

Case Report

A rare cause of acute tympanic membrane perforation: a case report

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ABSTRACT

This is a case report of 57yrs old gentleman who presented to accident and emergency department with complaints of sudden onset of left earache, tinnitus, feeling of fullness in the ear which he claimed to start following an episode of sudden sneezing, while he was trying to blow his nose by pinching it with 2 fingers. The tympanic membrane was ruptured. He was managed conservatively with analgesics. Spontaneous and complete healing of the perforated tympanic membrane occurred within one month of follow up. It was shown that an episode of sneezing with nose closed can build up such a high pressure in the middle ear which can perforate a tympanic membrane.

Keywords: Tympanic membrane perforation, Sneezing

INTRODUCTION

Tympanic membrane perforations are common in otolaryngological practice. Perforations of tympanic membrane can be due to infective cause, traumatic cause or due to chronic eustachian tube disorders.¹ Traumatic perforations of the eardrum are often encountered in the emergency and also in outpatient settings.

The literature reports various causes of acute traumatic rupture of tympanic membrane.²

It can be due to several causes like 1) non explosive blast injuries like slap injury, fist injury which seals the external auditory canal and raises the pressure of the canal; 2) explosive blast injuries where atmospheric pressure is increased suddenly; 3) in scuba divers where raised water pressure; 4) instrumental injuries as direct trauma via external auditory meatus or while syringing to clean the external auditory meatus; 5) barotrauma; 6) any live insects as foreign bodies; 7) associated with skull fracture in accidents.² We report here an unusual cause of

acute tympanic membrane perforation which followed an episode of sneezing with nose closed.

CASE REPORT

Mr. S 57 years old male patient presented in the accident and emergency department of our hospital with complaints of sudden onset of left earache, tinnitus which he claimed to start after a sudden bounce of sneezing while he was trying to blow his nose by pinching it with 2 fingers. Followed which he had a feeling of foreign body sensation and fullness of ear and he put his little finger inside, tip of which was found to be blood stained.

There was no history of any other trauma to ear like history of assault or insertion of any objects into the ear etc.

His vital signs were normal. He was afebrile, not pale, anicteric, acyanotic. There were no palpable lymphnodes, pedal edema or organomegaly. Chest was clear with bilateral air entry equal, with normal heart sounds and no added sounds.

On examination both pinnae appeared normal. Otoscopy of ear revealed blood clot in the external auditory canal and central perforation in the pars tensa with irregular congested margins occupying the antero inferior quadrant. Weber test lateralised to the affected side and Rinne was negative on that side. Audiogram done showed conductive hearing loss of 30dB in the left ear, with average taken at 500, 1000, 2000 and 4000 HZ.

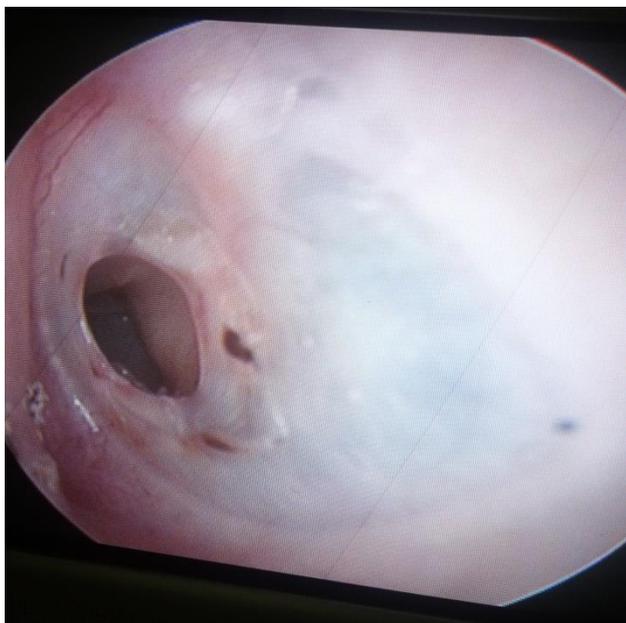


Figure 1: Tympanic membrane perforation.

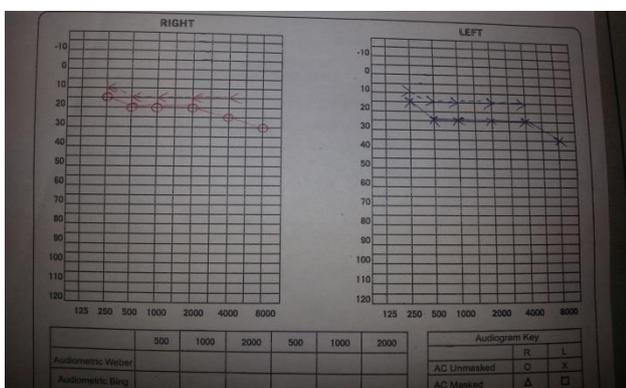


Figure 2: Pure tone audiogram of the same patient.

He was advised to keep the affected ear dry and analgesics were given for pain relief. Spontaneous and complete healing of the perforation occurred in the next follow up after 1 month.

DISCUSSION

Traumatic perforations in eardrum can be due to various causes. Ear is an organ which is vulnerable to damage by blast overpressure. An increase in pressure as little as above 5psi above atmospheric pressure (1 atm pressure =14.7 psi or 760 mm Hg) can rupture the tympanic

membrane.³ Tympanic membrane is divided into pars tensa and pars flaccida. Majority (80%) of perforations in tympanic membrane are in pars tensa. Tympanic membrane perforations can be due to infective cause, traumatic cause, or secondary to chronic eustachian tube disorders.⁴

Severe trauma can cause damage to the ossicles and stapes foot plate dislocation from the oval window area, which can lead to severe hearing loss.

Traumatic perforations are mostly found in antero inferior or postero inferior quadrants.^{4,5} Of these perforations involving postero inferior quadrant of ear drum were found to have higher air bone gap. 3 patterns of sensorineural hearing loss were found in case of traumatic perforations. 1) dip at single frequency; 2) 2 dips at different frequencies; 3) abnormal bone conduction at several high frequencies.⁶

Studies showed that wet perforations with bloody or watery discharge accelerate the healing compared to dry perforations.² Age of the patient and size of the perforation are inversely related to healing rate.⁷ As age of the patient and size of the perforation increases healing will be delayed.⁸ Curled margins either inverted or everted,coexisting damage to malleus or umbo, pre existing tympanosclerosis in the tympanic membrane does not found to have influence on healing.^{2,9} Sex of the patient also not found to have influence on healing. Studies showed no significant difference in the healing rates treated with paper prosthesis compared to spontaneous healing.¹⁰

Conductive hearing loss occurring in speech frequencies is found to be the most common form of hearing loss. The accompanying sensorineural hearing loss mostly affected several adjacent higher frequencies. Healing of perforation favoured significant recovery of the conductive hearing loss but recovery of sensorineural hearing loss was less favourable.¹¹

In the present case report suddenly produced positive pressure in the nasopharynx due to violent sneezing, transmitted through the eustachian tube led to the traumatic perforation.

CONCLUSION

Any sudden increase or decrease in the air pressure inside or outside the eardrum may lead to traumatic perforation of ear drum. Sudden bout of sneezing with nose closed can perforate a tympanic membrane. This case is highlighted to create awareness and to educate the public regarding this likely cause of tympanic membrane rupture.

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