



Zygomatic Abscess with Temporomandibular Joint Effusion Complicating Acute Otitis Media

CASE REPORT

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ABSTRACT

The incidences of extracranial and intracranial complications of acute otitis media (AOM) in children have markedly decreased in the postantibiotic era. Zygomatic abscesses are the rarest type of abscesses originating from mastoiditis. This paper presents a case with a zygomatic abscess as a complication of acute coalescent mastoiditis in a 7-year-old girl who underwent cortical mastoidectomy and myringotomy-ventilation tube insertion.

Keywords: Acute otitis media, complications, subperiosteal abscess, zygomatic abscess

INTRODUCTION

Acute coalescent mastoiditis (ACM) and a mastoid subperiosteal abscess are extracranial complications of acute otitis media (AOM). Subperiosteal abscesses are the most frequent complications of ACM (1-6). Zygomatic abscesses are a form of mastoid subperiosteal abscesses. There are three types of mastoid abscesses: i) posterior subperiosteal (postauricular), ii) inferior subperiosteal [a-sternocleidomastoid (Bezold's abscess) and b-digastric (Citelli's abscess)], and iii) anterior subperiosteal (zygomatic) (7). Zygomatic abscesses are the rarest of these. There are few case reports in the literature in which the abscess causes some degree of myositis, but temporomandibular joint arthritis is poorly known to further associate with complication (7-11).

Despite modern antibiotic therapy, ACM can still be a potentially dangerous situation due to possible extracranial and intracranial spread (1). In the past, in 25–50% of patients, AOM resulted in ACM; by 1950 the reported incidence of surgical mastoidectomy because of AOM was below 10% (12, 13). Antibiotics reduced the complication rate to 0.02–0.15%, yet the mortality rate is still high (approximately 20%), particularly in populations with lower socioeconomic conditions (1, 12-14). However, complications of AOM might be expected to increase with the escalation of antibiotic resistance (15). ACM is the most common complication of AOM in children, but recently, it has been reduced to an almost nonexistent event with an incidence between 0.2 and 2% (2, 5). ACM may occur in the absence of an obvious middle ear infection, when an aditus obstruction segregates the middle ear and mastoid cells. This dangerous condition is known as silent otitis media, where the tympanic membrane is almost normal in 10-20% of ACM cases (6, 16).

The aim of this report is to present the clinical findings and progress of a patient with a zygomatic abscess, which is a rare complication of AOM.

CASE REPORT

A 7-year-old girl was admitted to the Department of Otolaryngology with ear pain, hearing loss, otorrhea, and swelling of the zygomatic region on the left side. She had a history of otitis media with left ear pain, hearing loss, fever, and otorrhea and had been intramuscularly administered 1 g of ceftriaxone for the previous 5 days. She then developed a swelling on the left side of her face, which drove the family to our hospital. On her physical examination, a purulent material was aspirated from the external auditory channel. The tympanic membrane was irregular and macerated. A painful, diffuse, nonerythematous swelling on the zygomatic region was noted (Figure 1). Facial nerve functions were normal, and trismus and nystagmus were not observed. She was hospitalized, and intravenous antibiotics (ceftriaxone 1x1 g and clindamycin 3x200 mg) were started, but no improvement was observed in the following 48 h. The leukocyte count was 7500/mm³. The patient's aerobic culture was negative. A conductive hearing loss of 40 dB on the left side was found on audiometry, and a type B trace was observed on tympanometry. The examination of the right ear was normal. A computed tomography (CT) scan of the temporal bones showed an inflammatory infiltration of the left zygomatic region and opacification of pneumatic cells of the

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Figure 1. Picture showing the patient with swelling in the zygomatic region (arrow)

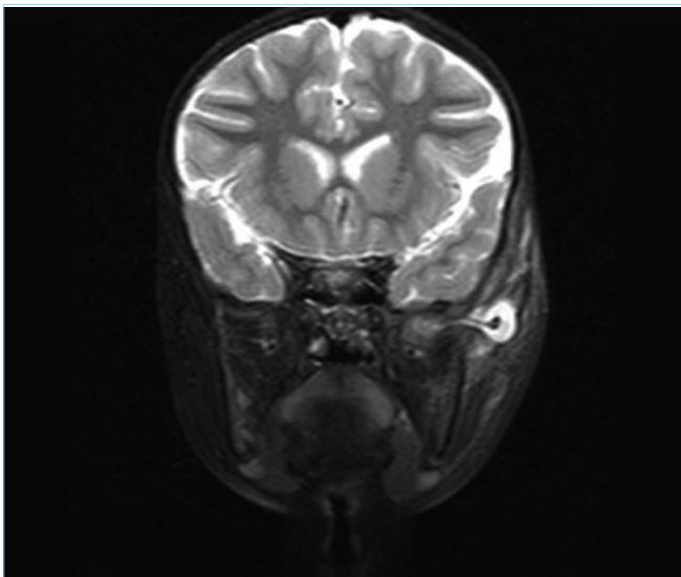


Figure 2. Picture showing a left-sided zygomatic abscess in the coronal section of MRI

left mastoid. Cranial magnetic resonance imaging (MRI) showed an abscess formation, 3x1 cm in size, in the left zygomatic region. There was an exantion to the temporomandibular joint and an increase in the intra-articular fluid amount. The inflammation also extended to the muscles (myositis) (Figure 2).

The patient underwent surgical treatment. Cortical mastoidectomy through the postauricular approach and myringotomy-ventilation tube insertion was performed. The zygomatic region was not opened but was squeezed instead, and the purulent material that drained from the zygomatic region to the mastoid cells was aspirated. The granulation tissue blocking the aditus and all other pathologic tissue were removed. A transmastoid drain was placed in the mastoid cavity. The mastoid cavity was aspirated daily for the following 7 days. The patient's postoperative recovery was quick; fe-

ver, swelling of the zygomatic region, pain, and purulent discharge from left ear disappeared. On the 7th day after the surgery, no secretion was present, and the drain from the mastoid cavity was removed. Her histopathological examination result was reported as inflammation with granulation and fibrin tissue. The patient was discharged from the hospital 9 days after the surgery with no ear complaints and no swelling of the left zygomatic region. Her pure tone audiometry test was totally normal on the first control which was performed 1 week after discharge. The tube was removed from the ear channel 6 months later. Informed consent was taken from the patient for this case report.

DISCUSSION

Acute coalescent mastoiditis is the most common complication of otitis media in all pediatric age groups (15, 17). During the last 60 years, antibiotics and public health care systems have significantly decreased the incidence and modified the treatment for these complications. The incidence of ACM is less than 0.1% (18), and subperiosteal abscesses are very rare. Zygomatic abscesses, which are the rarest type of the mastoid subperiosteal abscesses, can lead to periosteal elevation under the temporalis muscle with pain, tenderness, and swelling in the region of the zygomatic process. Middle ear infection spreading to the mastoid can extend through the tympanomastoid suture or along vascular channels in the cribriform area. Direct erosion of the mastoid cortex by inflammation is also possible (19). In our case the progression pathway of the mastoid abscess to the subperiosteal area was unclear.

The most common symptoms of a subperiosteal abscess are fever (100%), tenderness (85%), erythema (79%), swelling and protrusion of the auricle (73%), spontaneous tympanic membrane perforation (24%), and facial palsy (9%) (6); in our case, all, except facial palsy, were present in our case. Tympanic membrane perforation on its own was too small to be detected; however, obviously, there was a perforation where the drainage came through. An elevated C-reactive protein (CRP) level (>100) and leukocyte count (>15,000/mm³) are expected in case of a zygomatic abscess (6); these were normal in our case. Previously used antibiotics might be the reason for this situation.

A diagnosis of complicated AOM is based on clinical and radiological findings and laboratory assessment. Coalescent mastoiditis is difficult to diagnose due to both the infrequency of presentation and inconsistency of signs or symptoms. A laboratory evaluation is usually not helpful; most patients are afebrile, and they lack systemic complaints because of previously used antibiotics. Thus, there must be a high index of suspicion during the management of these patients, and early CT scans of the temporal bone are essential. If a complication is found, MRI should be the next imaging technique to help surgical planning (20). In our case, an abscess was not detected through a CT scan but was detected through MRI.

Bacteria cultured from complicated middle ear and mastoid effusions are more resistant to regularly applied antibiotics than bacteria found in uncomplicated AOM (21). *Streptococcus pneumoniae* is the most frequently cultured bacteria in cases of both AOM and its complications (21). In addition, *Pseudomonas aeruginosa*, *Streptococcus pyogenes*, and *Staphylococcus aureus* are frequently found in cultures of mastoid effusion in case of acute

mastoiditis (3, 15). Anaerobic otitis media or mastoiditis tends to follow a subacute and subclinical course in comparison with the course of aerobic illness (22). This is shown by an afebrile course, a lack of periauricular pain or tenderness, a noninflamed tympanic membrane, and a near-normal leukocyte count (23). In our case, the clinical course was rather serious, but anaerobic microorganism might be the reason for the negative culture. Previously used antibiotics might have had an influence as well.

Coalescent mastoiditis without further complications usually responds to more conservative treatment (2, 17). However, myringotomy or tympanostomy tube insertion is recommended to ensure adequate drainage of the middle ear. Treatment is supposed to open the blocked aditus; otherwise, cortical mastoidectomy should be performed. Cholesteatoma and purulent otorrhea and/or granulation tissue resistant to topical and systemic antibiotics for more than 2 weeks are indications for mastoidectomy (24, 25). Additionally, in case of coalescent mastoiditis in children where signs and symptoms do not subside within 48 h, mastoidectomy should be performed (24, 25). All other complications also require mastoidectomy.

CONCLUSION

Zygomatic abscesses are the rarest type of the mastoid subperiosteal abscesses. The diagnosis of subperiosteal abscesses is difficult due to both the infrequency of presentation and inconsistency of signs or symptoms. Early diagnosis, adequate medication, and mastoidectomy are necessary to treat subperiosteal abscesses.

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