

Gradual Recovery from Bilateral Severe Sensorineural Hearing Loss post Motor Vehicle Accident

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SUMMARY

Sensorineural hearing loss following trauma is a common finding in daily clinical practice and usually associated with a poor prognosis. Our case illustrates a patient who was involved in motor vehicle accident sustaining bilateral severe to profound sensorineural hearing loss but subsequently recovered fully after two years. Unless there is clear trauma to the cochlea or auditory nerve, a substantial duration of follow up is needed in the treatment of such cases.

KEY WORDS:

Trauma; Sensorineural hearing loss; Recovery

INTRODUCTION

Traumatic head injury following a motor vehicle accident is known to cause otological dysfunctions. The patient can sustain hearing loss which can either be conductive, sensorineural or mixed. However, sensorineural hearing loss which is usually associated with poor prognosis is a common finding. The social life and daily work of the individual will be affected by the impairment of hearing. To the authors' knowledge, the waiting period for the recovery from sensorineural hearing loss following trauma has not been reported in the English literature. The aim of this article is to highlight the fact that the gradual complete recovery of sensorineural hearing loss post trauma is a possibility.

CASE REPORT

An 18-years-old Malay man presented to the Casualty department with few hours history of motor-vehicle accident sustaining head trauma with associated left ear bleeding. On examination patient was unconscious and was on cervical collar. Otosopic examination revealed a normal right ear but the external auditory canal of the left ear was occupied with blood clots, so the tympanic membrane was not visualized. Left lower motor neuron facial nerve paralysis, HB grade IV was detected.

CT-Scan revealed left longitudinal temporal bone fracture and Chest X-Ray showed left clavicular fracture. The patient was commenced on intravenous antibiotics and steroids.

When the patient was stable he complained of bilateral hearing loss. Bilateral otoscopic ear examinations were normal except the minimal clots found on tympanic

membrane of the left ear. Turning fork test revealed negative Rinne's test on both ears while Weber's test was lateralized to the right ear. Audiometry showed left profound sensorineural hearing loss and right severe sensorineural hearing loss (fig.1). Electroneuronography revealed 25-45% loss of facial nerve function on the left. The patient was treated conservatively and followed up in the out-patient clinic.

A year later, the patient's pure tone audiogram (PTA) showed bilateral moderate to severe hearing loss (fig. 2). During his follow up two and a half years after trauma, the patient claimed that his hearing has come back to normal. His PTA showed normal sensorineural results bilaterally except at the frequencies of 500 Hz on the right and 2000Hz on the left where there was mild hearing loss. However, the patient still has mild to moderate conductive hearing loss on the left.

DISCUSSION

Traumatic head injury is usually associated with auditory dysfunction. The nature of the dysfunction depends on the type of trauma especially if it involved the temporal bone fracture.

Traditionally, temporal bone fractures are classified into longitudinal, transverse or mixed. Longitudinal fractures cause conductive hearing loss attributed to trauma in the external ear canal, tympanic membrane or ossicular chain while transverse a fracture gives rise to sensorineural hearing loss because it frequently involves the labyrinth¹. Clinically, longitudinal fractures presents with ear bleeding and conductive hearing loss while transverse fractures present with haemotympanum and sensorineural hearing loss which could result from either damage to the intracranial pathway of the acoustic nerve or damage to the cochlear. Sensorineural hearing loss that is a complication of traumatic head injury with temporal bone fracture is usually associated with a poor prognosis. Our patient had a longitudinal fracture. Labyrinthine concussion as postulated by De la cruz *et al* could be the underlying mechanism in our case². Sudden intense noise exposure due to the motor vehicle accident could be another possible mechanism of hearing loss in our patient. It has been reported that motor vehicle accidents or explosion from an air bag may cause immediate noticeable hearing loss³. Irrespective of the aetiology and pathogenesis of sensorineural hearing loss, a good prognosis is rarely reported.

This article was accepted: 10 January 2013

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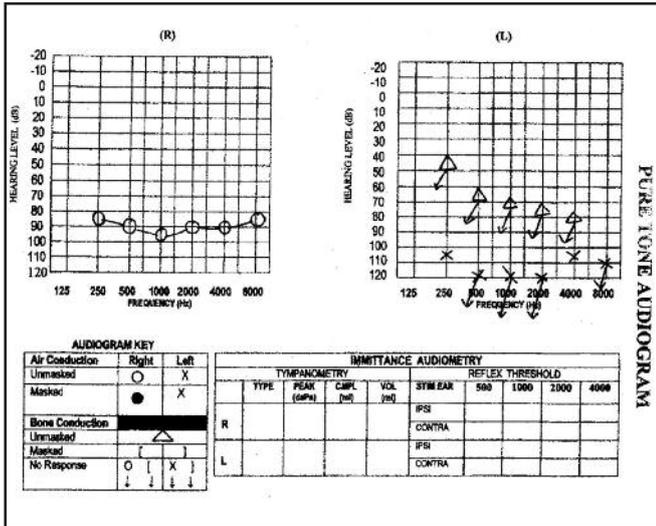


Fig. 1 : Pure tone audiogram during the first visit.

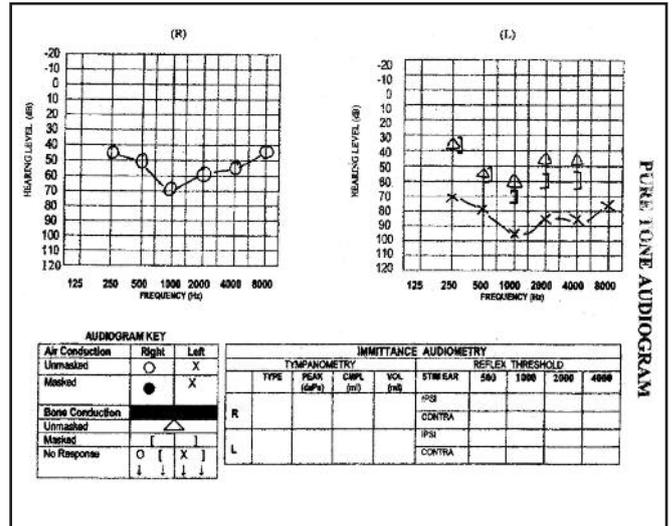


Fig. 2 : Pure tone audiogram at one year follow up.

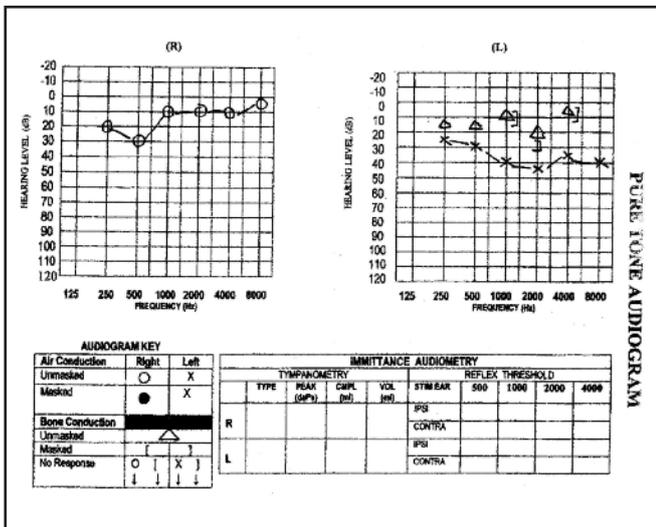


Fig. 3 : Pure tone audiogram at two and a half year follow up.

In a case series of three patients reported by Ulug and Ulubil, none of the patients showed any recovery from sensorineural hearing loss post head injury with temporal bone fractures⁴. In their series the three patients had contralateral sensorineural hearing loss to the site of temporal bone fracture. Md Daud *et al.* reported two cases of contralateral sensorineural hearing loss following traumatic head injury but with no recovery from the hearing loss⁵.

The case described in this report suggests that recovery of sensorineural hearing loss post traumatic head injury is an extremely troublesome complication but might nevertheless have a favorable outcome. However, such a patient is usually not followed up long enough to see the possibility of recovery. Our patient showed gradual improvement in hearing over the years, which was clinically confirmed by serial PTA. Nevertheless, further study is required to be able to determine the duration of period required for complete resolution of sensorineural hearing loss post trauma.

CONCLUSION

Unless there is clear trauma to the cochlea or auditory nerve, patients with sensorineural hearing loss post traumatic head injury may gradually recover in a few years time. A substantial duration of follow up is needed in the treatment of such cases.

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