

IPSI AND CONTRALATERAL TOTAL HEARING LOSS AFTER HEAD TRAUMA WITHOUT TEMPORAL BONE FRACTURE

Otology

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Özet

KAFA TRAVMASI SONRASI TEMPORAL KEMİK FRAKTÜRÜ OLMASIZIN İPSİ VE KONTRALATERAL TOTAL İŞİTME KAYBI

Temporal kemik vücuttaki en sağlam kemiklerden birisi olması sebebiyle ancak çok şiddetli kafa travmaları sonucunda fraktür oluşmaktadır. Longitudinal fraktürler sonrası daha sıklıkla iletim tipi işitme kaybı gözlenirken, transvers fraktürler sonrası oluşan işitme kaybı genellikle ileri derecede ve sensörinöral tiptedir. Literatürde temporal kemik fraktürü olmaksızın gelişen işitme kaybı çok nadir bildirilmiştir. Biz bu makalede, 31 yaşındaki erkek hastada künt kafa travması sonrası gelişen kontralateral total işitme kaybı olgusunu sunduk. Yüksekten düşme sonucu her iki kulağında total işitme kaybı gelişen hastanın, kranial ve temporal kemik tomografilerinde fraktüre rastlanmadı. Hastaya kortikosteroid tedavisi (metil prednizolon) uygulandı. Beşinci günde yaptırılan odyolojik tetkikinde travmaya maruz kalan kulağındaki işitme kaybında iyileşme gözlenirken(30/10 dB), diğer kulakta iyileşme saptanmadı. Birinci ayda yaptırılan odyolojik tetkikinde her iki kulakta tam düzelme olduğu görüldü (13 dB/13 dB). Sonuç olarak temporal kemik fraktürü olmaksızın oluşan işitme kayıpları literatürde nadir rastlanan olgulardır. Künt kafa travmaları sonucunda kontralateral olarak da geçici ya da kalıcı işitme kayıpları oluşabilmektedir.

Anahtar kelimeler: Total İşitme Kaybı, Kafa Travması, Kontralateral

Abstract

IPSI AND CONTRALATERAL TOTAL HEARING LOSS AFTER HEAD TRAUMA WITHOUT TEMPORAL BONE FRACTURE

Temporal bone is a very stiff bone in the body that only severe cranial traumas cause these fractures. After longitudinal traumas especially conductive hearing loss occurs, and after transverse fractures high sensorineural conductive hearing loss appears. In the literature temporal bone fracture without hearing loss is uncommon. In our study, we present a 31 year old man, who had a contralateral hearing loss after a non-invasive head trauma. Falling down from a high level, later on a bilateral total hearing loss occurred. There is no fractures in the cranial and temporal bone CT. We applied a steroid treatment (methylprednisolone). The pure tone audiogram in the fifth day shows that the hearing loss in the ear came under trauma had improved (30/10dB) but the other ear had no recovery. We saw a total improvement in both ears in the 1st month audiogram (13dB/13dB). Consequently, hearing loss without temporal bone fractures is a very rare case in the literature. After head traumas it may be possible that the contralateral, transient or permanent hearing loss may occur.

Keywords: Total Hearing Loss, Head Trauma, Contralateral

Introduction

Fractures in temporal bone occur only after severe traumas, since this is one of the strongest bones in the body. Sensorineural or conductive hearing losses may occur depending on the type and localization of the fracture [1]. Hearing loss developing without temporal bone fracture has been quite rarely reported in the literature [2,3].

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Herein, we presented a case developed contralateral total hearing loss without temporal bone fracture after a head trauma.

Case Report

A 31 years old male patient presented to the emergency department with the complaint of hearing loss occurred in his both ears following falling from height. In his medical history taken, trauma was noted to be in the right temporal region of his head. In his examination, echymosis was seen in the right temporal region and central perforation in both tympanic membranes. (Figure 1a, b).

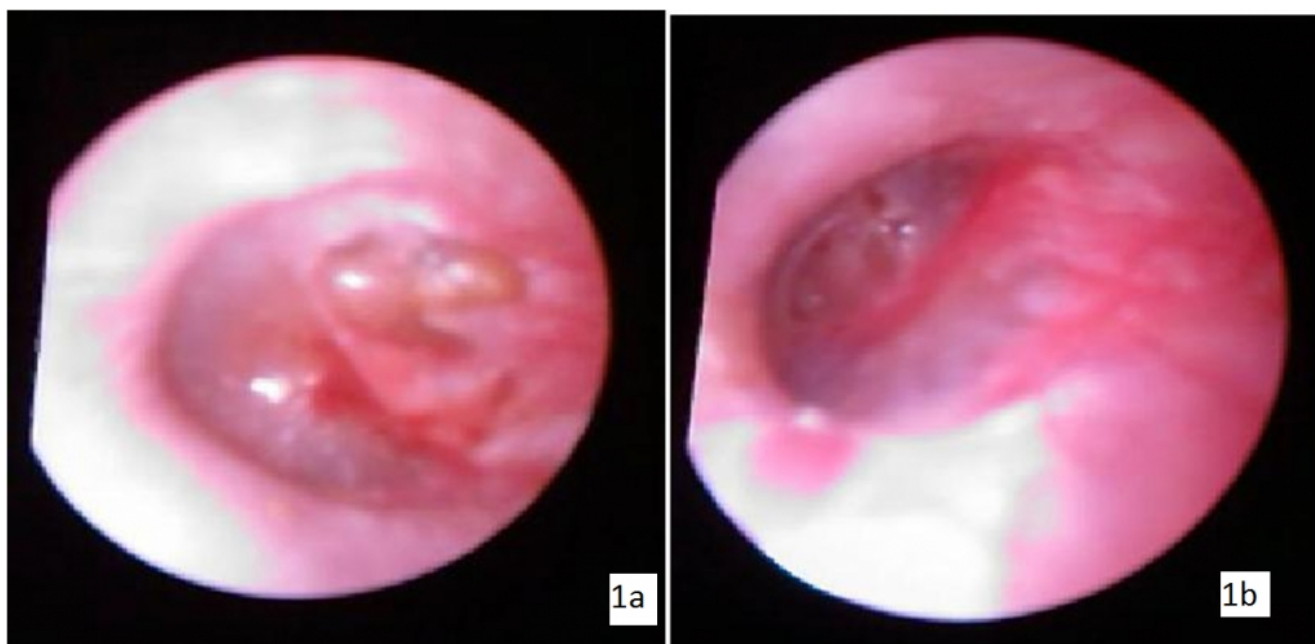


Figure 1

Images of the perforation occurred in the right and left membranes of the case

No rhinorrhea or otorrhea was observed. The patient had not vertigo or nystagmus, and the fistula test was negative. Perilymph fistula was not considered in the patient. No pathology was defined on the neurological examination. There was not any fracture observed on cranial and temporal bone computed tomography, (Figure 2).



Figure 2

Image of the temporal bone computed tomography

Ossicular chain was found intact on both sides. Audiometric examination was ordered, and total hearing loss was found in both the ears. Therefore, the patient was administered corticosteroid therapy (methylprednisolone). Following an IV-push of 250 mg, administration was started with a dose of 1 mg/kg and the treatment was continued for 12 days, gradually reducing. Audiometric monitoring of the patient was made. On the audiometric testing carried out on the fifth day, an improvement was observed in the hearing loss of the right ear (30/10 dB), while no improvement was defined in the left ear. (Figure 3 and 4) On the audiometric testing carried out again in the first month, both the ears were completely recovered (13/0 dB).

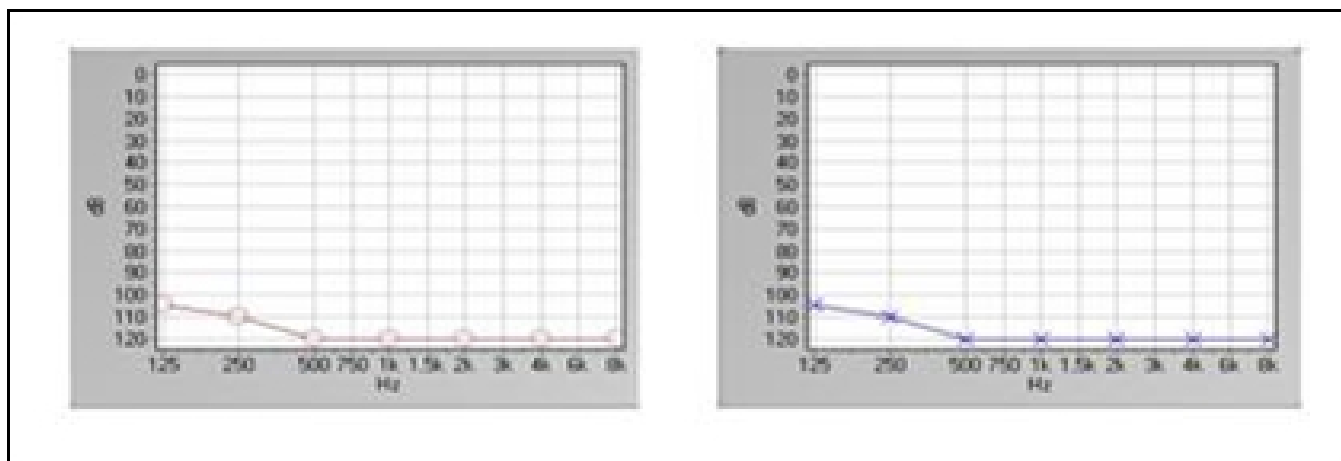


Figure 3

Audiometric findings of the case on the 1st day

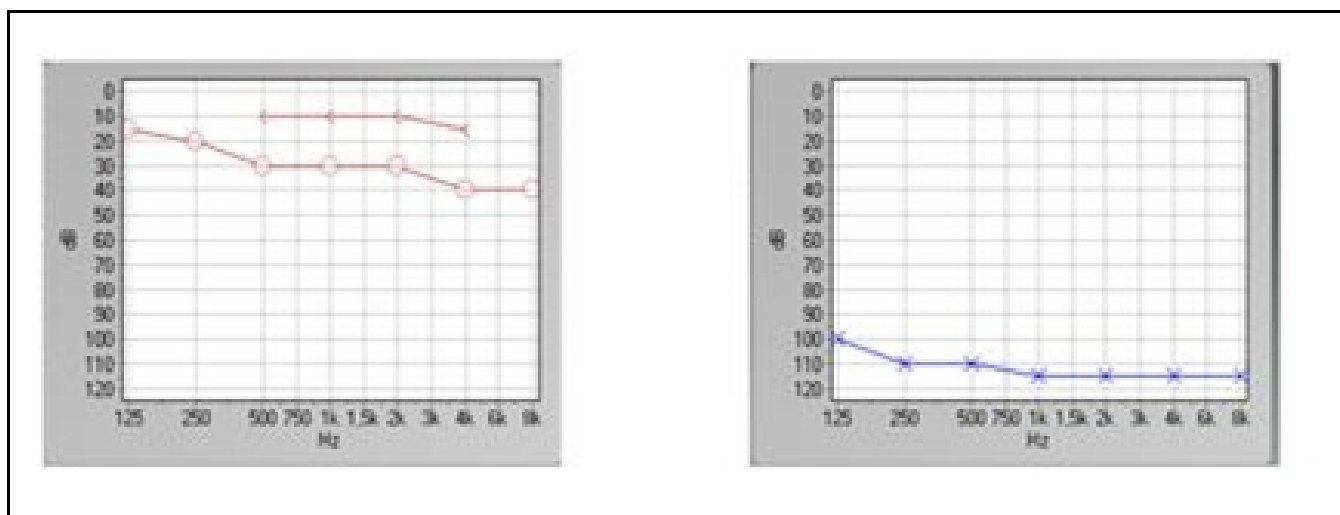


Figure 4

Audiometric findings of the case on the 5th day

Discussion

Both sensorineural and conductive hearing losses may develop due to temporal bone fracture. On the other hand, although infrequent in the literature, sensorineural hearing loss may occur also due to trauma in labyrinthine membrane without temporal bone fracture [1].

Contralateral hearing losses without fracture occurrence are quite rare in the literature. In their study, Toh et al. reported a case of contralateral hearing loss developed after a blunt head trauma [2]. Just as in our case, in that patient also total hearing loss without bone fracture or fistula was observed.

Several theories have been proposed for hearing losses developing after a trauma: Schuknecht et al. showed the trauma occurring in the labyrinth as the reason of hearing loss without fracture [4]. In various animal experiments conducted in the past, hearing losses due to injury of corti organ were observed. In the animals, bleeding from small arteries or veins in the membranous labyrinth was found to cause sensorineural hearing loss [4, 5].

Uluğ et al., reported sensorineural hearing losses emerge in the contralateral high frequency in the cases of head trauma resulting in bone fracture. Here, trauma of the labyrinth was indicated as the cause of hearing loss [3]. Anniko et al. reported a case with transient contralateral sensorineural hearing loss accompanying ipsilateral permanent hearing loss after head trauma [6].

In a study by Tokui et al. with guinea pigs on hearing losses seen in head traumas without fractures; ABR and cochlear microphonic measures and hearing threshold were defined at 1st, 7th and 14th days. The subjects were found to have an increase in the hearing threshold at 7th day and completely recovered at 14th day. According to the results from that study, eighth nerve and cochlear dysfunction developing secondary to head trauma may lead to transient sensorineural hearing loss [7]. In a study by Munial et al., hearing losses occurring after head traumas were investigated and significant differences in ABR responses secondary to head trauma were reported [8].

In the present case, sensorineural hearing loss secondary to head trauma may be caused by trauma in the membranous labyrinth as well as damage to corti organ, bleeding from small arteries or veins in the membranous labyrinth or eighth nerve and cochlear dysfunction.

Hearing losses without temporal bone fractures are infrequent in the literature. Although the mechanism is not

fully understood, contralateral transient hearing losses may develop due to various reasons after the blunt head. Sensorineural hearing loss developing without temporal bone fractures should be monitored with audiometric examinations.

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