



Temporal Root Abscesses due to Acute Otitis Media

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Abstract

The complications of acute otitis media have decreased since the advent of antibiotic therapy, however, as physicians we must be familiar with them due to their potential severity and because acute otitis media continues to be one of the most frequent pathologies in childhood. Zygomatic abscesses are extremely rare; their presentation can easily be confused with other pathologies such as external otitis, which will lead to a delay in diagnosis and treatment, and an increase in morbidity. We present a clinical case with an interesting differential diagnosis that reminds us of the importance of knowing these types of unusual complications.

Keywords: Otitis; Complications; Abscess; Zygomatic; Temporal

Introduction

The Acute Otitis Media (AOM) is one of the most common infections in childhood. It has its highest prevalence in the first year of life, decreasing during the second and third years [1]. Temporal root abscesses rare complications of acute otitis media that originate in the zygomatic cells of the temporal bone and extend into the soft tissues [2,3].

There are few cases of zygomatic abscesses published, however, it is important to know their existence as they involve potentially serious complications whose presentation form can be confused with other conditions.

The purpose of this work is to present a case of a zygomatic abscess showing the images that were necessary to make a diagnosis and its correct treatment.

Case Presentation

Eleven-year-old schoolchild with no relevant medical history who presented with a two-week history of left earache without otorrhea, vertigo, fever or headache. The outer ear was in normal position with painless mastoid palpation. At otoscopy, the External Auditory Canal (EAC) showed diffuse edema and whitish discharge that did not allow the eardrum to be seen. Diffuse External Otitis (DEO) was diagnosed and topical ciprofloxacin was prescribed.

The patient came to the emergency room on two occasions due to increased earache, and six days after the first visit presented with a painful left preauricular swelling of progressive appearance with a rubbery touch. He had no fever and the otoscopy was the same. The C-reactive protein was 13.72 mg/dL with leukocytosis of $14.89 \times 10^3/\mu\text{L}$ and neutrophilia of $10.14 \times 10^3/\mu\text{L}$ (68.10%).

In the Computed Tomography (CT), a 26 mm × 15 mm × 31 mm collection (AP × T × CC) was observed under the temporal muscle from the coalescing cells of the temporal squama and zygomatic process. In addition, at this level there was a solution of continuity with communication to the Middle Cranial Fossa (MCF) without intracranial involvement (Figure 1).

A left myringotomy was performed using general anesthesia obtaining scarce purulent material and a Transtympanic Ventilation Tube (TVT) was placed. The content between the squama and the temporal muscle was drained retroauricularly, a closed mastoidectomy was performed confirming the absence of purulent material and cleaning the coalescing cell with reconstruction of the bone defect towards MCF (Figure 2).

The culture result was *Streptococcus pneumoniae*. During the admission, 2 g of Cefotaxime was administered every 8 h, the patient evolved favorably. The control CT scan prior to discharge showed clear improvement without collections.

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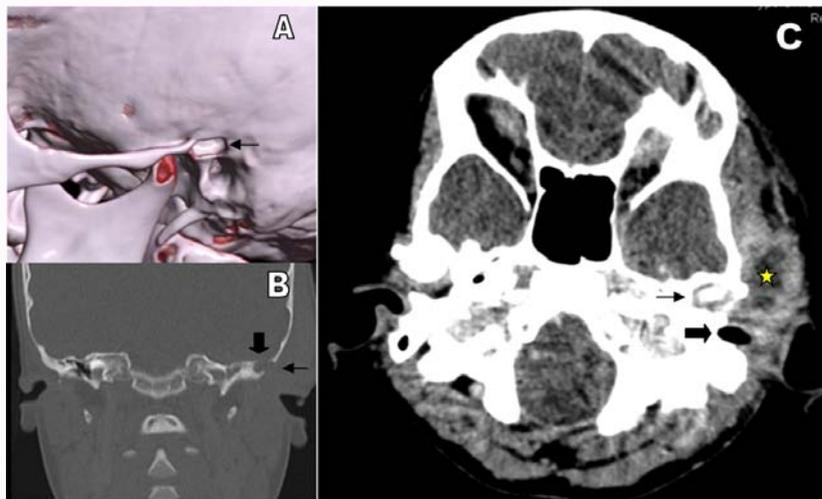


Figure 1: A) Reconstruction in which the bone defect is observed in the squama of the temporal, superior to the EAC at the root of the zygoma. B) Coronal section showing the bone defects, the upper one in communication with the MCF [thick arrow] and the lateral one that originates the abscess below the temporal muscle [thin arrow]. C) Preauricular collection [yellow star] anterior and superior to the left EAC [thick arrow], close to the TMJ [thin arrow] without affecting it.

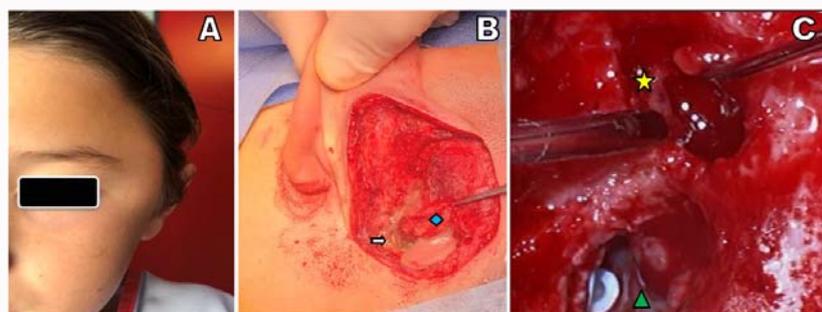


Figure 2: A) Clinical image showing left preauricular swelling prior to surgery. B) Surgical image, using a retroauricular approach, the collection of purulent material contained between the mastoid [white arrow] and the temporal muscle [blue rhombus] is drained. C) Surgical image showing the lateral bone defect [yellow star] of the coalescent cell with granulomatous material inside. In the lower third of the image the eardrum [green triangle] can be seen at the bottom of the EAC with a tube ventilation in place.

Discussion

The complications of otitis have decreased with antibiotic therapy. They are classified as intracranial and extracranial or intratemporal. It is estimated that 0.45% of suppurative AOM's can develop extracranial complications [4]. Within the extracranial, mastoiditis is the most frequent form and is the starting point for subperiosteal abscess, which consists of an abscess that affects the mastoid cortex and usually presents as a painful retroauricular swelling that detaches the outer ear forwards.

The zygomatic abscess and zygomatitis is a rare complication that occurs in pneumatized zygomas in which the infection progresses to the preauricular region. They can be formed by direct extension, caused by bone erosion through the epitympanic cells of the temporal root, or by phlebitis. If the affection progresses, the presenting symptoms may include trismus as a result of a temporal muscle myositis [5,6], however, the clinical presentation can be confusing, as in our patient, simulating DEO without trismus and without affecting the general condition.

Its differential diagnosis must include Luc's temporozygomatic abscess described by Henri Luc in 1913 when studying cases of subperiosteal abscesses without mastoiditis; he suggested that an

infection in the middle ear traveled through the Rivinus fissure and the branch of the deep auricular artery, affecting the cortex of the EAC and forming an abscess that obstructs the duct and ends up fistulizing the posterior wall of the EAC (Gelle's fistula) [7]. His theory has been questioned; Fernández et al. [8] affirm that in most cases Luc's abscess is related to mastoid occupation. Luc's abscess can be confused with abscessed otitis externa, but imaging tests clarify the diagnosis. In our case, the DEO image was clear, no fistula was found in the EAC and no purulent material was found in the mastoid. However, it did cause involvement of the preauricular region, fistulizing towards the temporal muscle and forming an abscess, for which it was diagnosed as a zygomatic abscess.

The diagnosis of these complications is usually delayed due to the latent onset of the symptoms, but it is necessary to insist on dubious presentations, in performing imaging tests such as CT, especially if we have low-dose CT. In the treatment, surgical drainage that includes mastoidectomy is necessary when CT suggests occupancy [9,10].

In conclusion, although temporal root abscesses are rare today, they need to be known as they represent a potentially important complication of AOM that can easily be confused with several clinical presentations, including external otitis.

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