

**A CASE REPORT ON THE SUCCESSFUL TREATMENT OF IDIOPATHIC SUDDEN
SENSORINEURAL HEARING LOSS USING STEROID THERAPY****Dr. Rajavarma P.¹, Sai Rishikaa S.², Reashma R.*², Nitheish C.² and Hari Shankar R.²**¹ENT Surgeon, Assistant Professor in Department of ENT, Government Medical College Hospital, Nagapattinam-611108, Tamilnadu, India.²Pharm D. Intern, E.G.S Pillay College of Pharmacy, Nagapattinam-611102, MoU with Government Medical College Hospital, Nagapattinam-611108, Tamilnadu, India.***Corresponding Author: Reashma R.**

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ABSTRACT

Sudden Sensorineural Hearing Loss (SSNHL) is an otological condition in which patients experience a sudden drop in hearing which occurs within 3 days and it is considered as a medical emergency. The idiopathic SSNHL typically affects the people with the age group between 43 to 53 years although it may arise at any age and cause trouble. Medical practitioners have a decisive role in recognising and initiating prompt and appropriate management because delayed treatment can lead to permanent and devastating consequences to patient and it may affect the patients quality of life. Though there is no standard treatment for treating the SSNHL which is proven to be effective. Here, We describe a case report of a patient presenting with idiopathic sudden sensorineural hearing loss which was promptly treated initially with oral Corticosteroids and Intratympanic dexamethasone injection for a course of period which was proven to be therapeutically effective in the patient and achieved significant hearing recovery, demonstrated by audiometric improvements. This case underscores the potential effectiveness of intratympanic dexamethasone as a salvage therapy for SSNHL, offering insights to other clinicians for treating patients with this condition.

KEYWORDS: Sudden sensorineural Hearing Loss, Intratympanic Dexamethasone, Corticosteroids.**INTRODUCTION**

Sudden sensorineural hearing loss (SSNHL) is an otologic emergency defined by a rapid loss of hearing, typically over a period of less than 72 hours, and characterized by a reduction of at least 30 dB in three consecutive frequencies. Affecting approximately 5 to 20 per 100,000 individuals annually, SSNHL is a condition that spans various age groups, but it is more prevalent in adults between the ages of 30 and 60.^[1,2] Clinically, SSNHL often presents with secondary symptoms like tinnitus, aural fullness, and vertigo, which can further compromise a patient's quality of life. Given the potential for lasting auditory disability, SSNHL requires prompt intervention to maximize the chances of hearing recovery.

The etiology of SSNHL remains uncertain in up to 90% of cases, classifying it as idiopathic in most instances. Proposed mechanisms include viral infections, microvascular compromise, immune-mediated inner ear damage, and membrane breaks within the cochlea.^[3,4] Viral infection is a well-supported theory, with studies indicating elevated antibody titers to various viruses in

SSNHL patients, suggesting viral labyrinthitis or neuritis of the cochlear nerve.^[2] Vascular compromise, on the other hand, hypothesizes that ischemia or thromboembolic events in the cochlear blood supply might lead to rapid-onset hearing loss due to the cochlea's sensitivity to oxygen deficits.

Systemic corticosteroids have long been the first-line treatment for SSNHL, as they are believed to reduce cochlear inflammation, improve microcirculation, and inhibit autoimmune processes.^[6] More recently, intratympanic corticosteroid administration, particularly with dexamethasone, has gained attention as an effective therapy for patients with SSNHL. This route directly delivers medication to the inner ear, achieving high cochlear concentrations while minimizing systemic side effects. Studies have shown that intratympanic dexamethasone is beneficial not only as a primary treatment but also as a salvage therapy for those unresponsive to systemic steroids conducted a multicentre randomized trial comparing oral prednisone with intratympanic dexamethasone for SSNHL, finding that intratympanic administration is a valuable alternative

for patients contraindicated for systemic steroids or as an adjunctive treatment in refractory cases.^[7,8]

Despite these advancements, about 15–40% of SSNHL cases result in permanent hearing deficits. The lack of universal treatment success further emphasizes the need for ongoing research into both the mechanisms and management of SSNHL. In this report, we present a case of SSNHL treated with intratympanic dexamethasone, providing insights into the diagnostic approach, treatment rationale, and clinical outcomes, thereby contributing to the existing literature on this challenging condition.

CASE DESCRIPTION

A 30 year old female patient attended the hospital Outpatient Department with initial chief complaints of sudden hearing loss on right side for past 2 days and complaints of plugged ears for 8 days. Patient had no history of Tinnitus, vertigo or any kind of ear discharge and history of ear problems. She recently had a traumatic experience due to recent deaths in her family and she was under severe distress.

Patient had no significant medical history of diabetes, hypertension, tuberculosis, asthma or any other condition and she was also not affected with corona during the pandemic, After complete otoscopic examination she was clinically diagnosed with a case of Idiopathic sudden sensorineural hearing loss (SSNHL) which was unilateral (right ear) and profound it was confirmed by Pure Tone Audiometry (PTA) which is a standard test which is used to assess the hearing sensitivity, the test results depicted that the patient showed a result of 103.3dB HL that indicated profound hearing loss on right ear, and the left ear had 20dB HL which was normal. The treatment strategy was discussed with the patient and proceeded, the patient was treated immediately with the first dose of Emergency Intratympanic Dexamethasone(5mg/1mL) and then her vitals were noted to be normal, patient was also prescribed with Inj. Hydrocortisone 100mg IV once a day along with Inj. Ranitidine 50mg IV once a day with Tab. Chlorpheniramine 4mg at night. The use of intravenous systemic steroid was stopped on Day 4. The patient was monitored continuously and then consecutively for 3 days once Intratympanic dexamethasone injection was administered up to 4 doses in the right ear from the day of hospitalisation and PTA was monitored and it was noted that it showed promising effect, the results showed the reduction of threshold frequency to 21dB HL in the right ear and patient was recovering but the patient experienced hearing loss on the left ear on Day 4, which was diagnosed as sequential bilateral SSNHL. The left ear showed a PTA reading of 110db HL and then both ears was treated with same medication. The audiometric monitoring was done periodically to note changes in patients recovery rate. After seven Doses of Intratympanic steroid therapy the right ear was completely recovered on Day 12 in which the PTA results showed 18.3db HL. The left ear PTA

showed 55db HL after six doses of Intratympanic Dexamethasone. So, clinicians decided to continue the treatment and after VIII doses on the left ear, the PTA results showed improvement, with the hearing threshold decreasing to 30Db HL the patient achieved near-complete recovery.

The patient was discharged and was asked to attend hospital for regular follow-up.

DISCUSSION

Sudden Sensorineural Hearing Loss (SSNHL) is a complex Clinical condition, often characterised by a rapid onset without an identifiable cause. In this patient, the absence of associated symptoms such as tinnitus or vertigo, combined with a recent history of psychological distress, points to a multifactorial etiology. Psychological stress can contribute to auditory changes, suggesting a need for holistic approaches in treatment. Controversies remain about many aspects of Intreatympanic steroid use, which warrant further investigation and critical evaluation of outcomes.^[9]

Intratympanic Dexamethasone is increasingly used due to its targeted action and fewer systemic side effects. This case supports its efficacy, as the patient showed marked improvement in hearing threshold following treatment. The initial recovery of a right ear, followed by the unexpected development of left ear involvement highlights the unpredictable nature of SSNHL and the importance of vigilant monitoring. Intratympanic steroid application is promising and minimally invasive, and should be considered strongly.^[9]

The occurrence of sequential bilateral SSNHL, while rare, emphasise the need for clinicians to be proactive in monitoring patient with unilateral SSNHL. This case illustrates that early intervention is crucial, as timely treatment of the second ear led to positive outcomes.

Overall, this case reinforces the importance of an interdisciplinary approach in managing SSNHL, involving audiologist, otolaryngologist, and mental health professionals. Future research could explore the relationship between psychological factors and hearing loss, as well as the long term effectiveness of various treatment modalities. Regular follow-up and audiometric monitoring remind essential to ensure continued recovery and to manage any potential recurrences effectively.

CONCLUSION

This case study demonstrates the successful management of idiopathic sudden sensorineural hearing loss (SSNHL) in a 30 year old female patient. Initially presenting with profound unilateral hearing loss, the patient responded well to a treatment regimen that included Intratympanic dexamethasone and Systemic steroids. Although, she subsequently developed bilateral hearing loss, the prompt adjustment of the treatment allowed for significant recovery in both ears. By the end of the treatment period,

audiometric assessments show substantial improvements, underscoring the effectiveness of timely intervention and the importance of continuous monitoring.

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