Tuberculosis otitis media

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ABSTRACT
Tuberculosis otitis media is relatively rare and often masquerade as other common otological conditions resulting in delay of diagnosis and complications of disease. It is usually characterised by painless chronic ear discharge with multiple tympanic membrane perforation and presence of abundant granulation tissues in the middle ear on examination. We report the case of a 66-year-old man who presented with symptoms of acute otitis media secondary to tuberculosis.

Keywords: Otitis media, ear, tuberculosis, tympanic membrane

INTRODUCTION
Tuberculosis is a rare cause of ear discharge and diagnosis of tuberculosis otitis media is often delayed, leading to dissemination and complications. Despite being one of the oldest diseases known to mankind, it is still a major cause of morbidity, especially in the developing countries. Tuberculosis is known to affect almost every organ in human body. Hence a high index of suspicion for early diagnosis and multidisciplinary approach often brings good outcomes in managing this disease. We report the case of a 66-year-old man who presented with a two-month history of right ear discharge, intermittent otalgia, tinnitus and progressive hearing loss secondary to tuberculous otitis media.

CASE REPORT
A 66-year-old man with no known medical illness presented with a two-month history of persistent right ear mucopus discharge. This was associated with intermittent otalgia, tinnitus and worsening hearing loss. He also experienced backache of two-week duration that had progressively worsened. He denied any history of fever, prolonged cough, loss of appetite or weight, and no previous contact with tuberculosis patient. He had previously received a course of oral antibiotic and antibiotic ear drops with no improvements of symptoms.

Otoscopic examination of the right ear revealed a central tympanic membrane perforation with jagged edge with presence of granulation tissue over the superior region, and a whitish polypoidal mass in the middle ear (Figure 1a). There was no mastoid tenderness or facial nerve palsy. Pure tone audiome-
try revealed a profound hearing loss of the right side and moderate to severe sensorineural hearing loss of the left side. A high resolution computed tomography scan revealed changes consistent with mastoiditis in the presence of right middle ear soft tissue density with no erosions of ossicles (Figure 1b).

Biopsy of the right granular tympanic membrane revealed chronic granulomatous inflammatory changes and was positive for acid fast bacilli on Ziehl-Neelsen stain. Further evaluation with chest and spine radiographs revealed evidence of pulmonary and spine tuberculosis (Figures 2a and b). Mantoux test was positive with a measurement of 12mm and erythrocyte sedimentation rate (ESR) was high at 83 ml/hr (normal <15). A provisional diagnosis of pulmonary tuberculosis with extrapulmonary involvements (middle ear and spine) was made. He was referred to the respiratory and orthopaedic team for initiation of
his anti-tuberculosis drug and further management of spinal tuberculosis respectively.

He was commenced on anti-tuberculosis medications (isoniazid, rifampicin, ethambutol and pyrazinamide) and was treated for one year. He underwent spinal surgery for evacuation of the paraspinal abscess and instrumentation over his thoracic vertebra. The otological symptoms improved markedly on treatment, with total recovery of otitis media and healing of the perforation of tympanic membrane after six months of treatment (Figures 3a and b). However, the hearing did not improve post-treatment and he is currently using hearing aid.

**DISCUSSION**

Despite advances in medical sciences and technology, tuberculosis remains a global burden with an incidence rate of 9.4 million and mortality of 1.78 million in 2009. Most were found in Southeast Asia and Africa (35% and 30% of total cases respectively). Tuberculosis can be divided into pulmonary tuberculosis and extra-pulmonary tuberculosis. It accounts for 0.04-0.90% of all cases of suppurative otitis media, and its incidence is rising steadily in countries where tuberculosis is endemic.

Tuberculosis otitis media classically presents with unilateral painless otorrhoea with multiple tympanic perforations and granulation tissues in middle ear which does not respond to empirical antibiotic treatment. Other classical features include presence of early conductive hearing loss that is often out of proportion to the clinical findings, which may progress to a mixed or sensori-neural hearing loss as the disease progresses.

The key to better outcome in tuberculosis otitis media is early diagnosis. If anti-tuberculosis treatment is advocated early, the otological manifestations usually heal completely without the need of surgery. Thus we would like to highlight the importance of high index of suspicion in order to make early diagnosis.

There are three postulated routes of transmission to the ear: via the Eustachian tube, haemotogenous spread and direct inoculation through a pre-existing perforated tym-
tympanic membrane. In our case, haematogenous spread is the most likely route as there were pulmonary and spinal tuberculosis at the same time.

The classical clinical appearance of multiple tympanic perforations in tuberculosis otitis media is not always present nowadays. In fact, the otoscopic findings is highly variable, ranging from middle ear effusion with intact tympanic membrane to perforated tympanic membrane (single/multiple) with or without middle ear granulation tissue/mass. This patient presented with right otalgia with presence of middle ear mass medial to a single tympanic membrane perforation. Due to variability of clinical presentations, we recommend early biopsy as a mean of obtaining early diagnosis. It had been shown in literatures that histological examination is most reliable in diagnosing tuberculosis otitis media.

Early diagnosis is important as early treatment can prevent the occurrence of complications which include facial nerve palsy, necrosis of ossicles, bony destruction of mastoid and petrous temporal bone, periauricular fistulas, lymphadenopathy and intracranial tuberculomas or abscess. This patient did not have any complications of disease upon diagnosis.

It is also important to screen patient for presence of disseminated tuberculosis even in the absence of previous tuberculosis contact or immunocompromised conditions as tuberculosis is a multisystemic disease. It is always important to routinely perform a chest radiograph to look for presence of pulmonary tuberculosis. Our patient complained of back-Ache, and a thoracolumbar radiograph led to the diagnosis of spinal tuberculosis. There was presence of dissemination of tuberculosis infection involving the ear, lung and spine. This is rare as he has no medical illness, not immunocompromised and there was no history of previous tuberculosis infection or contact.

The main stay for treatment of tuberculosis otitis media is still medical therapy. The role of surgery is only preserved for cases with complications such as the presence of extensive bony sequetrum in middle ear/mastoid, subperiosteal abscess and presence of facial nerve palsy. Surgery is also indicated in cases where the diagnosis is inconclusive in order to attain tissue for a histological diagnosis. It is always wise to perform a high resolution CT scan prior to any surgical procedure to assess the extent and presence of any complications of the disease.

In conclusion, the authors would like to highlight to clinicians the importance of high index of suspicion and to consider early tissue biopsy in order to diagnose tuberculosis otitis media early as this often lead to better treatment outcome. It is also important to screen for other organ involvement of tuberculosis infection as multi-organ involvements is common and advocate early multidisciplinary care for optimum treatment.

**REFERENCES**