

Atypical manifestations of tuberculous otitis media lead to late diagnosis

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ARTICLE INFO

Keywords:
Tuberculosis
Otitis media

ABSTRACT

Tuberculous otitis media is a relatively uncommon, approximately accounts for 0.05%–0.9% of chronic middle ear infections. It has been commonly seen in associated with or secondary to pulmonary tuberculosis. Clinical signs are often variable and different from classical descriptions. Therefore, laboratory studies are considered necessary for accurate diagnosis. Delayed diagnosis leads to delayed correct treatment, and followed by increased risk of complications such as permanent hearing loss or facial nerve palsy. In this report, we present a case of atypical tuberculosis manifestations after unsuccessfully long treating and excluding other infectious disorders of the ear. Biopsy during mastoidectomy procedure was performed for accurate diagnosis. Meanwhile, PCR result was negative for tuberculosis.

Introduction

Tuberculous otitis media (TOM) is a comparatively rare disorder of chronic infection in the middle ear and mastoid. It has been commonly seen in associated with or secondary to pulmonary tuberculosis. TOM accounts for 0.05%–0.9% of chronic otitis media [3]. Classical clinical manifestations are generally unilateral, presenting painless otorrhea, with or without multiple small perforations of the tympanic membrane. Patients may show symptoms with complications such as peripheral facial nerve palsy, bone necrosis, conductive hearing loss, and may suddenly turn to sensorineural hearing loss. Recent descriptions have shown TOM with pale, dense granular tissues that were similar to cholesteatoma, along with preauricular lymph nodes, however facial paralysis was often rare. Thus, clinical characteristics of the disease are relatively variable, and difficult to accurately diagnose at the first impression. False-negative cultures of Mycobacteria often occur while positive AFB results are uncommon. However histopathological findings rarely show granulomas of extrapulmonary tuberculosis that often results in necrotic granulomas [1]. Polymerase chain reaction - PCR is one of the most used tests, although this test is considered unreliable. Temporal bone CT scan does not necessarily reveal bone destruction.

This case study presents a delayed diagnose and treatment with tuberculous otitis media, which is a relatively uncommon pathology in the Department of Otolaryngology, Hue University Hospital. The purpose is to discuss and suggest that it be necessary to consider differential diagnosis from tuberculous otitis media in cases of otitis media that does not respond to routine antibiotics.

Case presentation

A 33 years old female patient was admitted to Department of Otolaryngology, Hue University Hospital in October 2018 with right-side otorrhea due to prolonged MRSA infection, not responding to antibiotics treatment. The patient had a long history of low-bass prolonged tinnitus that developed about 2 months before admission. Nasal endoscopic findings showed that the yellow pus fluid was seen on the sphenoid ethmoidal recess and nasopharynx was smooth. Right-sided tympanic membrane must have mild congestion without perforation. Mild level of reddish effusion in the middle ear was also seen (Fig. 1). The patient was treated for acute rhinosinusitis for 14 days with antibiotics. However, she still complained about tinnitus associated with mild right-sided ear pain. The first pure tone audiogram showed a mild conductive hearing loss (25 dB). Right ear tympanometry was type B. She continued to be treated with nasal aerosol and general antibiotic. Throughout she complained of tinnitus. Thus, she was placed on a ventilation tube which drained reddish fluid from the middle ear. After 2 weeks insertion, her outer ear was red, her anterior wall of the external ear canal was full, the edema and ear drum were not totally observed. Then, the ventilation tube was removed. She always presented with otorrhea after stopping antibiotics treatment. Aural specimen culture was Methicillin resistant *Staphylococcus aureus* (MRSA). Antibiogram of MRSA isolates were sensitive to Vancomycin, Tetracycline and Chloramphenicol. Glycemia was at 4.46 mmol/l. Temporal bone CT Scan showed fluid accumulation in mastoid cells associated with a fairly limited homogeneous soft tissue structure filling in the atrium and external ear. Bone destruction was not detected (Fig. 2). The second pure tone audiogram revealed a progressive conductive hearing

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<https://doi.org/10.1016/j.xocr.2019.100146>

Received 21 August 2019; Received in revised form 4 October 2019; Accepted 2 December 2019

Available online 05 December 2019

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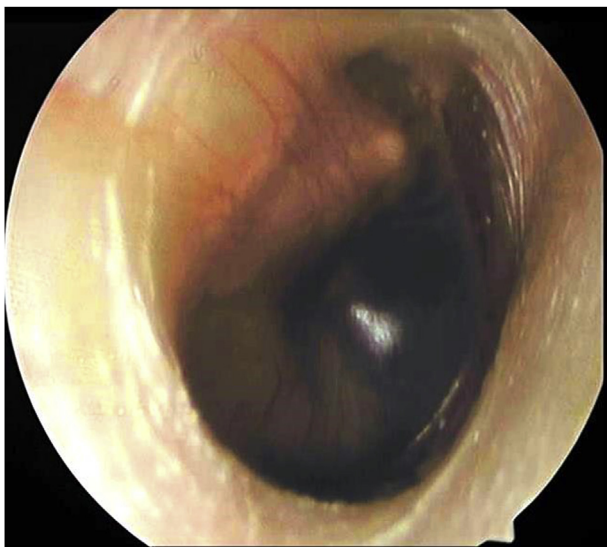


Fig. 1. The aural endoscopy revealed a mild level of reddish effusion in the middle ear. Right sided tympanic membrane was intact.

loss (35 dB). She was admitted with subacute mastoiditis, suppurative with MRSA. She was unsuccessfully treated with Vancomycin. She underwent surgery with the purpose of drainage and biopsy. During tympanoplasty, mastoid cell walls were as soft as alum sugar with presence of white inflammation debris. The anterior wall of the external ear skin was also thick. Histopathological findings revealed atypical tuberculosis in the middle ear (Fig. 3). PCR results was negative of tuberculosis. Check X-ray in the next day revealed a miliary tuberculosis. The patient was taking the combined antituberculosis medications.

Discussion

This is a very typically progressive case of ENT disease. Patient started with purulent sinusitis, leading to otitis media with effusion and unsuccessfully treated with antibiotics. Her condition was turned into acute otitis media, then acute mastoiditis, even when she received accurate antibiotic therapy. Otolaryngological diseases often refer to ciliated epithelial cells, lining the upper airway mucosa, including the nasosinus mucosa, Eustachian tube mucosa, and antrum mucosa. When presence of purulent rhinosinusitis could lead to edema of Eustachian tube mucosa and followed by otitis media with effusion due to negative pressure in the middle ear. Patient was treated with ventilation tube insertion for draining fluid out of the middle ear and balancing pressure between outer ear and middle ear. However, ventilation tube is considered as a foreign body, case by case, tympanic membrane tends to push it out. With this patient, symptoms were more severe. After placing ventilation tube in, the eardrum got inflammation, had sticky white purulent discharge, and edema external canal with granulations. She was unsuccessful treated with general antibiotics along with ear drops. Additionally, she presented with progressive tinnitus and earache. Pure tone audiogram revealed a mild conductive hearing loss (25dB). The diagnosis was not malignant necrotizing external otitis as glycemia was at normal thresholds and the temporal bone CT Scan did not reveal a bone destruction.

As noted, TOM is a relatively uncommon, approximately accounts for 0.05%–0.9% of chronic middle ear infections [3]. Physicians rarely think about this disease at the first impression then it would make diagnosis more difficult. Pathogenesis of tuberculosis of middle ear is related to three mechanisms: direct spread from the Eustachian tube, hematogenous spread from another tuberculosis focus, and direct implantation through tympanic membrane perforation [2]. Clinical signs

are often variable and different from classical descriptions. Therefore, laboratory studies are considered necessary for accurate diagnosis. Delayed diagnosis leads to delayed correct treatment, and followed by increased risk of complications such as permanent hearing loss or facial nerve palsy [2]. Tuberculosis of the middle ear is successfully treated with combined antituberculosis medication for at least 6 months. Moreover, mastoidectomy plays an important role in draining and lessening the removal in treating tuberculosis otitis media. Some recently published papers indicated that Quantiferon-tuberculosis Gold test was an essential test for diagnosing latent or active tuberculosis [3].

With this patient, tuberculosis otitis media was delayed diagnosed after unsuccessfully long treating and excluding other infectious disorders of the ear due to atypical tuberculosis manifestations. Biopsy during mastoidectomy procedure was practiced for accurate diagnosis. Meanwhile, PCR result was negative for tuberculosis. This showed that the role of surgery is very important. The aim of tympanoplasty is not only to drain pus from mastoid cells, but also to take lesions at the right position for histopathological examen, thus which will give a more accurate result.

In addition, with this patient, there were manifestations of purulent rhinosinusitis then acute otitis media, followed by acute mastoiditis, which did not respond to systemic and local antibiotic treatment. This could attribute to antibiotic resistant bacteria. Culture for identification of bacteria results in MRSA. This bacterium is completely resistant to many antibiotics of beta-lactams and Macrolides, and sensitive to Quinolones and Vancomycin. The presence of MRSA becomes a challenge for clinicians, as it is resistance to many different antibiotics, especially to beta-lactams because of "Staphylococci cassette chromosome mec - SCCmec". MRSA has not been reported often to the community for otitis media, which acquired rhinosinusitis. However, it could be certainly worth further research. There were combined factors or this patient that making delayed diagnosis of tuberculosis otitis media. X-ray check after detecting atypical tuberculosis in the middle ear was relatively late performed for this patient. This could be ruled out that ENT clinicians should have taken care of the patient's overall disease rather than just focusing on the speciality disorders. Patient started with combined antituberculosis medication. If the pulmonary tuberculosis progresses well, tuberculosis otitis media will disappear [3]. Prognosis for this patient was good because there were no complications such as facial nerve palsy or sensorineural hearing loss.

Conclusion

Tuberculosis otitis media is a relative rare disease. Clinicians must suspect that TOM in patients with otitis media may not respond to routine antibiotics. In case of negative PCR, surgery for biopsy at right position for histopathological diagnosis is a useful method. Antituberculosis treatment after making accurate diagnosis should be performed for good result. In summary, this case study presented diagnostic pitfalls and additional diagnostic techniques for patients with discrete symptomatology of tuberculosis otitis media.

Research involving human participants and/or animals

Not indicated.

Informed consent

Not indicate.

Ethical statement

Each of the authors has contributed to, read and approved this manuscript.

None of the authors has any conflict of interest, financial or otherwise.



Fig. 2. Temporal bone CT Scan showed fluid accumulation in mastoid cells associated with a fairly limited homogeneous soft tissue structure filling in the atrium and external ear. Bone destruction was not detected.

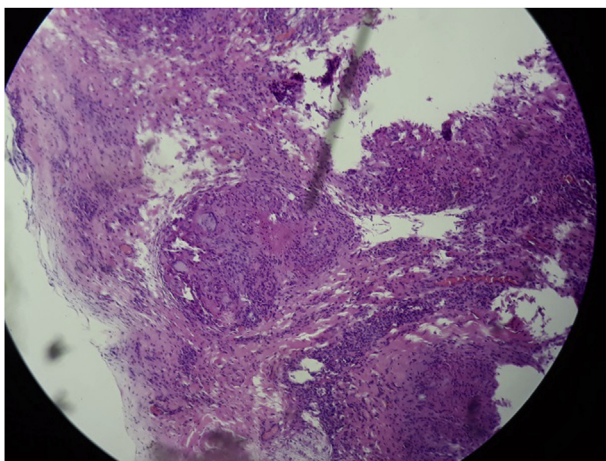


Fig. 3. Incisional biopsy: Histological findings revealed many multinucleate giant cells and many granulomas with caseous necrosis (arrow), suspicion of tuberculosis in the middle ear.

previously published, nor is it under consideration for publication elsewhere.

Declaration of competing interest

None of the authors has any conflict of interest, financial or otherwise.

This article does not contain any studies with human participants or animals performed by any of the authors.

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