



# Atypical and rare localization of children tuberculosis: a review of two cases

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## Abstract:

Tuberculosis is a rare cause of chronic suppurative otitis media and mastoiditis; the predisposing factors of this association, however, are not commonly described. These patients typically present multiple perforations of the tympanic membrane, an ear discharge, and progressive hearing loss. This diagnosis should be taken into account in patients that do not respond to routine therapy for fungal external otitis or bacterial otitis media. We describe two cases of patients with tuberculous otitis media.

## Introduction:

Tuberculosis is a frequent chronic granulomatous infectious disease caused by *Mycobacterium tuberculosis* or *bovis*, which can affect all organs. The most common form is pulmonary tuberculosis, accounting for 55 to 60% of cases. (1) In the ENT sphere, the lymph node tuberculosis is the most common, the percentage of ear involvement is not well known. The clinical form is not very specific, most often identical to a common chronic otitis media, and probably takes second place in a good number of cases. Compared to the various forms of ear infections, tuberculosis of the middle ear (TME) accounts for less than 0.1% of chronic otitis media. (2) Diagnosis is often difficult and late. The existence of multiple perforations, conventionally described and well known to physicians, is observed only exceptionally.

The aim of this article is to describe the diagnostic and therapeutic approaches, as well as the mode of presentation of tuberculous otitis.

**Cases report:**

## ✓ Case 1:

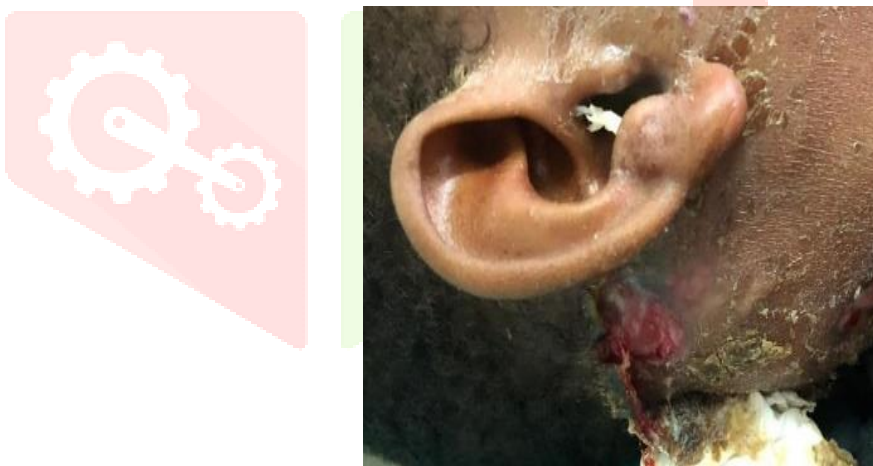
A 4-year-old patient with no notable pathological history, who has presented 2 year ago a left fetid otorrhea calmed by taking antibiotics becoming permanent fetid and thick one year ago without hearing loss, dizziness aggravated 15 days before admission with a fluctuating hot painful left retro-auricular swelling without facial paralysis. On clinical examination, the child was in good general condition, otoscopy revealed purulent fetid otorrhea of the left external auditory canal, with a polyp filling the entire fundus of the left CAE, associated with a left retroauricular swelling. The CT scan of the temporal bone showed opacification of the middle ear with lysis of the temporal bone and an abscess next to the mastoid region.

The patient underwent surgical drainage of the retroauricular abscess and medicated with topical and oral antibiotic on C3G with good evolution, then underwent a left mastoidectomy surgery which revealed a polypoid lesion of the left mastoid, sent to the anatomopathological study who showed an inflammatory lesion necrotizing granulomatosis compatible with tuberculosis.

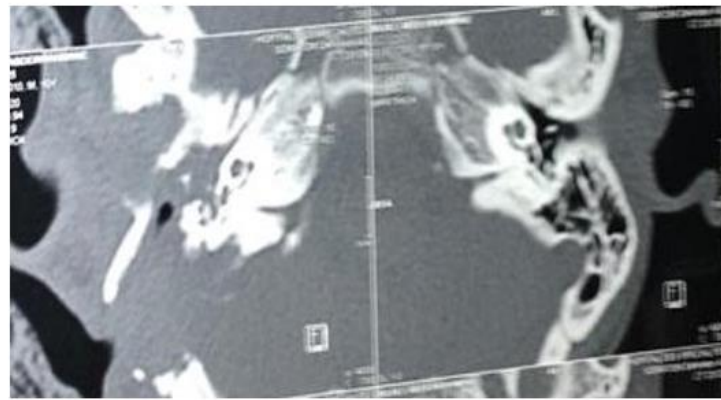
## ✓ Case 2:

A 07-years old patient with no notable pathological history, consulted the emergency room for an acute 3-day retroauricular swelling fistulized through the skin with pus and purulent otorrhea. The patient did not show signs of tuberculosis impregnation or neurological signs. The child reported the notion of otorrhea of the right ear since the age of 03 years with hearing loss without dizziness or facial paralysis that were treated with local and oral antibiotics but recurrent.

Clinical examination found a tonic child reactive, cervicofacial examination objective retroauricular swelling fistulized through the skin with pus, the otoscopic examination found a polyp filling almost the entire right EAC. The CT- scanner finds a hypodense lesion causing bone lysis and lysis of the ossicular chain and filling of the mastoid.



**Figure1:** Retroauricular abscess fistulized through the skin with pus



**Figure2-3:** CT scan of the temporal bone shows a hypodense lesion causing bone lysis, and lysis of the ossicular chain and filling of the mastoid.

The patient underwent surgical drainage of the retroauricular abscess and sending the material to the bacteriological and anatomopathological study as well as intravenous antibiotic therapy and then the patient underwent a mastoidectomy which revealed a mastoid filled with a whitish structure, forming a shell surrounded by a very hyperplastic and hemorrhagic mucosa. Intraoperative biopsies were performed which returned in favor of granulomatous lesions compatible with tuberculosis.

Both patients had simple postoperative consequences. An anti-tuberculosis treatment was started, combining rifampicin (10 mg/kg), isoniazid (5 mg/kg), and pyrazinamide (25 mg/kg) for 9 months.

### Discussion:

Tuberculosis of the middle ear is exceptional and the diagnosis is often late. It is responsible for 0.05 to 0.9% of chronic otitis media (1). The classic TME triad of painless otorrhea, facial nerve palsy, and multiple tympanic perforations is rarely seen. Currently, the most frequent reason for consultation in children is otorrhea refractory to conventional antibiotic therapy. It is exceptionally bilateral; it can be associated with facial paralysis or hearing loss (2). In our observation, the main clinical sign was painless otitis with associated purulent otorrhea.

From the middle ear, tuberculous lesions can spread to the mastoid, temporal bone (3), central nervous system (4), or even occipital condyle and atlas, leading to instability of the craniocerebral junction. High-resolution computed tomography is the gold standard to look for an extension to mastoid cells and temporal bone and for checking the integrity of the ossicle chain, facial nerve canal, and labyrinth (5). Tuberculous meningitis is particularly feared in

case of erosion of the tegmen tympani. TME can also be the consequence of dissemination via the lymphatic route from cervico-thoracic lymph node involvement and, exceptionally, via the hematogenous route.

Bacteriological or anatomopathological examinations of biopsy or operative specimen confirm the diagnosis of TME, with a sensitivity of 70 to 90% (6). Cultivation of otorrhea is generally unprofitable (30%). Microbiological diagnosis is also difficult on samples taken during ENT surgery (bone biopsy) (7). The diagnosis can also be made by a puncture-biopsy of cervical lymphadenopathy, a simple and cost-effective procedure (diagnosis in 80% of cases). In some cases, the diagnosis of TME may only be based on the effectiveness of proof-of-TB treatment (7).

The radiological examinations, in particular, the CT scan show only none specific lesions of chronic otitis. The only element suggestive of a TME is that the mastoid appears well pneumatized in two-thirds of cases, wherein general it's little pneumatized in the case of chronic non-tuberculous otitis, with or without cholesteatoma. The CT scan is however useful for an assessment of lesions. It can highlight peri-lymphatic fistulas by erosion of the otic capsule, at the level of the lateral semicircular canal, of the bulb of the superior canal, or of the promontory as well as of bone sequesters. MRI does not add any more information and is only useful in the event of facial paralysis, showing an enhancement at the level where the facial nerve is affected. (10). Since TME occurs in immunocompromised patients, HIV testing is recommended.

Anti-tuberculosis drugs are the treatment for TME (1). The duration of treatment is usually prolonged beyond the six least recommended in pulmonary tuberculosis, up to nine months, or even longer depending on the progress. (1.8). Surgery is indicated for diagnostic purposes, for tissue removal for histological and bacteriological examinations, or as a second line, after the failure of medical treatment. However, the diagnosis is sometimes difficult and once the ear is opened. Surgery may be necessary in the event of complications. It may be tympanoplasty, subperiosteal abscess drainage, bone sequestration removal, or facial nerve decompression.

### Conclusion:

Tuberculosis of the ear is a rare condition. The clinical picture is often comparable to that of banal chronic otitis, and bacteriological examinations are rarely positive immediately. The two cases described in this article illustrate the difficulties of diagnosis.

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