

Brain Abscess Developing After Auto-Mastoidectomy: A Case Report

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Abstract

Auto mastoidectomy is a rare complication that can develop after a chronic middle ear infection and can be seen in cases where no response to classical infection treatment is obtained. The destruction of bones and tissues may cause the current infection in the brain. A 55-year-old male patient applied to the emergency department for a left ear pain complaint. In his examination, he was conscious, but orientation and cooperation were not complete. The brain CT showed a mastoidectomy cavity on the left, but he had never been operated on. The destruction of bones and tissues may cause the current condition in the brain. This case report examines a case of auto mastoidectomy due to cholesteatoma, which can be diagnosed when the brain abscess develops.

Keywords: Brain Abscess, Automastoidectomy, Chronic Otitis Media

Introduction

Auto mastoidectomy is a rare complication of mastoid destruction due to infection or mass, observed in people without a history of surgery. Damaged mastoid tissue can predispose to another infection or progress to the eardrum and ear bones, leading to hearing loss. Cases of auto mastoidectomy caused by cholesteatoma have been reported most frequently in the literature (1). Cholesteatoma is a cystic lesion of keratinised stratified squamous epithelium (2). In this case report, while studying the aetiology of brain abscess, one case with otitis media due to cholesteatoma and determined auto mastoidectomy will be examined.

Case Report

A 55-year-old male patient applied to the emergency department complaining of left ear pain that had been present for three weeks and spreading to the left side of his head for a few days. Antibiotics and analgesics had prescribed two weeks ago with the diagnosis of otitis media, but he hasn't used his medications regularly. He has a history of hypertension (HT), diabetes (DM) and chronic obstructive pulmonary disease (COPD). There was no history of trauma or surgery. His fever was 39°C, and his blood pressure was 120/80 mm/Hg. In his examination, he was conscious, orientation and cooperation were incomplete, nuchal

rigidity was positive, kernig and brudgenzy were negative, bilateral muscle strength was good function, left eardrum was edematous, and there was a slight discharge in the external auditory canal. There were no acute pathologies on the other system exams. Leukocytes 22,000 109/L, neutrophils 84%, and C-RP (C-reactive protein) 9.34 mg/L were detected for blood tests. The PCR (SARS-CoV-2) requested was negative, and no viral pneumonia was found in chest computer tomography (CT).

For the preliminary diagnosis of intracranial disease, brain CT and magnetic resonance (MRI) examinations were performed. A mastoidectomy cavity was observed on the left. Soft tissue densities were observed in the left mastoidectomy cavity and middle ear, and a signal change showing diffusion restriction in the medial part of the left temporal lobe was observed (acute infarct? Abscess?). The nodular diffusion restriction area was marked in the left temporal lobe inferior part (Figure 1). He was referred to the academic hospital with preliminary diagnoses of abscess, meningitis, encephalitis, and mass.

It was learned that the patient was thought to have a brain abscess in the examinations performed at the hospital. He was hospitalised and operated on by otolaryngologists and neurosurgeons (Figure 2).

During the operation, it was reported that the incus and stapes were destroyed, and the malleus was partially preserved. Tympanoplasty was not performed due to suppurative discharge. *Proteus Mirabilis* was grown in

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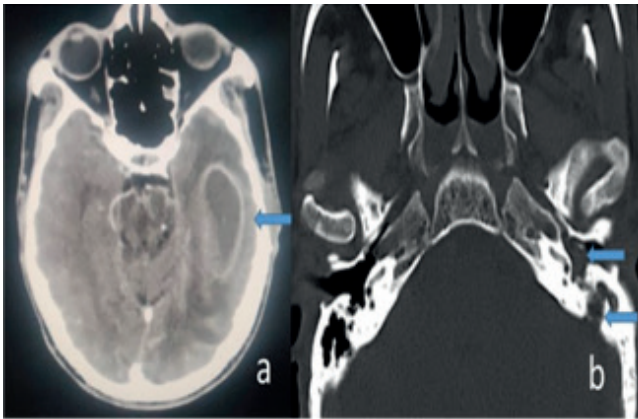


Figure 1a-b. Due to chronic auto mastoiditis complicated by the formation of an intracranial abscess (a) and bone destruction of the posteromedial wall of the mastoid of the temporal bone (b) are represented by arrows.

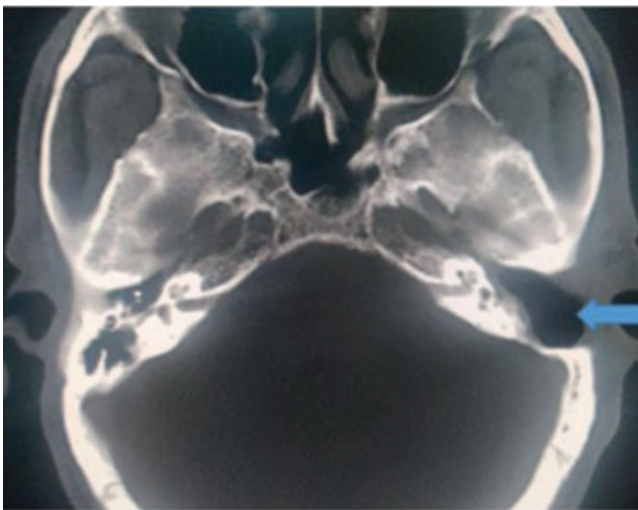


Figure 2. The patient's post-operative mastoidectomy cavity (arrow).

aspiration from the inner ear and brain tissue. Antibiotic therapy was administered. Complete hearing loss was observed before and after surgery. The patient, who was hospitalised for 30 days, had no neurological sequelae except slowing down in speech. He was discharged with the recommendation of Neurosurgery and Otorhinolaryngology outpatient control.

Discussion

In the literature, there is not enough information about auto mastoidectomy cases. Otorrhea, hearing problems, ear pain, and facial paralysis are the most common reasons for admission. There are patients with these complaints for an average of 20 years. When facial paralysis develops, the diagnosis is made in a shorter time (1). The factor that causes this situation may be that patients consider it normal when their complaints do not go away. Still, when facial paralysis develops, it is noticed by the patient's relatives,

and the treatment is directed. In the case presented in this article, some complaints were probably longer but increased to 15 days. It is thought that the diagnosis was made more quickly when external signs such as impaired consciousness appeared (possibly after the development of an abscess).

The progression of the epithelial layer in the outer ear canal to the inner ear is responsible for the development of cholesteatoma. The epithelial layer that covers the ear canal and the membrane's outer surface will continue to produce keratin if it enters the middle ear cavity. This substance, utterly foreign to the middle ear, provokes a severe reaction. A cystic lesion is formed by creating a predisposing ground for infection, traumatising the surrounding tissues and may cause the development of chronic otitis media (3). Cholesteatoma is a common cause of chronic otitis media. In a study by Sun et al., intracranial complications due to chronic otitis media were examined, and it was found that complications developed in patients with cholesteatoma at the highest rate. *P. Mirabilis* was the most common factor among these patients (4). The same factor was detected in the case of this study.

In a study in which CT scans of auto mastoidectomy and post-mastoidectomy cases were examined, patients of auto mastoidectomy, defects of soft tissue and bones in the external auditory canal were observed together in cases of post-mastoidectomy. It was determined that there was a posterior and lateral wall defect in the external auditory canal, and there was no Henle's spine (5). In the case of this study, the presence of soft tissue and destruction of the posteromedial wall of the mastoid bone was detected. The patient's lack of an operating history also supports the diagnosis of auto mastoidectomy. The difference became evident with the tissue destruction that developed post-op. In patients with impaired consciousness or insufficient information with this information, it can be decided whether further examination will be performed, the type of treatment and a precise diagnosis.

Compatible with the literature, in this case, chronic infection progressed to the intracranial tissue and intracranial complication due to developed otitis media. This suggests that cases thought to develop otitis due to cholesteatoma should be promptly treated and followed up. In addition, the clinician should warn the patient about possible complications.

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