise due to failure of resolution, with pulmonary, bronchial or lymph node 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 lymph nodes.

The rapid resurgence of TB prompted WHO to call for the universal adoption of the directly observed therapy strategy (DOTS) for managing drug resistance.[3,4.]

Extrapulmonary form of TB has been classified at anatomical and clinical level into 3 types.[5] Clinically primitive process which appears in extrapulmonary regions as first clinical expression of tubercular disease, completely lacking in any previous morbid outbreak in the pulmonary area. Clinically secondary: Extrapulmonary morbid conditions either in the short or long term, following clinically overt pulmonary processes. Late phenomena of earlier tubercular process, either ignored or remaining latent or previously occurring in a more or less manifest form.

In our study, tubercular cervical lymphadenopathy was the commonest (64.81%), followed by laryngeal involvement in 16.66% and aural involvement in 12.96%. Our results are similar to most of the earlier published studies.[3,5,8,9] Details of different regional involvement are described below.

Tuberculous cervical lymphadenopathy: cervical lymph nodes are the commonest location for peripheral TB.[6,7] Approximately 5% of patients develop cervical lymphadenopathy. The portals of entry for the tubercle bacilli to the cervical lymph nodes include lung, tonsils, and nasopharynx. TB of cervical lymph nodes is of clinical significance in both patients from endemic developing countries and immunocompromised patients, particularly HIV infection.[6] Unilateral involvement prevailed in 82.85% of our cases, as in other series[5]. Anterior triangle was the most commonly affected, similar to the results by Wang et al.[8] Posterior triangle lymph nodes were most commonly affected in other studies[9]. Matting and fixation to surrounding structures was seen in 50% cases. Associated active pulmonary TB affects 5% of patients with cervical disease, and in our study it was 13.8%.[7]

Laryngeal TB: in the last century, Tuberculosis was the commonest condition to affect the larynx. In 1905, Haverson 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% now. There is predominance of males in fourth to sixth decade, similar to our findings.[10] 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 the larynx was mostly affected, whereas now it is the vocal folds (50-70%), closely followed by ventricular bands (40-50%).[11] Other sites are epiglottis, aryepiglottic folds, arytenoids, post commisure, and the subglottis. There can be multiple ulcerations, hypertrophic lesions or granulomatous and polypoidal lesions.[11] Our study had 66.66% vocal cord involvement. The appearance of laryngeal TB can be misleading, diagnosis can only be made by biopsy. None of our cases had coexistent carcinoma. The route of spread is proposed to be direct endobronchial, or haematogenous in case where pulmonary lesions were minimal.[10] Only two of our cases had history of old pulmonary TB. Response to ATT is evident in 1-2 weeks. Hoarseness and lesions disappear unless fibrosis has occurred. The persistence of a suspicious lesion maybe due to non-compliance, resistant organism, or a concomitant carcinoma, which should be excluded by biopsy.

Aural tuberculosis: this can be secondary to active pulmonary TB, and bacilli reach middle ear via haematogenous route or Eustachian tube, or primary, where there is no previous focus. Spread may occur along lymphatics and 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 persistent perforation in the tympanic membrane. There are three stages, acute (this stage has moderate congestion of tympanic membrane, swollen blood vessels, followed rapidly by reddening and thickening of tympanic membrane, tubercle formation and perforation), chronic form (this is slow, painless, with perforation and pink granulations), and necrotic (this form destroys the bone which appear as fragments in discharge).[12] The classic clinical features of tubercular otitis media were described by Wallmer in 1953 as painless otorrhea, 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.[12,13] Facial palsy is more common in paediatric population. Perforations are generally single. Widespread use of neomycin and gentamicin ear drops, having weak anti-tuberculous action, can mask the presentation. Histopathological examination of middle ear and mastoid mucosa shows three types of TB: miliary, granulomatous, and caseous. Culture is difficult as organism is slow growing. Repeated samples are needed. 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 the antrum.

All authors believe that medical management is best. Surgery is only indicated to provide histologic material for diagnosis, drainage of subperiosteal abscess, removal of sequestrum, and for decompression of facial nerve.[14] The surgery group has better outcome of perforation

closure. Our patients had non-specific presentations similar to chronic otitis media. One patient had multiple perforations. Since pre-operative 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 Liovanni Morgagni in 1761 in autopsy of a tubercular patient with ulcerations of the 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, bacteriocidal action of nasal secretions, and the filtering by nasal vibrisae. Nasal mucosa is inherently resistant to mycobacterial growth. It generally affects females in the fourth decade. Symptoms are nasal obstruction, discharge, epistaxis, crusting, and ulceration. Lesions maybe ulcerative, infiltrative, or proliferative, and most cases are unilateral. The most common sites involved are cartilaginous septum and inferior turbinate. Para sinus tuberculosis is mostly secondary to pulmonary or extrapulmonary TB which reaches the maxillary sinus by the bloodstream or direct extension of nasal infection. Maxillary and ethmoid sinuses are commonly affected. Pathologically it is of three types: mucosal infection with polypi and thickened mucosa, bony involvement with fistula formation, and is more common and hyperplastic type with tuberculoma formation. Diagnosis is best made by HPE or culture of the involved tissue. Nasal swab of secretions has very low yield.[15] 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 (0.05-1.5) % patients with pulmonary TB. Primary 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 TB earlier. Primary TB of the palatine tonsils is now extremely rare, presenting usually with persistent sore throat and dysphagia.[16] The frequent recurrence of upper respiratory tract infection, which prove resistant to adequate antibiotic therapy should raise suspicions of an underlying tuberculous nasopharyngitis, especially if history of previous TB is found.[16] Our patient had a pulmonary focus of tuberculosis, which maybe the cause of oropharyngeal involvement. He was managed with ATT.

Pott's spine

The commonest vertebra to be affected by TB is the 10th thoracic vertebra and the cervical spine in less than 1/5th of the cases.[17] Pain is the commonest symptom, resulting in stiffness, followed by dysphagia, dyspnea, and stridor due to pressure effects. Abscess is initially behind the prevertebral fascia. Later it may present as retropharyngeal abscess commonly, or rarely as sternomastoid abscess. Sometimes it can present as parotid mass.[17] Unfortunately our patient presented very late and fatal cervical complications couldn't be avoided.

CONCLUSION

Tuberculosis is a challenging disease because of its varied and atypical presentations, especially in developing countries. Making a diagnosis requires updated knowledge and a high index of suspicion. Tuberculosis of 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 are a limiting factor. In the larynx, the vocal cords were the commonest site affected, which is contrary to earlier findings. Laryngeal TB need not be associated with pulmonary TB or positive sputum test. 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 otolaryngologists should keep TB in mind when dealing with head and neck lesions.

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