Case Report

Tuberculous otomastoiditis: a rare entity

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Tuberculous otomastoidtis (TOM) is a clinical challenge, which may results in delay or misdiagnosis, subsequently leads to complications. We report a case of TOM of a 50 year old lady with underlying 3 years history of left chronic otitis media who presented with acute facial paralysis. She failed to respond to medical therapy, and thus surgical intervention played a role. It is essential to have high degree of suspicion in establishing the diagnosis of TOM, so that early treatment can be initiated and also prevent complications. (Rawal Med J 201;42:440-443)

Key words: Tuberculous mastoiditis, otitis media, facial nerve paralysis

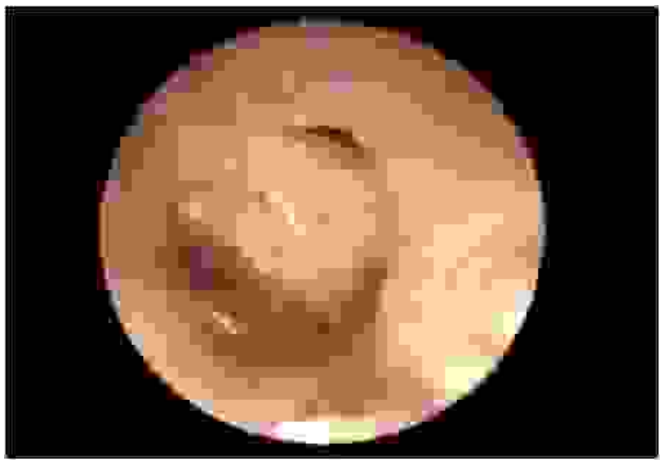
INTRODUCTION

Tuberculosis (TB) is one of the major global diseases and the second worldwide leading cause of death of infectious disease caused by Mycobacterium tuberculosis. It primarily affects the lungs as pulmonary TB and may manifest as extrapulmonary TB. Among the extrapulmonary sites, the most localization is in ear, nose and throat (ENT) region as reported in a study with majority of 211 out of 230 cases involving ENT manifestation; in which 95.3% were in cervical lymph nodes, 2.84% in middle ear, 1.42% in larynx and 0.47% in the nose.[1] Here, we present one of the rare ENT manifestations of extrapulmonary TB, a case of tuberculous otomastoiditis (TOM) which highlights high degree of clinical suspicion in establishing the diagnosis and the indication of surgical intervention with the treatment challenges.

CASE PRESENTATION

A 50 years old lady with premorbid history of diabetes mellitus and hypertension was referred to our center for acute left sided facial weakness for 2 weeks duration with underlying 3-year history of recurrent discharging left ear associated with tinnitus and worsening left hearing loss. The left otorrhea has never been resolved since 3 years despite treatments and regular follow ups. Before the onset of left sided facial weakness, the left otorrhea got worsened with foul smelling but scanty purulent discharge. Otherwise, she had neither fever, nasal symptoms, vertigo, headache nor fits.

Fig. 1. Tympanic membrane showing perforation and slough.

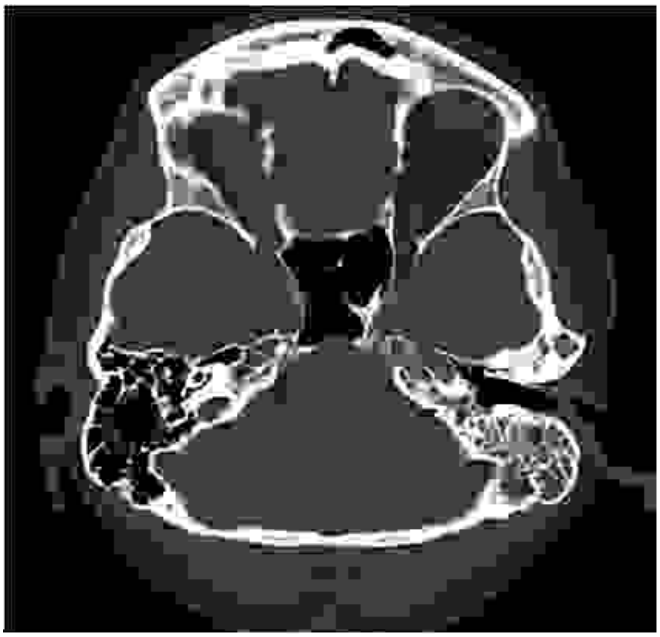


On examination, there was presence of left lower motor neuron facial nerve palsy (House & Brackmann Grade IV, Sunny Brooke score 54). Otoscopic examination left ear showed purulent discharge with necrotic tissue and slough in the middle ear mucosa through a large perforation of tympanic membrane (Fig. 1). The right ear was normal. There was no swelling or erythematous skin over the mastoid region and no palpable cervical lymphadenopathy. Other clinical examinations were unremarkable. Pure tone

audiometry showed profound mixed hearing loss over the left ear with normal hearing on the opposite side. A High Resolution CT scan of temporal bone revealed soft tissue density in the left middle ear and mastoid cavity as well as erosion of tympanic segment of left facial canal and scutum (Fig. 2).

In view of high suspicion for TB, further questioning of the patient elucidated that she had history of few episodes of hemoptysis 3 years ago in which she was investigated for suspected pulmonary TB at that time. However, it was not supported as all the results turned out to be negative except positive mantoux test. Now the Mantoux test was strongly positive, erythrocyte sedimentation rate was 30 mm/hr, negative Ziehl-Nielson staining of sputum, normal chest radiography and no Mycobacterium tuberculosis was isolated from culture of granulation tissue.

Fig. 2. CT scan of temporal bone showing soft tissue density of mastoid cavity.



Considering these clinical and radiological findings and discussion with respiratory physician, a diagnosis of tuberculosis otomastoiditis was made. She was started on anti-tuberculous therapy (ATT) with oral isoniazid, rifampicin, ethambutol and pyrazinamide with regular follow-up. Nonetheless, after 2 months of ATT, otologic examination and facial nerve function did not show significant improvement. Therefore, she underwent left modified radical mastoidectomy and facial nerve decompression under general anesthesia. Intra-operatively, we found cheesy discharge with extensive soft tissue mass in the middle ear cavity and mastoid antrum, which were removed. The mass was also noted to infiltrate the tympanic segment of facial nerve canal. The facial nerve sheath in the tympanic segment was edematous, thus proceeded with neurolysis to relieve the edema. Histopathological examination of the materials sent intra-operatively reported as presence of necrotic bony fragments and granulation tissue with epitheloid granuloma and Langhan's type giant cell with central caseating necrosis, consistent with the diagnosis of TB.

At 3 months post-operatively, the facial nerve function was improving, with House & Brackmann Grading decreased to grade III and Sunny Brooke scoring increased to 68. The left ear was also dry and mastoid cavity was healthy. Patient has been regularly followed-up until she completed her course of ATT for 9 months.

DISCUSSION

Tuberculous otomastoiditis is a rare occurrence constituting 0.04% of all cases of chronic suppurative otitis media.[2] There are three distinct theories of pathogenesis of the TOM; aspiration of mucous into the middle ear through the eustachian tube, hematogenous spread from other tuberculous foci and direct implantation through external auditory canal and perforated tympanic membrane.[2] Classically, TOM was used to be described to have clinical presentation of painless otorrhoea, multiple tympanic membrane perforations, pale granulation tissue, facial nerve palsy, early severe hearing loss and bone necrosis.[3] However, the clinical features nowadays are not usually in accordance with these classic presentations. Most patient may present with intractable otorrhea unresponsive to routine antibiotic treatment, otalgia, moderate to severe hearing loss, tympanic membrane abnormality either intact but pale, tense and immobile tympanic

membrane or defect with single tympanic membrane perforation, and also abundant granulation or polypoidal tissue.[4,5] Presence of multiple tympanic membrane perforation and facial nerve palsy are uncommon.[4,5]

A study on 52 patients from South Korea reported the most common presenting symptom was mucopurulent otorrhea, 28.8% had associated tinnitus, 13.5% experienced dizziness as well as otalgia, and 9.6% were found to have peripheral facial nerve palsy.[3] Hearing loss in TOM can be variables either conductive, sensorineural or mixed type.[6] Early in the disease, conductive hearing loss is likely to occur due to tympanic membrane perforation, however, at the later stage, sensorineural or mixed hearing loss may develop when involving the labyrinth.[6]

Because of the rarity of TOM, its diversity and non-specific clinical presentations, diagnosing TOM is difficult and challenging, which may result in delay[7] or misdiagnosis, subsequently may progress to complications including facial paralysis, destruction of the inner ear with labyrinthitis, post auricular fistula and abscess.[4,7]

Laboratory diagnosis is challenging as well. Smears of acid fast bacilli and cultures for M. tuberculosis of the ear discharge are not always positive[4,8] and positive results obtained vary from 10-71%. Most authors agree that the most ideal diagnostic method is histopathological examination of granulation tissue of the affected ear.[8,9] Out of 12 ears that were found to have granulation tissue in the tympanic membrane or the middle ear, 91.6% showed evidence of granuloma or caseation necrosis.[8]

CT scan is suggested as the best imaging modality as it helps in identifying features suggestive of TB, assessing the extent and complications of the disease as well as demonstrating the anatomy in preparation prior to surgery.[10] Features including soft tissue attenuation in the middle ear cavity, mastoid air cells preservation without sclerosis, and extension of soft tissue to external acoustic meatus are more commonly found in TOM than in cases of pyogenic chronic otitis with or without cholesteatoma.[3]

Anti-tuberculous therapy is accepted as an effective treatment and course is recommended to be given for at least nine months. However, drug resistance does occur in some of cases. Therefore, patients should be regularly monitored to observe their respond or in case of unresponsive to medical therapy.

Surgical intervention is indicated in managing extensive or complicated cases such as removing bony sequestrum, draining abscess, decompression of facial nerve and failure of ATT.[9] Some authors believe that combination of surgery and ATT results in earlier and higher chance of recovery with dry ear.[7,8] We found a single case report of TOM which had similar treatment challenge of failure of medical therapy where surgical intervention was indicated.[9]

In summary, TOM is one of the rare ENT manifestations of extrapulmonary TB. It is advisable to have high degree of suspicion in diagnosing TOM whenever we encounter any cases of chronic otitis media which is unresponsive to routine treatment or presented with atypical clinical features and radiological evidences.

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