Tuberculous otitis media without lung involvement and the risk of airborne transmission

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Received 4 January 2012; received in revised form 16 January 2012; accepted 20 January 2012

Tuberculous otitis media (TOM)/mastoiditis is a rare disease in developed countries. A delayed diagnosis causes significant morbidities including hearing loss, facial palsy, vertigo, and an intracranial invasion.

We present a previously healthy 28-year-old woman working as a respiratory therapist. She had suffered from chronic intermittent otorrhea since June 2006, refractory to medical therapy. Illustrated in Fig. 1A, high resolution of computed tomography of the temporal bone in Aug 2006 suggested right otitis media with mastoid involvement. Significant hearing loss and facial palsy complicated in November 2006. She underwent surgical intervention subsequently, which showed total perforation of the right eardrum and whitish granulation tissue over the right middle ear. The pathologic findings revealed necrotic debris and granuloma formation. The mycobacterium culture of debridement was negative. But, the similar symptoms still bothered her, even though she received antibiotics therapy and additional operation in July 2007. The diagnosis of tuberculous otitis media was confirmed by microbiologic evidence of ear discharge approximately 18 months after her initial presentations. Meanwhile, the sputum culture also yielded Mycobacterium tuberculosis (MTB). The standard antituberculosis therapy lasted for 1 year, with sequelae of frequent tinnitus, vertigo, and right ear hearing loss of 75 dB.

The sensitivities of the various diagnostic tools for this disease are not satisfactory; early diagnosis depends on a high index of suspicion. The clinical pictures, highly suggestive of TOM, include persistent otorrhea despite surgical intervention and systemic antibiotics therapy,1–3 chronic otitis media complicated with facial palsy, and/or severe hearing loss, or the contact history of tuberculosis.2

Another cause hindering the early diagnosis of TOM was its infrequent association with the involvement of other systems.3 However, nearly one-half of the patients had active or previous pulmonary tuberculosis changes based on the plain films.4 Although some investigators suggested that chest radiography should not be considered as a routine investigation tool for otorrhea,5 we suggest that a chest plain film and pulmonologist referral are indicated in refractory otorrhea.

On the other hand, there was no suggestion of pulmonary tuberculosis on the chest plain film seen in Fig. 1B in the clinical manifestations. However, the sputum culture yielded MTB. The possible causes may be that there was subtle pulmonary infection that was not revealed by the chest radiography. A retrograde spread to the throat via the eustachian tube could have been a possible mechanism. The risk of airborne transmission should be considered in spite of normal chest radiography.

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http://dx.doi.org/10.1016/j.jfma.2012.01.013
It has been postulated that tuberculosis may spread to the middle ear through direct implantation from the external auditory canal via eardrum defects. Thereafter, it is suggested that people with eardrum perforations may use an air-barrier for ears if they will be potentially exposed to tuberculosis aerosols, such as personnel in isolation room.

Conclusion

The characteristic manifestations should raise the suspicion of TOM. The risk of airborne transmission should be considered in spite of apparently normal chest plain films. Air-barriers of ears might be suggestive to persons with diseased eardrums in environments, possibly pervading tuberculosis droplets.

References