

Tuberculous Otitis Media in Children: Rare Case Report

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Abstract

Tuberculosis of the middle ear and temporal bone are rare and accounts for only 0.05 - 0.9% of all cases of all chronic otitis media. We present a rare case report of a 10-year-old boy with a right chronic febrile otomastoiditis misdiagnosed and treated as meningitis given its high temperature without improvement. Examination found post-aural ulceration with bare bone sequestrum and a total perforation of the tympanic membrane on otoscopy. Audiometry indicated a 70 db conductive hearing loss in the right ear with air-bone gap of 50 db. CT scan of temporal bone showed an extensive bone lysis of the mastoid and the middle stage of the skull base. The pathological examination of the granulomatous tissue biopsy during the mastoid surgery, revealed tuberculous granulomatous inflammation with necrosis that was consistent with progressive tuberculosis. The patient was treated accordingly with a remarkable improvement. The diagnosis of tuberculosis should be kept in mind in case of a chronic otitis media, especially in endemic countries.

Keywords: *Tuberculous Otitis Media (TOM); Children; Otomastoiditis*

Introduction

Tuberculous otitis media (TOM) is a rare cause of chronic suppurative infection of the middle ear and mastoid. The incidence of tuberculosis in this location is very low, its scarcity is largely due to childhood immunization programs. Its diagnosis is often delayed because it can easily be mistaken with other acute or chronic middle ear conditions. Hence the interest to think about it in case of a recalcitrant chronic otitis media, especially in endemic countries. We present a rare case report of a 10-year-old boy with a right tuberculous chronic otomastoiditis misdiagnosed and treated as meningitis without improvement.

Case Report

A 10-year-old boy with no relevant medical history, brought by his parents to the ENT department, presenting a painless purulent otorrhea and progressive hearing loss of the right ear evolving for the last 4 months, complicated later by a right mastoiditis with post-aural ulceration. The temperature was at 39° permanently, reason for which the child has been treated as meningitis in a peripheral hospital. Physical examination found a weight loss at 18 kg, a large right-sided post-aural ulceration with bare bone sequestrum (Figure 1A). Otoscopic examination revealed completely destroyed EAC of the right ear; a total perforation of the eardrum through which an inflammatory mucosa covered with granulomatous tissue was seen. The left ear was normal. Pure tone Audiometry indicated a 70 db conductive hearing loss in the right ear with air-bone gap of 50 db. A CT scan of temporal bone showed (Figure 2) a right otomastoiditis with extensive bone lysis of the mastoid and the middle stage of the skull base with no collection or contrast enhancement and a right jugular-carotid

lymph node phlegmon. On surgical exploration, we noticed the destruction of the right CAE and the mastoid turned into a large cavity, completely filled with granulomatous material. Removal of the bone sequestrum and the granulomatous tissue was performed (Figure 3). The pathological findings revealed tuberculous granulomatous inflammation with necrosis that was consistent with progressive tuberculosis. Direct microscopic lecture did not reveal Mycobacterium tuberculosis using the Ziehl-Neelsen staining method and culture is still in progress (4months). A tuberculin skin test was negative. Chest x-rays revealed bilateral hilar lymphadenopathy. Three sputum smears were all negative for Acid fast bacilli. The patient was started on a three-drug anti-tuberculous treatment (rifampicin, isoniazid, pyrazinamide) during 2 months with local therapy based on Ofloxacin/Prednisolone droplets (Figure 1B). The ear discharge subsided after 2 months and audiometry showed unchanged conductive hearing loss on the right side. Anti-tuberculous treatment (rifampicin, isoniazid) is considered for additional 4 months.

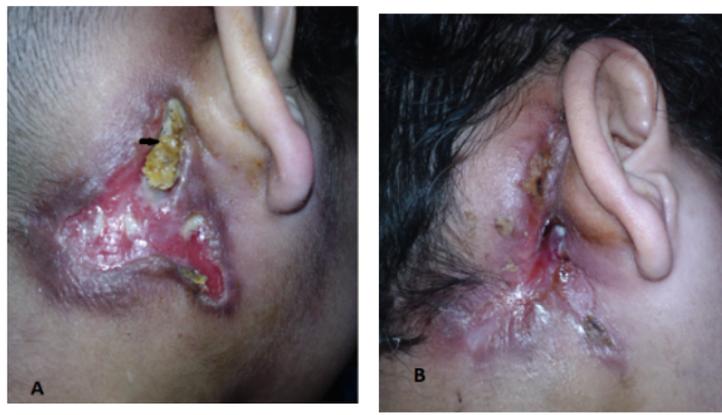


Figure 1: A: Initial appearance: large retro-auricular ulceration with bone sequestration (black arrow). B: Appearance after 2 months of anti-bacillary treatment.

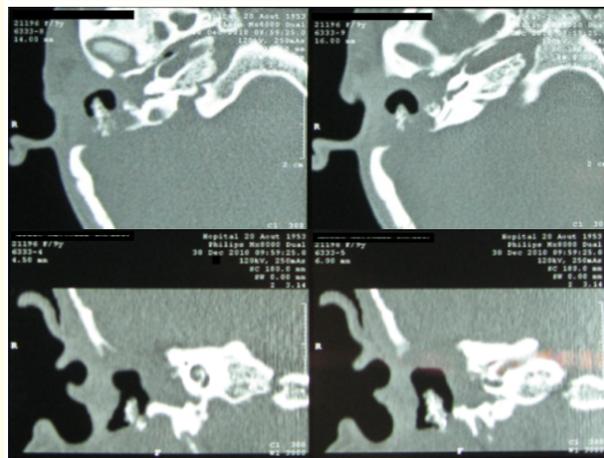


Figure 2: CT of the right temporal bone-axial and coronal section--: total destruction of the mastoid and the tympanic cavity with bone sequestration.

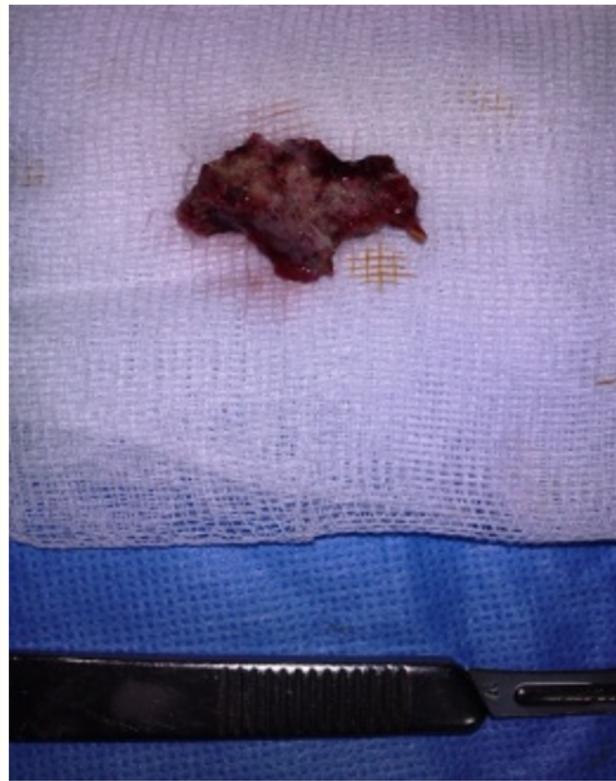


Figure 3: Bone sequestration biopsy during the mastoid surgery.

Discussion

ENT involvement of tuberculosis - apart from cervical lymphadenopathy and laryngeal tuberculosis- accounts for 0.1 to 1% of all forms of tuberculosis. Tuberculosis of the middle ear and temporal bone are rare and accounts for only 0.05 - 0.9% of all cases of all chronic otitis media [1].

Tuberculous Otitis Media (TOM) is usually secondary to tuberculosis disease, and exceptionally found as primary location of tuberculosis [2]. The middle ear involvement is thought to occur through hematogenous dissemination from other tuberculous foci, aspiration of mucus via the Eustachian tube, or direct inoculation from a ruptured tympanic membrane [3]. Our patient had a total perforation of the tympanic membrane but no other confirmed site of tuberculosis infection.

The diagnostic of TOM remains a challenge because of its non-specific clinical features and the difficulty in confirming diagnosis by microbiological tests of ear discharge. The classic TOM triad -painless otorrhea, facial palsy (35% of pediatric cases and often reversible) and multiple tympanic perforations- is rarely observed [4,5]. Our patient had a total perforation of the tympanic membrane, history of purulent, painless ear discharge unresponsive to local or parenteral antibiotic therapy and no facial palsy.

TOM may be revealed by extracranial complications as labyrinthitis, post-aural fistulas, subperiosteal abscess, or even intracranial complications: meningitis, thrombosis of lateral sinus or skull base osteomyelitis.

Pure tone audiogram reveals conductive hearing loss (moderate to severe), sensorineural or mixed depending on the severity and the infection extent (labyrinthitis). Our patient had 70 db conductive hearing loss in the right ear with air-bone gap of 50 db given the extent of destruction of the middle ear.

Temporal bone CT scan assesses the extension to mastoid cells and temporal bone, the integrity of the ossicular chain, facial nerve canal and the labyrinth. CT scan findings can vary from non-specific clouding of the mastoid to extensive soft tissue densities with fluid levels in the middle ear, mastoid and petrous air cells and multifocal bone erosions [6].

Bacteriological examination of the ear discharge can make the positive diagnosis but not often reliable, due to secondary infection. Therefore, clinicians must maintain a high suspicion, perform multiple cultures and search meticulously for evidence of tuberculous infection in other organs [7].

Histopathology of the granulomatous tissue may reveal definitive features of tuberculosis. Well-formed epithelioid granulomas with Langerhans giant cells, histiocytes and epithelioid cells and focal areas of necrosis are suggestive of tuberculous etiology [8].

Fungal infections or atypical mycobacteria, Wegener's granulomatosis, sarcoidosis, syphilis, histiocytosis X and cholesteatoma are the main granulomatous entities that may present a differential diagnosis of TOM.

In pediatric population, Anti-bacillary drugs: Rifampin, Isoniazid, Pyrazinamide (2 month)/(Isoniazid and Rifampicin (4 months), is still the mainstay treatment of TOM. It's possible to extend the duration up to 9 or 12 months depending on progress. Mastoid surgery may provide material for diagnosis, drainage of a subperiosteal abscess, sequestrectomy and, according to some authors, decompression of the facial nerve [9,10].

Prognosis of TOM depends on the precocity and the effectiveness of its management. Therefore, if atypical clinical features are noted in a case of chronic otitis media, repeated cultures of the ear discharge should be obtained to rule out the possibility of TOM or treat it appropriately otherwise, in order to prevent dreaded sequelae like deafness, facial palsy or intracranial complications mentioned hereinbefore [7].

Conclusion

The clinical presentation of TOM is often nonspecific; therefore, tuberculous origin should be strongly considered in case of a chronic ear infection, of purulent otorrhea resistant to antibiotic treatment with bone necrosis or pre-auricular lymph node, specially, in patients with known or suspected tuberculosis.

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