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Title: A case of Chronic Otitis Media Caused by Mycobacterium Abscessus

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Keywords: non-tuberculous mycobacteria, Mycobacterium abscessus, chronic otitis media, multi-antibiotic chemotherapy, surgery

Corresponding Author: associate professor Makoto Ito, M.D.,PhD.

Corresponding Author's Institution:

First Author: Hisashi Sugimoto

Order of Authors: Hisashi Sugimoto; Makoto Ito; Miyako Hatano; Yosuke Nakanishi; Yumiko Maruyama; Tomokazu Yoshizaki

Abstract: The first case report of adult chronic otitis media (COM) caused by Mycobacterium abscessus (M. abscessus) is described here. A 61-year-old woman presented persistent otorrhea for 2 months, despite treatment with standard antimicrobial drugs. Physical examination revealed a small perforation of the tympanic membrane and edematous middle ear mucosa. Mycobacterial cultures and PCR yielded non-tuberculous mycobacteria (NTM); M. abscessus. Intravenous panipenem/betamipron and amikacin and oral clarithromycin were administered for 36 days. Computed tomography of the temporal bone showed improved aeration in the tympanic cavity, but soft tissue shadow remained unchanged in the mastoid 31 days after starting medication. She therefore underwent tympano-mastoidectomy at 36 days. At surgery, inflammation remained in the middle ear, and edematous pale mucosal tissue was noted around the stapes and ossicular chain. Histopathologic examination showed inflammation and granulation tissue, but no caseating necrosis or acid-fast bacilli. After surgery the symptoms resolved and remained well without evidence of infection recurrence 12 months after the operation. Although it appears very uncommon in adult COM, M. abscessus should be considered as a possible cause of a chronically draining ear. Multi-antibiotic chemotherapy including high-dose clarithromycin can effectively treat adult COM caused by M. abscessus.

A case of Chronic Otitis Media Caused by Mycobacterium Abscessus

Hisashi Sugimoto, MD, PhD¹⁾, Makoto Ito, MD, PhD¹⁾ *, Miyako Hatano, MD, PhD¹⁾²⁾
Yosuke Nakanishi, MD¹⁾³⁾, Yumiko Maruyama, MD, PhD¹⁾³⁾ and Tomokazu Yoshizaki,
MD, PhD¹⁾

1) Department of Otolaryngology-Head and Neck Surgery, Kanazawa University
Graduate School of Medical Science, Kanazawa, Japan

2) Department of Otolaryngology, Tonami General Hospital, Tonami, Japan

3) Department of Otolaryngology, Kurobe Civic Hospital, Kurobe, Japan

*Address correspondence and reprint requests to: Dr. Makoto Ito, MD, PhD.

Department of Otolaryngology Head and Neck Surgery, Kanazawa University
Graduate School of Medical Science, 13-1 Takaramachi, Kanazawa, Ishikawa
920-8640, JAPAN

Telephone: 76-265-2413, FAX: 76-234-4265

E-mail: makoto@med.kanazawa-u.ac.jp

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NTM and *M. tuberculosis* infections of the ear have similarities in their clinical presentation, such as edematous tissue in the middle ear and chronic otorrhea that fails to settle with antimicrobial chemotherapy. On the other hand, *M. Tuberculosis* causes necrosis of the tympanic membrane and skin of the external auditory canal and can result in facial paralysis and necrosis of the nasopharynx, while NTM is less pathogenic and does not cause such destructive changes. CT of the temporal bone cannot differentiate NTM from other forms of otitis media or granulomatous disease but is generally performed to rule out bone erosion and intracranial complications [13,17,18].

Differentiation from other granulomatous diseases is performed by biopsy of the granulations and by culture looking specifically for NTM [9,18]. The diagnosis of *M. abscessus* infection is generally straightforward, i.e., the organism is an acid-fast, Gram-positive rod that resembles diphtheroid group on a Gram-stained smear. *M. abscessus* grows well on routine bacterial culture media. The cultures must be maintained for more than 4 days to allow sufficient time for growth of the organism [1,5]. In recurrent or persistent COM with otorrhea, mycobacterial cultures should be obtained to diagnose NTM and tuberculosis.

Until recently the treatment of *M. abscessus* was considered difficult. Rapidly growing mycobacteria are routinely resistant to standard anti-tuberculous drugs, and *M. abscessus* is particularly drug resistant. Spontaneous recovery is accordingly rare in these infections. Therapy consists of surgical debridement, removal of all foreign bodies, and long-term multi-antibiotic chemotherapy [4]. In the literature, surgical excision of the infected tissue is recommended for *M. abscessus* COM and long term antimycobacterial chemotherapy with clarithromycin and amikacin is also recommended for *M. abscessus*. Clarithromycin should be given at high doses (600-800 mg/day) and the chief disadvantage of multi-antibiotic chemotherapy is gastrointestinal symptoms due to high-dose clarithromycin. When performing surgical debridement, as much infected tissue must be removed as possible to avoid multiple surgical interventions, because one study showed that almost 50% of all cases needed multiple surgical debridements before the infection resolved [5,7,9,10].

In the present adult case, the infection was successfully eradicated with multi-antibiotic treatment and tympano-mastoidectomy. Multi-antibiotic chemotherapy including high-dose clarithromycin was very effective, and no bacteria including NTM

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M. abscessus otitis media is usually found in well children presenting with painless chronic otorrhea. Although it appears very uncommon in adult otitis media, *M. abscessus* should be considered as a possible cause of a chronically draining ear in an adult. It is important to obtain mycobacterial cultures to diagnose *M. abscessus* infection.

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FIGURE CAPTIONS

Figure 1. The tympanic membrane showed a small perforation with copious, serous otorrhea.

Figure 2. Computed tomography on April 17, 2008 showed a soft tissue shadow occupying the middle ear and mastoid cavity.

Figure 3. Audiometry on March 3, 2008 revealed right conductive hearing loss.

Figure 4. Audiometry on July 11, 2008 showed improvement of the conductive hearing loss.

Figure 5. Computed tomography on August 29, 2008 demonstrated good aeration in the tympanic cavity.

TABLE. M.abscessus patient Information

Authors	Age(yr)/Sex	Antibiotic Treatment	Surgical Treatment	surgical Revision	outcome (hearing level)
Nylen et al,1994	6/M	Clarithromycin	Radical mastoidectomy	Mastoidectomy	residual 40-dB conductive hearing loss
Franklin et al 1994	1/F	Erythromycin	Tympanomastoidectomy	None	residual mild conductive hearing loss
Franklin et al 1994	2/M	Erythromycin	xamination, debridement, biopsy	Tympanoplasty	not noted
Franklin et al 1994	3/M	Erythromycin	Tympanomastoidectomy	None	normal hearing
Franklin et al 1994	6/M	Erythromycin	Tympanomastoidectomy	None	Residual mild mixed conductive and sensorineural hearing loss
Franklin et al 1994	4/F	Erythromycin	Tympanomastoidectomy	Tympanomastoidectomy	residual 40-dB conductive hearing loss
Franklin et al 1994	1/M	Clarithromycin	None	None	not noted
Van Aerem et al 1998	2/M	Clarithromycin/ ciprofloxacin/ ethionamide	Mastoidectomy	Mastoidectomy (twice)	residual 34-dB conductive hearing loss
Ferguson et al 1996	5/M	Clarithromycin	None	None	not noted
Linmans et al 2008	4/M	Clarithromycin	Cmbined-approach tympanoplasty	Second look	normal hearing
Our case	61/F	Clarithromycin / panipenem/ betamipron	Tympanomastoidectomy	None	residual 30-dB conductive hearing loss

Figure1



Fig.1

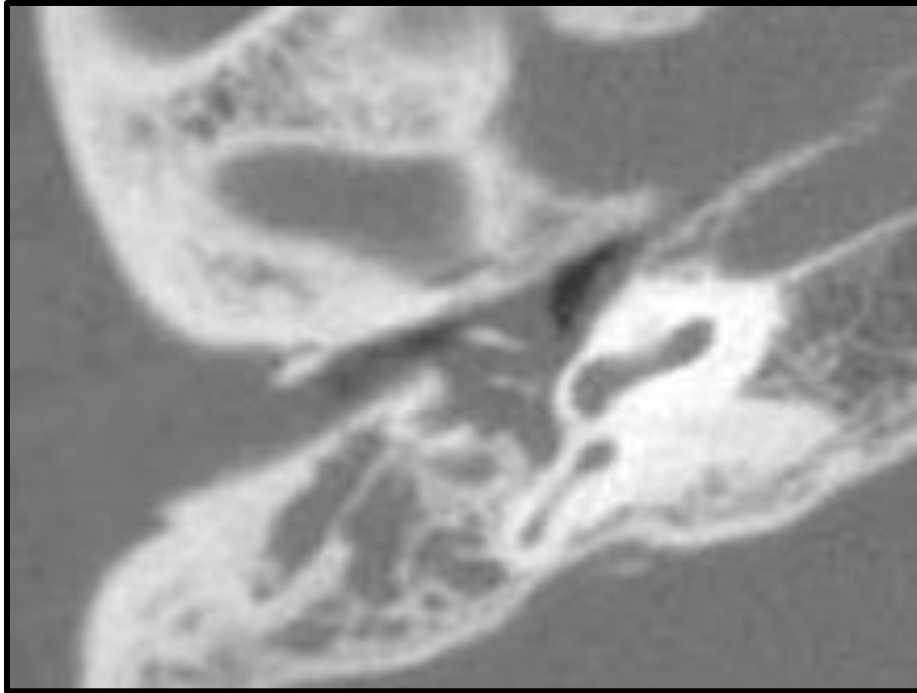


Fig2 CT scan showed soft tissue shadow occupied in the middle ear and the mastoid cavity

Figure3 Rev

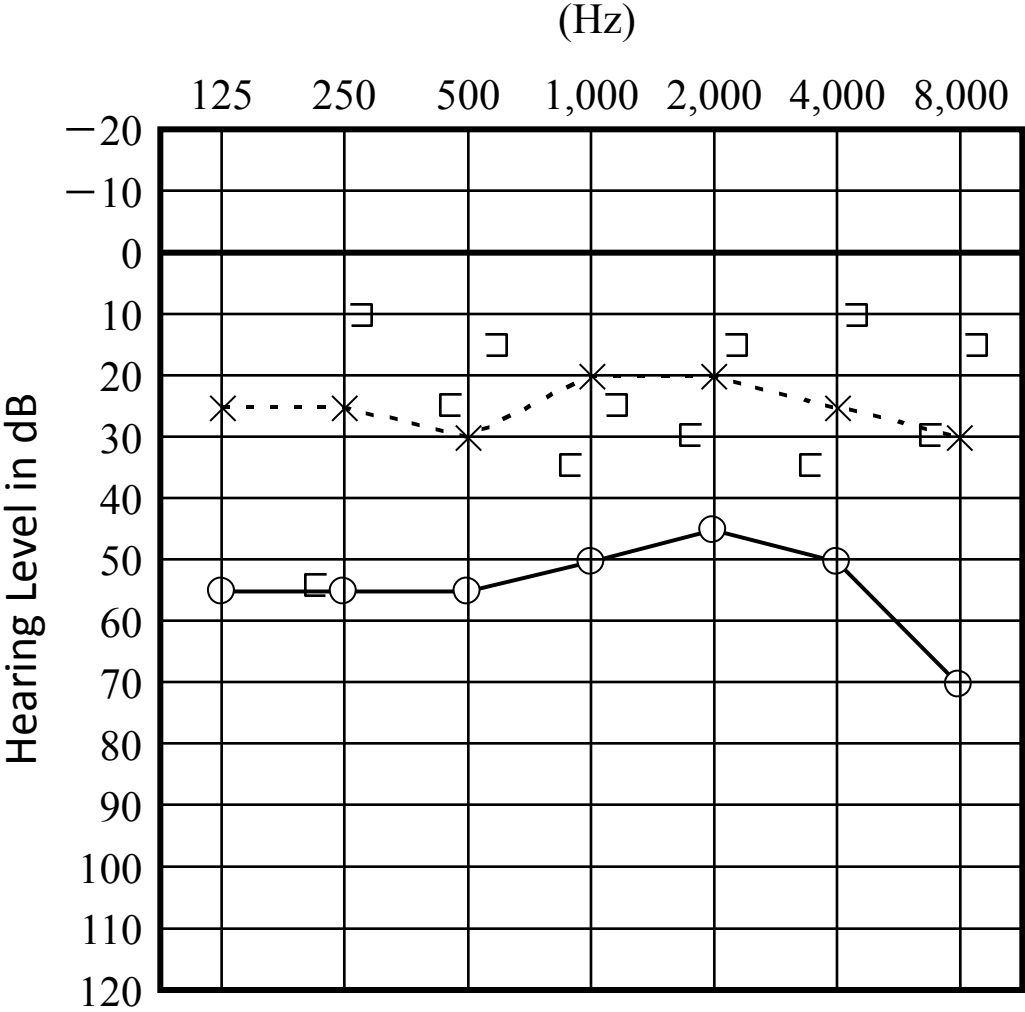


Fig3 audiogram revealed right conductive hearing loss

Figure4 Rev

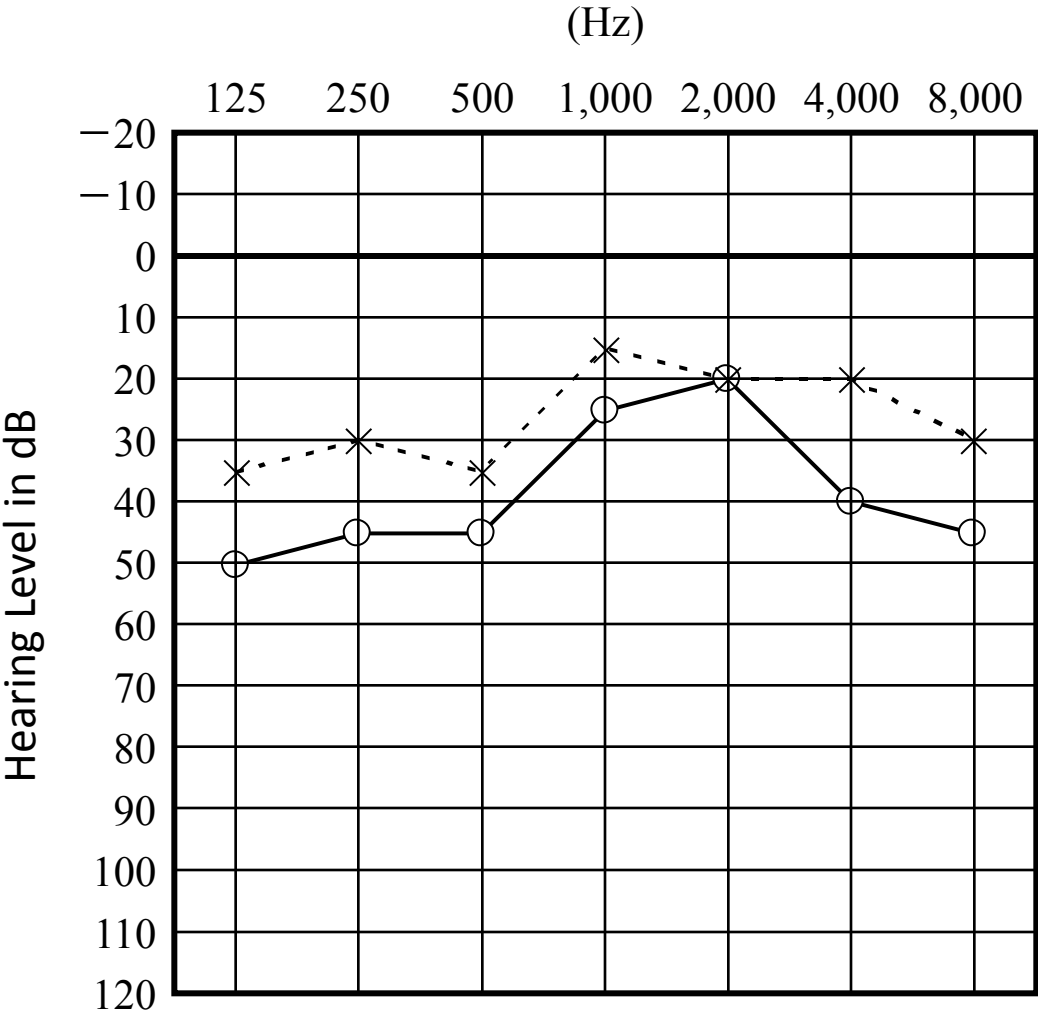


Fig4 Two months after the operation.
Improvement of conductive hearing loss.

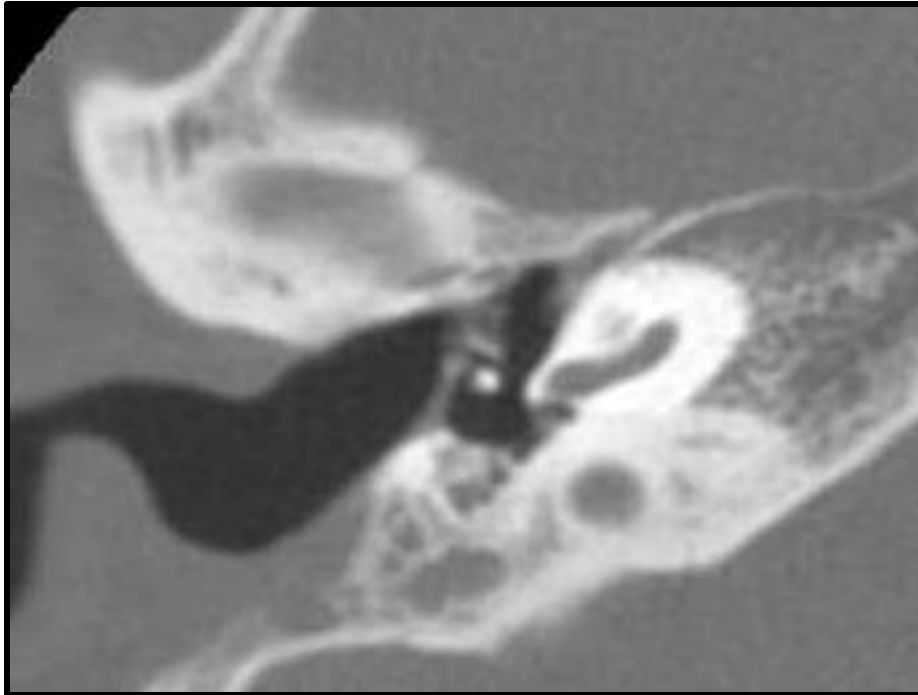


Fig5 Three months after operation. Good aeration in the tympanic cavity.

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ANL

Thank you for sending me the editorial response.

We agree with removing "The first case report of" from the title.

Thank you.

With best regards,

Makoto Ito, MD, PhD

Department of Otolaryngology, Clinical Neuroscience, Kanazawa University

Graduate School of Medical Science

TEL; 76-265-2413

FAX; 76-234-4265

makoto@med.kanazawa-u.ac.jp

On 2010/01/25, at 13:54, Auris Nasus Larynx wrote: