

## Case Report

# An unusual case of complicated temporal lobe abscess following tympanomastoidectomy

Tuanfang Yin<sup>1</sup>, Jihao Ren<sup>1</sup>, Yongde Lu<sup>1</sup>, Xing Chen<sup>1</sup>, Yaowen Wang<sup>1</sup>, Fengying Huang<sup>2</sup>

<sup>1</sup>Department of Otolaryngology Head and Neck Surgery, The Second Xiangya Hospital, Central South University, Changsha, Hunan, China, 410011; <sup>2</sup>Department of Obstetrics and Gynecology, The Second Xiangya Hospital, Central South University, Changsha, Hunan, China, 410011

Received May 11, 2013; Accepted May 26, 2013; Epub June 15, 2013; Published July 1, 2013

**Abstract:** We report a unusual case of complicated temporal lobe abscess following tympanomastoidectomy in a 26-year-old Chinese man here. The patient complained of binaural recurrent purulent discharge accompanied by hearing loss more than 10 years, then he received a right tympanomastoidectomy three months ago, but 3 weeks after surgery, he started to experience fierce headache and nausea and so on. The CT and MRI suggested the diagnosis of right temporal lobe abscess and then right temporal lobe abscess was excised. The patient was successfully treated with a right temporal lobe abscess resection and a radical right mastoidectomy. Although the cerebral abscess following radical tympanomastoidectomy are extremely rare, we should pay attention to it. we suggest the main reasons was still suffering from purulent discharge in the ear after the first tympanomastoidectomy, the granulation and cholesteatoma failed to completely remove during the first operation. and even resulted in substantial bone defect. It is well-known that good drainage is a key to reduce intra-cranial complications.

**Keywords:** Tympanomastoidectomy, otitis media, cholesteatoma, brain abscess, diagnosis, treatment

### Introduction

Previously, common complications of middle ear surgeries mainly include injury of facial nerve, exposure and hemorrhage of sigmoid sinus, exposure of dura mater and cerebrospinal leak, hearing loss, and impaired vestibular function [1, 2]. Reports of complicated cerebral abscess following radical tympanomastoidectomy are extremely rare [3, 4]. Intra-cranial complications are usually caused by otogenic infection penetrating through congenital or acquired bone defect in the skull and spreading in the cranial cavity, or by thrombophlebitis and subsequent intra-cranial spread [5]. Here we report a unusual case of complicated temporal lobe abscess following tympanomastoidectomy.

### Case presentation

The patient was a 26-year-old man who had experienced purulent discharge for three months after right tympanomastoidectomy and for one month after excision of right temporal

lobe abscess. He was admitted to the Department of Otolaryngology Head and Neck Surgery, Second Xiangya Hospital of Central South University and complained recurrent purulent discharge in both ears accompanied by hearing loss more than ten years. About three months ago, he underwent a temporal CT scan in a local hospital and was diagnosed as "bilateral cholesteatomatous otitis media" (**Figure 1**), then received "radical right mastoidectomy and tympanoplasty". Three weeks after surgery, he started to experience fierce headache, and was put on an anti-inflammatory therapy. His symptoms were slightly improved after treatment, but a few days later the symptoms described above exacerbated, and accompanied by nausea and vomiting. The brain CT scan suggested the diagnosis of "possible formation of right temporal lobe abscess". The patient was given anti-inflammatory and cranial pressure-reducing therapies as well as symptomatic therapy for one week, however, the symptoms were not improved. The MRI examination reported "formation of right temporal lobe abscess" (**Figure 2**) and then right temporal



## Temporal lobe abscess following tympanomastoidectomy

vious radical mastoidectomy. Garayev et al reported a case of complicated cerebellar abscess at 30 years after first radical mastoidectomy, a repeated radical mastoidectomy became necessary because of renewed brain abscess at the cerebellar region five weeks after primary operation [4]. Based on intra-operative findings of the revision surgery, we suggest the main reasons for the formation of cerebral abscess are that the patient was still suffering from purulent discharge in the ear after the first tympanomastoidectomy, and that granulation and residual cholesteatoma were found in attic during the revision mastoidectomy. This indicate the first operation failed to completely remove the lesions, and even resulted in substantial bone defect of regimen tympani, leading to considerable exposure and downward bulging of local dura, followed by poor drainage of attic and tympanic antrum. Tympanoplasty further caused impeded drainage from the mastoid cavity and thus exacerbated infection, allowing intra-cranial spread of infection. It is well-known that good drainage is a key to reduce intra-cranial complications and "wet" ears after radical mastoidectomy, while complete removal of attic lesion and full drainage are very important in mastoidectomy, particularly for patients with lower dura mater. Base on removal of lesions and complete drainage, one-stage tympanoplasty could be considered. Bone defect in tegmen tympani and exposure of dura mater are usually caused by inexperienced operators who had little experience in recognizing the presence of lower dura mater. Hence, before mastoidectomy, it is necessary to perform coronal CT scan to determine the presence of lower dura mater. For patients with lower dura mater, caution should be taken when removing lesions and exposing soft tissue below temporal line level during surgery,

and excessive exposure and damage on dura should be avoided, as seen in this case. The exposed dura and defect of tegmen mastoideum caused by operation should be early treated by cover and repair with fascia intraoperatively as above. We also think caution is needed in selecting concurrent tympanoplasty after radical mastoidectomy if the surgeon is not absolutely sure whether lesions are completely removed.

### Disclosure of conflict of interest

There is no conflict of interest for all authors.

**Address correspondence to:** Dr. Fengying Huang, Department of Obstetrics and Gynecology, The Second Xiangya Hospital, Central South University, Changsha, Hunan, China, 410011. Tel: +8613874870394; E-mail: hfy6697@163.com

### Reference

- [1] Agrawal A, Pratap A, Singh I, Kumar A, Shrestha S. Cerebellar abscess following mastoidectomy for chronic otitis media. *Pediatr Neurosurg* 2007; 43: 327-329.
- [2] Isaacson B, Mirabal C, Kutz JW Jr, Lee KH, Roland PS. Pediatric otogenic intracranial abscesses. *Otolaryngol Head Neck Surg* 2010 Mar; 142: 434-437.
- [3] Migirov L, Eyal A, Kronenberg J. Intracranial complications following mastoidectomy. *Pediatr Neurosurg* 2004; 40: 226-229.
- [4] Garayev A, Talyshinskiy A, Büntzel J. Otogenic cerebellar abscess - two case histories. *Laryngorhinootologie* 2007 Sep; 86: 660-663.
- [5] Seven H, Coskun BU, Calis AB, Sayin I, Turgut S. Intracranial abscesses associated with chronic suppurative otitis media. *Eur Arch Otorhinolaryngol* 2005; 262: 847-851.