Case Report

Acute Otitis Media and Facial Paralysis in an Infant with Aural Atresia: Management of a Rare Case

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INTRODUCTION

Aural atresia is a congenital disease that is characterized by an embryologic developmental defect of the external auditory canal (EAC). There is an erythematous, bulging tympanic membrane by otoscope in physical examination of acute otitis media (AOM). Children with aural atresia experience AOM as children have normal anatomy. However, its diagnosis is hard due to the absence of EAC. Facial paralysis is an intratemporal complication of AOM. If this complication develops in a child with aural atresia and otitis media, it makes the condition even more complicated. A 10-month old child who had such a condition is presented in this paper.

KEYWORDS: Mastoidectomy, facial palsy, methylprednisolone

Acute otitis media (AOM) is a common disease in the pediatric population. According to the Academy of Pediatrics guidelines, AOM should be diagnosed in children with moderate to severe bulging of the tympanic membrane or new onset of otorrhea not due to acute otitis externa.

Complications of AOM are classically classified as intracranial or intratemporal. Considering intratemporal complications, mastoiditis and facial paralysis occur most frequently. Facial nerve paralysis, with an incidence of 0.5%, is not a frequent complication of AOM with the use of the pneumococcal and haemophilus vaccines nowadays. Its pathophysiology is not yet clearly understood. There are several hypotheses in the literature. Nerve compression due to edema and exposure of a congenitally dehiscent facial nerve to bacterial toxic metabolites are the most accepted hypothesis.

If there is a middle ear space, children with aural atresia can surely experience AOM. However, its detection is difficult because of the inability to examine the tympanic membrane. Co-existence of aural atresia, acute otitis media, and facial paralysis as complications should not be common. Here, we aim to present a boy who had aural atresia and, AOM with complicated facial paralysis and management of his treatment. There is only 1 case in English literature as far as we know.
CASE REPORT
A 10-month male infant was referred from pediatrics to the otolaryngology clinic because of right-sided facial paralysis. According to his mother, the boy suddenly developed facial drooping on the right side for 2 days. He also had a runny nose and fever for a week. His prenatal and natal history was normal. He had atrial and ventricular septal defects that healed spontaneously in the follow-up. His left ear was normal according to his neonatal screening auditory brain response (ABR) test.

In his physical examination, his right auricular cartilage skeleton was normal but the EAC could not be seen. He had skin tags in front of the auricles bilaterally. His left external auditory canal was normal. He had catarrhal nasal discharge bilaterally. In the resting state, the left oral commissure was strained towards the lateral, and asymmetry could be seen. When he cried, these findings increased. Computed tomography (CT) was performed and demonstrated inflammatory changes in the paranasal sinuses and haziness of the middle ears and bilaterally without bony destruction or acute intracranial abnormalities. His mastoid air cell aeration was infantile. Antrum and a few superficial cells could be seen in CT. The left malleus and incus—stapes ossicles, semicircular canals, vestibules, cochleas, vestibular and cochlear aqueducts, and internal acoustic canals had normal sizes bilaterally. The head of the right malleus was abnormal. The labyrinthine part of the right facial nerve was normal but its tympanic and vertical parts could not be evaluated (Figure 1). His Jahrsdoerfer score was 9. He had right-sided facial paralysis, House Brackmann grade 4.

In case of a possibility of facial nerve damage during surgery because of abnormal aural anatomy, he was first treated medically. He was interned and given 10 mg methylprednisolone (Prednol; Gensenta, Istanbul, Turkey) in a tapering dose, 50 mg/kg ceftriaxone (Cephaxon; Toprak Ilaç, Sakarya, Turkey) and nasal decongestant (Rhinfant; Pharmactive, Istanbul, Turkey). Because of immediate ceftriaxone sensitivity, his antibiotic was changed to clindamycin, 30 mg/kg in 3 doses with the recommendation of the pediatric infectious disease department. With this treatment, his C-reactive protein (CRP) level decreased from 32.7 mg/L to 6.5 mg/L within 3 days and he had no fever. The nasopharyngeal culture was not performed, because empirical antibiotic treatment improved inflammatory markers as fever and CRP level. However, there was no healing in his facial nerve paralysis degree in a 7-day treatment course. For this reason, the patient was operated because of complicated AOM and facial paralysis. Since the patient had grade IV facial paralysis, electroneuronography (ENoG) was not performed.

**MAIN POINTS**
- Acute otitis media can develop in children with aural atresia. In addition, it can be complicated as children with normal anatomy.
- Because of unusual anatomy, it may be required to delay surgery if facial paralysis is not House Brackmann grade VI.
- Cortical mastoidectomy is the preferred type of surgery for the treatment of an aural atresia case with acute otitis media and facial paralysis.
Pharyngeal cultures are being used in clinical practice. It could be nasopharyngeal culture. But today, little is known about how naso-

Causative bacteria in upper airway infections can be detected by mended in the treatment of AOM. We did not think of surgery in the vide drainage through the Eustachian tube, although it is not recom-

and methylprednisolone. We also added nasal decongestant to pro-

ommendations, which include the following: intravenous antibiotics, Since this complication is rare, there are limited evidence-based rec-

nerve palsy is usually seen in children over 3 years old, although it can be seen in younger children, as with our patient.6

Since this complication is rare, there are limited evidence-based rec-

ommendations, which include the following: intravenous antibiotics, tympanocentesis for gram stain and culture, and myringotomy with or without ventilation tubes.7 Use of steroids is controversial in facial paralysis with AOM.8 IV antibiotics such as third-generation cephalosporins, which also have good meningeal penetration, should be utilized to target common pathogens.8 The most common pathogens are Streptococcus pneumoniae, Staphylococcus aureus, and Streptococcus pyogenes.10 In the case of immediate reaction to beta-

lactam antimicrobial agents, macrolide or lincosamide can be used in the treatment of AOM.11 In the present case, we applied ceftriaxone of facial nerve is mandatory. The facial nerve commonly directs a more forward route at the plane of the second genu and mastoid part in patients with atresia.12 To avoid facial nerve damage during surgery, we waited for the patient to respond to medical treatment. In addition, he had House-Brackmann grade 4. During mastoidectomy, facial nerve was not encountered.

There was such a case presented in the literature by Zalzal.5 He reported a 2-year-old boy with right aural atresia, AOM, and facial paralysis. A subperiostal abscess then developed in the patient. Two days after drainage of the subperiosteal abscess, a simple mastoidectomy was performed because of a recurrent spiking fever. Unfortunately, lateral sinus thrombosis developed and Zalzal had to later perform internal jugular vein ligation, revision mastoidectomy, debridement, and evacuation of thrombosed sigmoid sinus later. He reported that the patient had partial facial weakness after the last surgery. His case was of course more challenging. We cannot know whether he would have performed surgery if there was no other complication.

The facial nerve in patients with microtia/ataresia can have an abnor-

mal route, therefore surgeons must be vigilant concerning it. Facial nerve injuries can be catastrophic for the patient. Fortunately, injury to this nerve is uncommon (<0.5% incidence). To prevent accidental damage, understanding the probable aberrant courses of the facial nerve is mandatory. The facial nerve commonly directs a more forward route at the plane of the second genu and mastoid part in patients with atresia.12

CONCLUSION

The incidence of facial paralysis as a complication of AOM decreases with common vaccinations. Its optimal management is controvers-

sial. Aural atresia with complicated AOM is a very rare condition. Therefore its management is similar more controversial. We would like to share our experience such a case who had aural atresia, AOM, and facial paralysis to enrich the literature.

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