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Short Communication

Intratympanic steroids as primary treatment for sudden sensorineural hearing loss

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ABSTRACT

Sudden sensorineural hearing loss (SSNHL) is an otological emergency which demands immediate treatment. It is a rare condition which goes unnoticed because of lack of awareness about this condition among the people and healthcare professionals. SSNHL is considered to be idiopathic but some researchers have reported viral infections, vascular insufficiency, intra labyrinthine membrane rupture etc. as possible etiologies. There are various treatments modalities described in literature such as are steroids, antivirals, vasodilators, hyperbaric oxygen therapy etc. Steroids are one of the most common treatment modalities used for SSNHL. Intratympanic administration of steroids is beneficial because they help in hearing loss recovery while bypassing the side effects of systemic steroids. Our study is a retrospective study of the 15 cases of SSNHL treated by intratympanic steroids in the ENT Department of Burnpur Hospital from 2022-2025. The study reported more number of males with SSNHL. Most of the cases were seen in the age group of 61-70 years. Hearing recovery was seen in 73.3% of the cases. It is concluded that Intratympanic administration of steroids are a novel modality of treatment for cases of SSNHL and awareness of this condition must be created among the public and medical practitioners.

Keywords: Sudden, Sensorineural, Intratympanic, Steroids

INTRODUCTION

Sudden sensorineural hearing loss (SSNHL) is a condition which was first described by de Kelyn is commonly defined as abrupt onset of hearing loss of at least 30 dB in three consecutive frequencies on a standard audiogram occurring over a period of three days or less.[1,2]

The incidence of SSNHL varies according to age, it increases with age, ranging from 11 per 100,000 for patients younger than 18 years to 77 per 100,000 for those older than 65 years with an overall slight male preponderance.[3,4]

It is considered that SSNHL is idiopathic, however many authors have recommended various etiologies such as viral infections, vascular insufficiency, and immunological or inflammatory conditions, intra labyrinthine membrane rupture and drug toxicity.[3,5,6]

For many years, administration of steroids by oral or intravenous route was the standard modality of treatment of SSNHL.[7,8]

Various therapeutic modalities, such as antivirals, diuretics, antibiotics, vasodilators, plasma expanders, osmotic agents, anticoagulants, hyperbaric oxygen, and mineral supplements among others, have also been used to treat SSNHL.[7]

The theoretical advantage of intratympanic steroid delivery revolves around the fact that a higher concentration of drug is being delivered through the round window by diffusion, where by reducing the systemic side effects as it is not given intravenously.[7,9]

Although some studies have been done in the past on use of steroids for SSNHL by intratympanic route by researchers, more research is still required to reach at a consensus that intratympanic steroids is one of the best treatment modalities for SSNHL which can be done at any hospital setting and can used as 1st line of treatment.

Aim

The aim of this study was to describe our experience of SSNHL patients seen in our setup and their treatment with intratympanic steroid injections as a primary therapy.

METHODS

It was a retrospective study conducted by ENT Department in which data of the SSNHL patients who had received intratympanic dexamethasone injection from 2022-2025 was collected from the hospital records. Convenience sampling was used to select the participants of the study.

Inclusion criteria

Unilateral SSNHL which was defined as a sudden unilateral sensorineural hearing loss of at least 30 db at 3 contiguous frequencies over period of <3 days, age group of patients 21-70 years and patients received intra-tympanic steroids for SSNHL were included in study.

Exclusion criteria

Patients with use of ototoxic medications, the presence of a neoplasm or chemotherapy or radiation therapy and patients who had taken oral or intravenous steroids for SSNHL were excluded from the study.

Method of intratympanic injection

The operative procedure of intratympanic steroid injection was performed under a microscope and with patient in supine position. After the surgeon confirmed intact tympanic membrane and middle ear status, local anaesthesia was administered with a cotton ball soaked with xylocaine 4%, which was applied on the tympanic membrane for 10 minutes. While the patient tilted the head 45◦ to the healthy side, a 26-gauge spinal needle was introduced into the postero-inferior portion of membrane and 0.3-0.5 mL of dexamethasone (4 mg/mL) was instilled through this site. The patient was instructed to minimise swallowing or remain in the same position for 30 minutes to minimize drug drainage through Eustachian tube. Once weekly Intratympanic injections were given to the patient.

Outcome measures

Pretreatment and posttreatment hearing levels were calculated on an audiogram. The difference between them is the hearing improvement. Hearing improvement is considered significant if the pure tone average >10 db.

All the data was collected and details entered in Microsoft excel sheet.

RESULTS

Our study showed male gender predisposition (Table 1). The age group most commonly reported according to our study was 61-70 years (Table 2). The recovery rate according to our study was 73.3% (Table 3).

Table 1: Gender distribution of SSNHL patients.

Gender	N	Percentage
Males	10	66.6%
Females	5	33.3%

Table 2: Age distribution of SSNHL patients.

Age (in years)	N	Percentage
21-30	1	6.6%
31-40	1	6.6%
41-50	1	6.6%
51-60	4	26.6%
61-70	8	53.3%

Table 3: Recovery rate after intratympanic steroid injection.

Variables	N	Percentage
Recovered	11	73.3%
Not recovered	4	26.6%

DISCUSSION

Despite being an emergency which requires immediate intervention, SSNHL remains underreported. Awareness of this condition is less among the public and also among healthcare professionals.

Our study gave an idea of the gender and age distribution of SSNHL patients reported at our centre. Our study shows a male preponderance (66.6%) which is similar to various research studies of SSNHL which also have reported greater incidence in males.[7,10]

Our study showed majority of the patients were in the age group of 61-70 years while the study done by Byl who found that increasing incidence with increasing age, with a peak incidence of 47/100 000 in patients 45 years and older.[11,12]

In our centre we tried to treat this rare condition with intratympanic steroid injection which helped in bypassing the side effect of systemic steroids It has been recommended that intratympanic corticosteroids be offered to patients with incomplete recovery from

SSNHL 2-6 weeks after onset of symptoms as per the 2019 AAO H and N clinical practice guidelines.[2,13]

As per different research studies, the frequency of intratympanic injections varies from once daily to once weekly or less and doesn't reach a uniform standard.[14-17] In our study we gave weekly intratympanic injections for SSNHL patients.

The study by Silverstein et al who were among the first to report the use of intratympanic steroids in SSNHL observed hearing improvement in 25% of the patients using a criterion of >10 dB improvement in PTA.[3,18] The study by Solanki et al showed hearing gain >10 dB in 83% of patients which is similar to the study by Kopke et al who have reported a substantially higher recovery rate of 83%. Lefebvre and Staecker in their study have shown hearing improvement in 100% of patients, using a stricter criterion of >16 dB improvement in PTA.[3,19,20] In our study we had a hearing recovery of 73.3%. in SSNHL patients treated with intratympanic steroids.

Awareness of this condition and the treatment options was created among the healthcare professionals of our institute and also among the employees of the industrial setup .and it is hoped that more accurate reporting of cases of SSNHL will be done early so that timely intervention can further improvise the recovery rates.

Among the research studies on recent advances in the treatment of SSNHL is the study by Amizadeh et al which studies the efficacy of methyprednisolone acetate nanogel in treatment of SSNHL.[21] The scope of nanomedicine must be explored in the treatment of inner ear disorders such as SSNHL and more such research studies need to be conducted in different ENT clinical setup.

Limitations

Small number of study participants and shorter duration of study

CONCLUSION

Intratympanic steroids is a very good modality of treatment of SSNHL with good recovery rates. Awareness of this condition, early reporting of the cases and timely treatment of this condition with intratympanic steroids helps in getting the best recovery rates.

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