Case Series

Extra-Pulmonary Tuberculosis in ENT: A Case Series on the Overlooked Details

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ABSTRACT

Introduction

The importance of knowing the extra pulmonary manifestations of Tuberculosis (TB) in a country like India, which contributes the largest number of cases in the world, is extremely important in every speciality of medicine. The annual incidence is more than 10 million per year, with about 7.5 million newly diagnosed and 10.6 million total diagnosed cases in 2022. In 2022 alone, India accounted for 27% of the global burden of TB. We would like to address a few of these extra pulmonary manifestations, which should be given as much importance as pulmonary TB.

Cases

We would like to discuss 3 cases of extra-pulmonary TB and the steps that we took for diagnosis of the same. The first case was TB laryngitis, the second one being a chronic retropharyngeal abscess secondary to TB, and the third being lupus vulgaris of the nose.

Conclusion

The diagnostic algorithm of TB has been adequately described in NTEP. But to reach an adequate diagnosis, the onus lies on the clinician to recognise the features and symptoms of a case of extra pulmonary TB. The signs and symptoms on simple visual examination, endoscopy and x ray imaging must not be missed and a clinical diagnosis reached with the help of all 3.

Keywords

Tuberculosis; TB; Pulmonary; Laryngitis; Retropharyngeal Abscess; Lupus; Extra Pulmonary

Dr Robert Koch discoverer *Mycobacterium tuberculosis* on March 24, 1882, there are evidence of tubercular infection in the study with human skeletons since thousands of years. It most commonly affects the lungs, but can affect almost all the organs of human body (extra pulmonary TB).[1]

The importance of knowing the extra pulmonary manifestations of TB in a country like India, which contributes the largest number of cases in the world, is extremely important in every speciality of medicine. The National Tuberculosis Elimination Programme (NTEP), previously known as Revised National Tuberculosis Control Programme (RNTCP), aims to strategically reduce TB burden in India by 2025, five years ahead of the Sustainable Development Goals. But in spite of government support, the disease takes a huge toll on mortality and morbidity in India.[2]

In fact, the Global Tuberculosis Report 2024, published by the World Health Organization (WHO) on 29th October 2024 revealed that 8.2 million people were newly diagnosed with TB in 2023, the highest number recorded since WHO began monitoring TB in 1995, and India still having the highest disease burden (26%).[3]

Although the diagnosis of pulmonary TB is a differential that is always considered, but many times the diagnosis of extra-pulmonary disease is missed. We would like to address a few of these extra pulmonary manifestations from an otorhinolaryngologist's point of view, which should be given as much importance.

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Case Series

Case 1

A 42-year-old male patient, diabetic, presented with complaints of sore throat, cough and hoarseness of voice for 2 months. The patient was apparently normal 3 months ago when he developed non-productive cough and low-grade fever with evening rise of temperature. Hoarseness of voice developed since 1 month, but there was no haemoptysis or dyspnoea. There was no history of weight loss. Ear, nose and oral cavity examination were within normal limits. Fibre optic laryngoscopy showed irregular mucosa on bilateral true vocal fold, arytenoid and aryepiglottic folds, with diffuse inflammation of the mucosa in the entire laryngeal inlet (Fig. 1). A CECT of the neck and thorax showed an irregular thick walled cavitatory lesion in the left upper lobe of the lung, with multiple nodular opacities and subsegmental consolidation of left lingular lobe, while the neck region had no obvious abnormalities. A direct laryngoscopic biopsy under general anaesthesia was done, whose histopathological examination (HPE) showed features favouring granulomatous laryngitis (Fig. 2), and the Acid Fast Bacilli (AFB) stain of the same tissue was positive for acid fast bacilli. The patient was immediately started on anti-tubercular treatment (ATT).

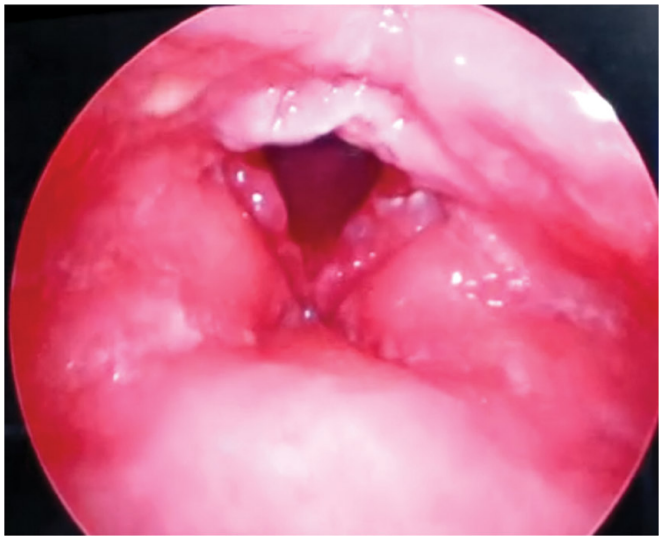

Fig.1. Irregular mucosa on bilateral true vocal fold (mouse bitten appearance), arytenoid with diffuse inflammation of the laryngeal inlet

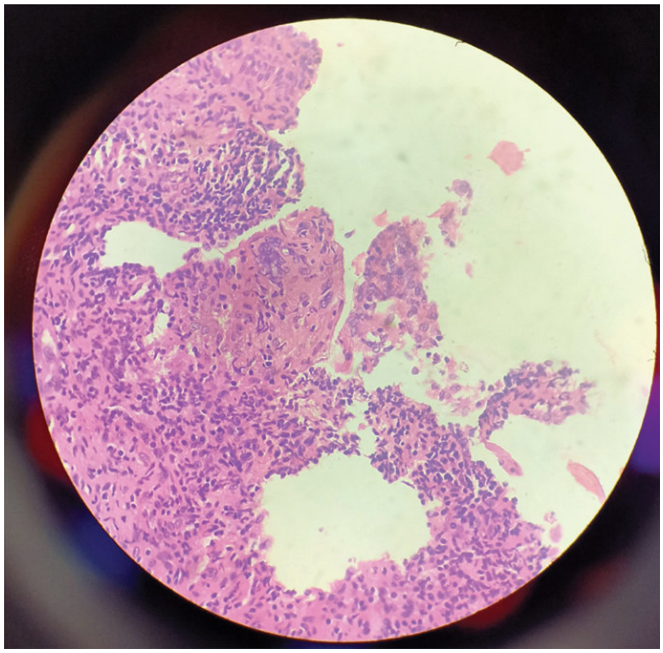

Fig. 2. Histopathological slide showing epithelioid histiocytes with giant cells and granuloma

Case 2

A 59-year-old male presented with complaints of progressive dysphagia and foreign body sensation in the throat for 3 months, along with multiple swellings in the right lateral aspect of the neck. The dysphagia was not associated with odynophagia, hematemesis, or hoarseness of voice. The swellings in the lateral aspect of neck were discrete, firm, non-tender, mobile, present at lymph node levels 3, 4 and 5. There was no history of weight loss, fever or cough. Oral cavity examination and diagnostic nasal endoscopy showed a bulge on the posterior pharyngeal wall. An initial x-ray revealed a soft tissue bulge in the retropharyngeal C1-C4 region (Fig. 3). MRI neck done showed inflammation and an abscess in the C1-C4 region, with effacement of vertebrae (Fig. 4). FNAC was done from the retropharyngeal region via nasal endoscopy (Fig. 5) as well as from the neck swelling. The neck swelling showed features of tuberculous lymphadenitis, while the retropharyngeal swelling was suggestive of necrotizing inflammation. The patient was referred to the department of pulmonology and started on ATT.

Fig. 3. Soft tissue bulge in the retropharyngeal C1-C4 region

Fig. 4. Inflammation and an abscess in the C1-C4 region, with effacement of vertebrae on MRI

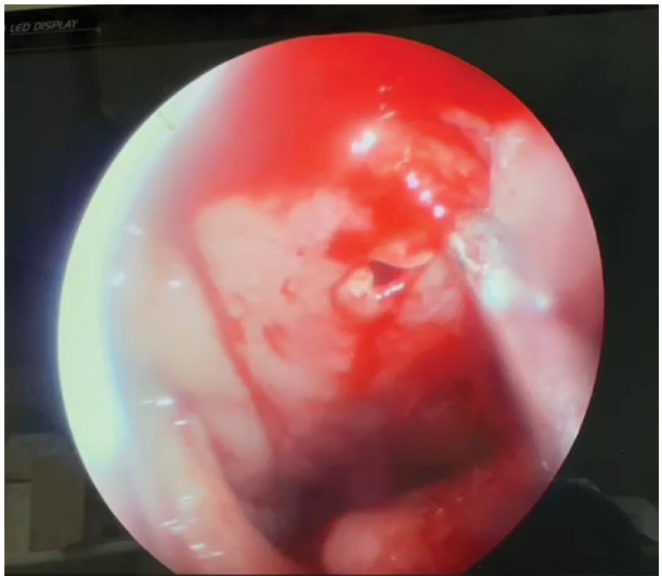

Fig. 5. Nasal endoscopy picture of the posterior pharyngeal wall showing region from which FNAC was taken

Case 3

A 42-year-old male presented with epistaxis, itching over bilateral vestibules and a hyper pigmented spot over the tip of the nose and both alae for over a year. The pigmented macule was extending up to the septum. Anterior rhinoscopy also showed a separate ulcer over the septum on the left side. A nasal endoscopy did not reveal any new findings, and the rest of the ear, nose, throat and neck examination was within normal limits. There was no other positive history. Mantoux test was doubtful (8x8 mm induration). Sputum was negative for AFB. A deep biopsy from the lesion showed infiltrated inflammatory cells and epithelioid granulomas, with Langerhan's and foreign body giant cells. The patient was started on ATT for 6 months, leading to resolution of the lesion.

Discussion

Tuberculosis (TB) is caused by *Mycobacterium tuberculosis,* and is known to affect all the tissues in the body. Of this, close to 80% affects the lungs and causes pulmonary tuberculosis. In 2022, TB was the world's second leading cause of death from a single infectious agent, second only to COVID-19, causing almost double the number of deaths by HIV. The annual incidence is more than 10 million per year, with about 7.5 million newly diagnosed and 10.6 million total diagnosed cases in 2022. In 2022 alone, India accounted for 27% of the global burden of TB. Although close to a quarter of the global population is estimated to have been infected with TB, the risk of actually developing TB is approximately 5% in the first 2 years after exposure. Without treatment, the mortality may be as high as 50%.[1]

The most common extra-pulmonary manifestation of TB is lymphadenitis. Previously it was thought that 25-30% of patient with ENT TB have concomitant pulmonary TB, a trend which has later shown to decrease and lesser cases with pulmonary TB are seen now.[4]

As per the National Tuberculosis Elimination Programme and The Ministry of Health and Family Welfare (India), the various forms of extra-nodal ENT TB include laryngeal, sinonasal, oropharyngeal, para/retropharyngeal, salivary gland, thyroid gland, TB otitis media and TB mastoiditis. The most common of theses is laryngeal TB, and vocal cords are commonly affected in the laryngeal form. Extra-nodal head and neck TB constitute <1% of all extrapulmonary TB cases.[5]

Laryngeal TB usually presents with symptoms of hoarseness, odynophagia and dysphagia, along with loss of weight and appetite. The most common presenting symptom is dysphonia which may be present in up to 100% of cases. The 2 theories that attempt to explain its etiology are The Bronchogenic Theory (larynx is infected by direct spread from the endobronchial tree) and The Hematogenous Theory (larynx is spread by hematogenous spread from sites other than the lungs). The laryngeal findings may range from edema, hyperaemia, nodularity, ulcerations and exophytic mass to obliteration of anatomic landmarks. Vocal fold fixation may occur. Hypertrophic, exophytic or polypoidal lesions are more common than ulcerative or granulomatous lesions. It may involve multiple subsites including the true vocal folds, epiglottis, false vocal folds and ventricle, arytenoid, inter-arytenoid area and subglottis. Classically it has been described as initially affecting the posterior part of the larynx and posterior commissure. Some of the named signs include:

1. Turban epiglottis: due to marked edema
2. Mouse bitten appearance: of vocal folds[6-8]

Retropharyngeal TB presents as a deep neck cold abscess. Tuberculous abscesses in the retropharyngeal area are rare, chronic and secondary to TB of the cervical spine, petrous apex or lung. Retropharyngeal abscesses normally occur in immunocompromised patients. Although acute retropharyngeal abscess is seen more commonly in children below 5 years age secondary to infections of adenoids, nasopharynx, posterior pharyngeal wall, sinuses and tonsils, chronic abscess is seen more commonly in adults, caused mainly due to tuberculous infection of the spine. Only about 1% of TB patients have skeletal TB, with 7% of these cases involving the cervical spine. This is because it is theorised that Pott's disease originates in the pelvic organs and disseminates via Batson's plexus to involve the lumbar, thoracic and cervical spine in decreasing order of frequency. Radiology is imperative to assess extent of the disease and the possible complications. On a plain x-ray of the cervical spine, on its lateral view, an abscess can be identified by measurements of more than 7mm in the retropharyngeal space at the lower border of C2. A retrotracheal space abscess is suspected on measurement of more than 14mm in children and 22 mm in adults, measured at C6. At computed tomography will help differentiate cellulitis from an abscess, while an MRI provides better visualisation of soft tissue and vascular complications. Any abscess in this region is of particular concern due to its connections with the mediastinum and deep neck spaces. Although surgical drainage improves symptoms, the mainstay of management is medical.[9-11]

Lupus vulgaris is one of the commonest forms of cutaneous tuberculosis, that occurs in people previously infected with TB. Cutaneous TB overall, occurs in only about 0.5% cases of disseminated TB. Other patterns include scrofuloderma, tuberculosis verrucosa cutis, primary inoculation tuberculosis, tuberculous gumma and metastatic tuberculous abscess. Lupus usually occurs as a result of dissemination (hematogenous, lymphatic, contiguous) from an endogenous focus during a period of lowered resistance. The primary may be from a pulmonary or cervical focus, but may also be a quiescent complex elsewhere. Rarely it may occur due to BCG vaccination. Due the well demarcated reddish brown plaques with deep seated nodulation they become yellowish brown, often known as "apple jelly" nodules.[12,13]

Conclusion

The diagnostic algorithm of TB has been adequately described in NTEP. But to reach an adequate diagnosis, the onus lies on the clinician to recognise the features and symptoms of a case of extra pulmonary TB. The signs and symptoms on simple visual examination, endoscopy and x ray imaging must not be missed and a clinical diagnosis reached with the help of all 3. A good pathologist is absolutely necessary to help diagnose the specimens sent, to not delay treatment. We have all been trained to appropriately detect pulmonary and extra pulmonary TB, but the practical application of the same is a must.

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