

Retroauricular Swelling and Erythema in a 13 Year-Old Girl: Incidentally Diagnosed Bone Abnormality

13 Yaşında Bir Kız Olguda Kulak Arkasında Şişlik ve Kızarıklık: Tesadüfen Saptanan Bir Kemik Anomalisi

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ABSTRACT A 13 years old girl presented to our emergency department with erythema and swelling on her left retroauricular area which are nonspecific signs of inflammation. She was previously healthy and no immunosuppressive therapy was taken. She only had a history of an untreated external otitis for few days. In following days swelling and erythema has worsened. In our emergency service, physical examination was unremarkable except retroauricular swelling, erythema, tenderness and protrusion of the left auricle. Laboratory workup revealed leukocytosis, increased erythrocyte sedimentation rate and C reactive protein and the primary diagnosis was a mastoiditis which is a common complication of upper respiratory infections. Mastoiditis concomitant to an epidural effusion was seen on magnetic resonance imaging and also a bone deformity called as Körner's Septum was shown in computed tomography. A simple mastoidectomy with drainage of the abscess was performed by ear-nose-throat specialists and she was started on antibioticotherapy for possible causative agents, was completely recovered and discharged after 14 days course of therapy.

Key Words: Child; otitis externa; mastoiditis; tomography, spiral computed

ÖZET Onüç yaşında kız olgu, sol kulak arkasında kızarıklık ve şişlik gibi özgül olmayan inflamasyon bulguları ile acil servise başvurdu. Öncesinde sağlıklı olan olgunun immun süpresif ilaç alım öyküsü yoktu, ancak başvurudan önce birkaç gün süreyle eksternal otit nedeniyle lokal antibiyotik damla tedavisi verilerek izlendiği öğrenildi. İzlemede gelişen şişlik ve kızarıklık nedeniyle geldiği acil servisimizde fizik bakışında retroaurikuler şişlik, eritem, hassasiyet ve protrüzyon dışında özellik saptanmadı. Laboratuvar tetkiklerinde lökositoz, sedimentasyon hızı ve C reaktif protein düzeyinde artış saptanan olguya üst solunum yolu enfeksiyonlarının yaygın bir komplikasyonu olan mastoidit tanısı kondu. Manyetik rezonans görüntüleme mastoidite eşlik eden epidural efüzyon ve bilgisayarlı tomografide Körner Septumu olarak adlandırılan bir kemik deformitesi saptandı. Kulak burun boğaz uzmanları tarafından basit mastoidektomi ve abse boşaltma işlemi uygulanan hastaya olası etkenlere yönelik antibiyoterapi başlandı ve 14 gün süreyle tedavi ardından sorunsuz taburcu edildi.

Anahtar Kelimeler: Çocuk; otitis eksterna; mastoidit; tomografi, spiral bilgisayarlı

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Upper respiratory tract infections can often be complicated in pediatric population due to fragility of their deep tissues. Mastoiditis is a common complication of otitis media which may occur two weeks after the onset of acute suppurative infection.¹ Blockage of the drainage of mastoid air cells is the basic physiopathologic mechanism causing mastoiditis. Retroauricular erythema and fluctuation, and proptosis of the au-

ricles are the characteristic clinical signs of acute mastoiditis. Even if these characteristic features are present further radiological imaging are often necessary to show the depth of the infection and also bone deformities and aeration of the mastoid cells.² Here we present a case diagnosed with mastoiditis who has an anatomical ear abnormality found in further examination.

Informed consent was obtained from the patient and her parents.

CASE REPORT

A 13 years-old girl was presented with retroauricular swelling and erythema. She had otalgia for last 4 weeks and retroauricular erythema 2 weeks before admission. Although primary care physician treated her by ototopical antibiotic for 10 days due to external otitis, no resolution was defined and she was admitted to our emergency department. Physical examination was unremarkable except retroauricular swelling, erythema, tenderness and protrusion of the left auricle. Laboratory workup revealed leukocytosis (WBC: 24500/mm³, shift % 80 were neutrophils), increased erythrocyte sedimentation rate (ESR: 30 mm/h) and C reactive protein (5.1 mg/dl). Computed tomography (CT) was performed and the likely cause of the condition was found (Figure 1). Although CT is not typically the radiographic study of choice to show inflammatory processes it helps to show bone deformities and aeration of the mastoid cells. In the present



FIGURE 1: CT demonstrated *K\"orner's septum* in the left mastoid area

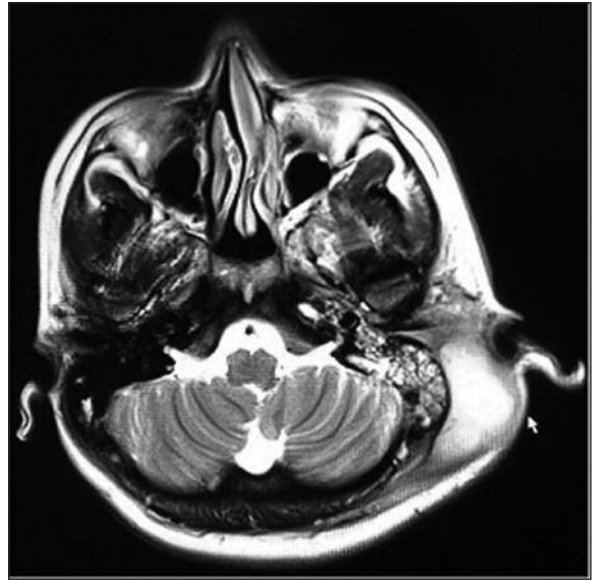


FIGURE 2: Deep tissue infection and epidural effusion were revealed in MRI.

case it helped to show mastoiditis and existence of a possible *K\"orner's septum* in the left mastoid area. On the other hand magnetic resonance imaging (MRI) is as well as the preferred imaging modality for the potential complications of acute surgical mastoiditis.

We also planned to demonstrate the depth of infection and used MRI also to confirm mastoiditis before starting any invasive therapeutic procedure. Signs of mastoiditis and suprisingly a space-occupying epidural effusion was seen on MRI (Figure 2). In the light of imaging a simple mastoidectomy with drainage of the abscess was performed by ear-nose-throat specialist. Intraoperatively suppurative cholesteatoma and granulation filling in the mastoid antrum and apex of mastoid process noted. *K\"orner's septum* (*KS*; an important anatomic variation) which was prediagnosed in CT is was noticed during exploration (Figure 3). All specimens were cultured to identify the causative agent. She was started on metronidazole, ceftazidime and vancomycin treatment to cover possible microorganism also including *Pseudomonas aeruginosa* which is important in prolonged and untreated infections as in our patient. Combination therapy was continued also postoperatively while blood and specimen cultures were pending. Blood culture was

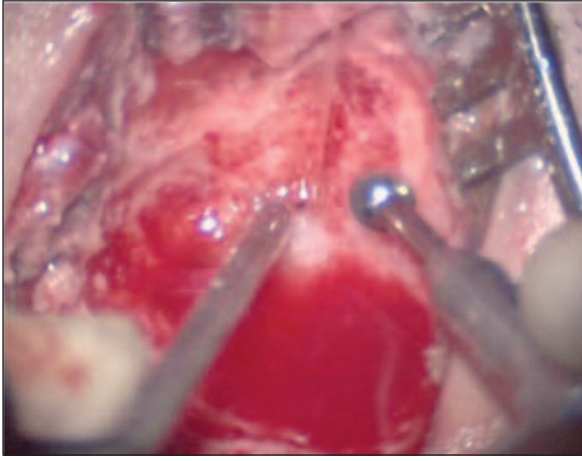


FIGURE 3: Korner's septum was shown during exploration.

(See color figure at <http://www.turkiyeklinikleri.com/journal/turkiye-klinikleri-journal-of-case-reports/1300-0284/tr-index.html>)

negative but penicillin resistant but cephalosporin sensitive *Streptococcus pneumoniae* was grown in aspiration specimen. It is well known that *S.pneumoniae* is the most common pathogen which is obtained from tissue cultures in otitis media. Also *Streptococcus pyogenes*, *Staphylococcus aureus* and *coagulase-negative Staphylococcus spp.* are common. Our patient was previously healthy but was not vaccinated with *Pneumococcal* vaccine because it is newly mandatory in our country to vaccinate children in early childhood. Thus she was at risk of pneumococcal invasive infections. Her medical therapy was reevaluated according to antibiogram sensitivity results and continued with ceftriaxone monotherapy. She was completely recovered after 14 days course of therapy.

DISCUSSION

The diagnosis of acute mastoiditis is usually made clinically in children with classic clinical findings including fever, otalgia which may manifest as irritability in young children, postauricular swelling / tenderness/erythema, fluctuance or mass and protrusion of the auricle or edema of the external auditory canal.³ Although in the present case some of those were positive, physical examination revealed that additional diagnostic tests required. To evaluate suspected complications, confirm the diagnosis

and determine the stage and extent of infection CT and MRI were obtained.

MRI is an available method of investigation if intracranial complications are suspected. Because of its higher sensitivity in detecting extra-axial fluid collection and associated vascular problems, MRI is performed in children with intracranial neurologic symptoms or CT findings suggestive of intracranial complications.² In our patient the history and clinical features revealed an upper respiratory tract infection seemed like an external otitis. But it had a long-lasting course despite appropriate therapy and additionally it caused an abscess forming lesion. Thus we decided to perform a cranial MRI which showed mastoiditis complicated by an epidural effusion. The spread of upper respiratory infections in a previously healthy patient is unusual. It is necessary to attack the anatomic barriers to develop any deep infection like epidural effusion.

There was no history of trauma or recurrent infections in our case. However, *Körner's septum (KS)* which was prediagnosed and showed during operation was a risk factor causes spread of infection and developing a cholesteatoma. *KS* is a bony lamina starting from the articular fossa, extending above the middle ear, and running inferiorly lateral to the facial canal as it proceeds to the mastoid apex. *KS* represents the persistence of the petrosquamous suture line.⁴ It divides the mastoid process into a superficial squamous portion and a deep petrous portion and it is important to recognize it prior to surgery. If it is unrecognized radiologically, it may be dangerous to mistake an extensive septum as the medial wall of the mastoid at surgery, thus leaving that portion of the medial mastoid air cells unexplored. In the majority of studies, it was suggested that there is a relationship between chronic ear disease and decreased mastoid pneumatization. However, the significance of *KS* has not been well-established, due to the limited number of studies carried out. Despite this fact, there is accumulating evidence that *KS* is associated with certain diseases of the ear. Because of its anatomical location it is thought to cause attic-itus blockage.⁵

The decision for operating a child with mastoiditis remains the key to effective management. Zanetti et al reported that a simple mastoidectomy tympanoplasty is warranted for exteriorization, if the child is older than 30 months or >15 kg of weight or for infected cholesteatoma or granulation tissue.⁶ Since our patient had these criteria upon admission she consulted by ear-nose-throat specialist and mastoidectomy was performed.

CONCLUSION

In cases of underlying condition either cholesteatoma or anatomic defect, antibiotic or local treatment does not effect the course of mastoiditis. But it should be kept in mind that underestimated symptoms with clinical findings does not always show the actual cause and especially in older children imaging studies can be more necessary and helpful to reveal the real picture.

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