

Original Research

Assessment of outcome of intratympanic dexamethasone injections in patients with tinnitus

Anand Kumar Gupta

Associate Professor, Department of ENT, Venkateshwara Institute of Medical Sciences, Gajraula, Uttar Pradesh, India

ABSTRACT:

Background: Tinnitus is one of the main causes for which patients seek ENT specialist consultation. The present study was conducted to assess outcome of intratympanic dexamethasone injections in patients with tinnitus. **Materials & Methods:** 62 patients of tinnitus of both genders were subjected to assessment of tinnitus handicap questionnaire and tinnitus rating scale was applied. All patients received three doses of IT dexamethasone (8 mg/2 cc) three times every other day. Pure-tone audiometry was performed. **Results:** Out of 62 patients, males were 34 and females were 28. Handicap rating scale before treatment and after treatment values were no handicap in 0 and 26, mild handicap in 24 and 30, moderate handicap in 20 and 6 and severe handicap in 18 and 0 respectively. The difference was significant ($P < 0.05$). The mean tinnitus rating scale values before treatment was 7.5 and after treatment was 2.6. The difference was significant ($P < 0.05$). **Conclusion:** Intratympanic dexamethasone injections decreases both tinnitus rating scale scores and handicap scores for patients with chronic idiopathic tinnitus patients. IT steroid treatment can be safely used for patients with chronic tinnitus.

Key words: tinnitus handicap questionnaire, tinnitus rating scale, Pure-tone audiometry

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Corresponding author: Anand Kumar Gupta, Associate Professor, Department of ENT, Venkateshwara Institute of Medical Sciences, Gajraula, Uttar Pradesh, India

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INTRODUCTION

Tinnitus is one of the main causes for which patients seek ENT specialist consultation. It is the leading cause for loss of hearing which may occur alone or with combination with other disorders. There are two types of tinnitus based on objectivity.¹ Subjective tinnitus is prevalent one, heard by patient only on the other hand objective tinnitus may be heard by other subjects also apart from patients. There are numerous causes of tinnitus. Among all, the common ones are noise, ear problems, injuries to head-and-neck region, consumption of ototoxic drugs and Meniere's disease etc.² It can also be classified as acute and chronic tinnitus based on the duration of tinnitus. Acute tinnitus lasts for few days whereas chronic tinnitus is long-lasting, clinically more than 3 months of tinnitus.³

Treatment modalities for tinnitus are hearing aid amplification, masking techniques, tinnitus retraining therapy, or certain oral medications.^{4,5} Nowadays, intratympanic (IT) therapies are gaining importance and acceptance for management of certain forms of

tinnitus. Intratympanic dexamethasone injections provide fruitful results in cases of severe disabling tinnitus.⁶ These injections are also efficacious in idiopathic tinnitus. These injections are given in posterior inferior quadrant of the tympanic membrane.^{7,8} The present study was conducted to assess outcome of intratympanic dexamethasone injections in patients with tinnitus.

MATERIALS & METHODS

The present study comprised of 62 patients of tinnitus of both genders. All gave their valid written consent for the participation in the study.

Data such as name, age, gender etc. was recorded. A thorough ENT examination was carried by an expert Otorhinolaryngologist. All were subjected to assessment of complete blood count (CBC), blood biochemistry. Radiological examination such as magnetic resonance imaging (MRI) was performed. Tinnitus handicap questionnaire and tinnitus rating scale was applied. Values were as follows- 0 to 16 (no handicap), 18- 36 (mild handicap), 38- 56 (moderate

handicap), and between 58-100 (severe handicap). All patients received three doses of IT dexamethasone (8 mg\2 cc) three times every other day. Pure-tone audiometry was performed. Patients were recalled

regularly and post treatment scores were recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 62		
Gender	Males	Females
Number	34	28

Table I shows that out of 62 patients, males were 34 and females were 28.

Table II Comparison of Handicap rating before and after treatment

Handicap rating scale	Pre- treatment	Post- treatment	P value
No handicap	0	26	0.01
Mild handicap	24	30	
Moderate handicap	20	6	
Severe handicap	18	0	

Table II, graph I shows that handicap rating scale before treatment and after treatment values were no handicap in 0 and 26, mild handicap in 24 and 30, moderate handicap in 20 and 6 and severe handicap in 18 and 0 respectively. The difference was significant (P< 0.05).

Graph I Comparison of Handicap rating before and after treatment

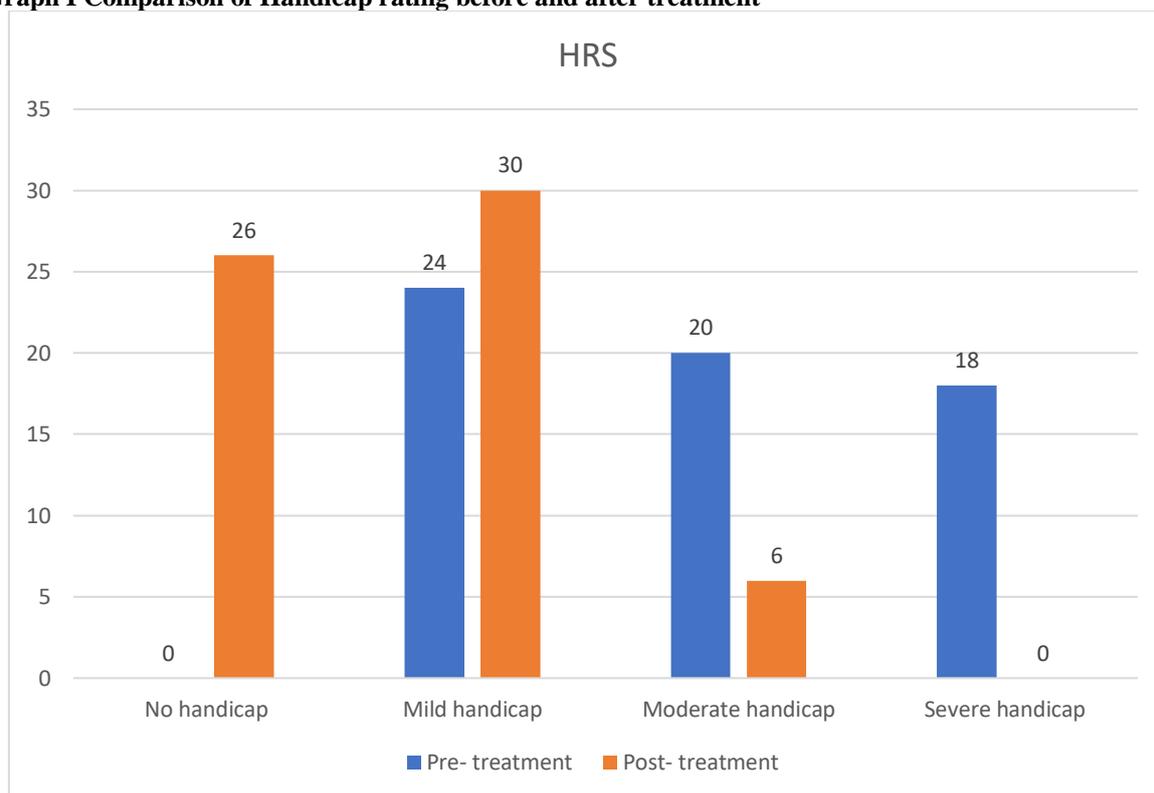
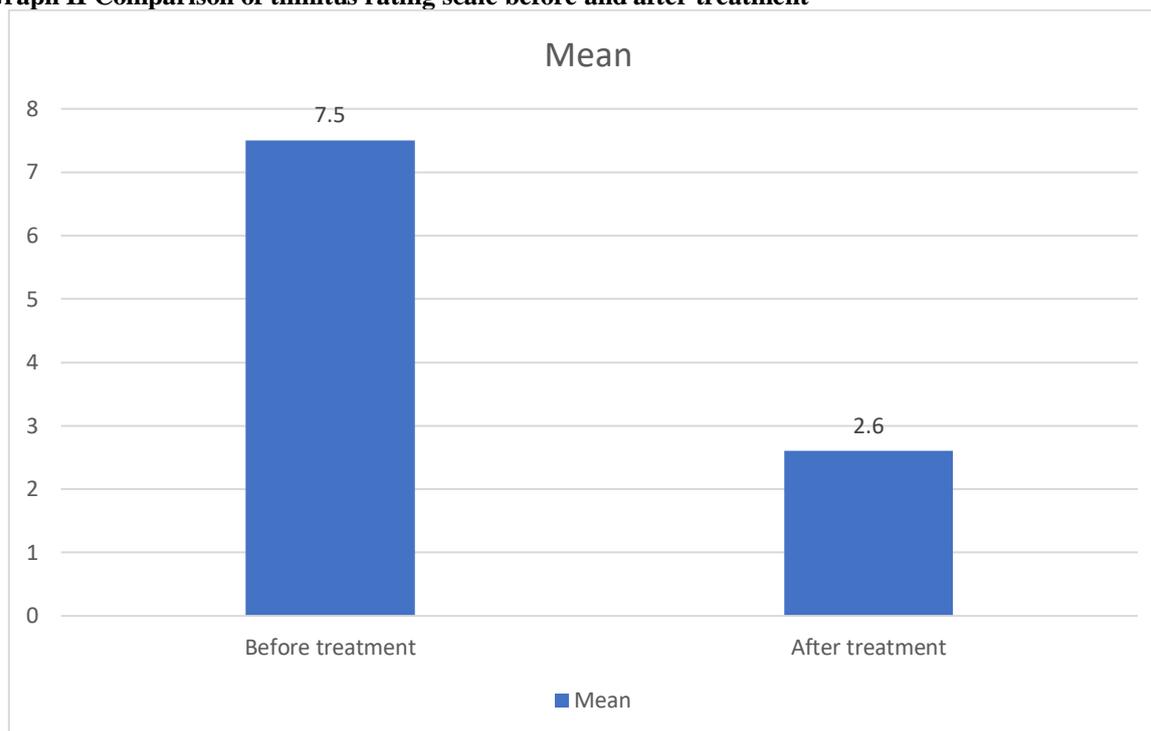


Table III Comparison of tinnitus rating scale before and after treatment

Tinnitus rating scale	Mean	P value
Before treatment	7.5	0.01
After treatment	2.6	

Table III, graph II shows that mean tinnitus rating scale values before treatment was 7.5 and after treatment was 2.6. The difference was significant (P< 0.05).

Graph II Comparison of tinnitus rating scale before and after treatment

DISCUSSION

Increased cochlear blood flow is the method by which corticosteroids act upon the inner ear.^{9,10} Factors such as mechanical obstruction within the middle ear, integrity and inflammation of the round window membrane, and the molecular weight, concentration, liposolubility and electrical charge of the medication etc. influence the passage of medication across the round window in ear.^{11,12} The present study was conducted to assess outcome of intratympanic dexamethasone injections in patients with tinnitus.

We found that out of 62 patients, males were 34 and females were 28. Handicap rating scale before treatment and after treatment values were no handicap in 0 and 26, mild handicap in 24 and 30, moderate handicap in 20 and 6 and severe handicap in 18 and 0 respectively. Araujo MF et al¹³ conducted a study on thirty-six patients (36) with severe disabling tinnitus of both genders which were divided into two groups. Group I obtained intratympanic injections of a dexamethasone solution (0.5-mL intratympanic injections once per week for 4 weeks of either a 4-mg/mL dexamethasone solution) and group II received isotonic sodium chloride solution. The 2 groups were similar in age, sex, tinnitus laterality, measurement of tinnitus intensity on the visual analog scale, and main otologic diagnosis. Results showed that 29% of the ears in the saline group and 33% of the ears in the dexamethasone group showed significant improvement immediately post-treatment.

We found that the mean tinnitus rating scale values before treatment was 7.5 and after treatment was 2.6. Shulman and Goldstein¹⁴ treated 10 patients with severe and disabling intratympanic cochlear

tinnitus with dexamethasone injections. Five patients experienced tinnitus control for at least 1 year and 2 had tinnitus control for only a few hours. Three patients experienced no improvement.

Cesarani et al¹⁵ studied 54 patients treated with intratympanic dexamethasone injections. In this study, 34% experienced complete resolution of tinnitus, 40% experienced significant improvement, and 26% experienced no change. Six weeks follow up revealed complete resolution in only 13.5% of the patients. Only 2 patients continued reporting complete resolution of the symptoms at the 1-year follow-up examination. Sakata et al¹⁶ checked the efficiency of IT dexamethasone treatment for idiopathic tinnitus patients. The efficacy found to be 72% in 1214 patient and 75% in 3041 patients. The most patients had an underlying cause such as Meniere's disease, noise-induced hearing loss, sudden hearing loss, drug intoxicity and others. Oliviera et al¹⁷ identified 500 patients with the symptoms of tinnitus. Presbycusis, COM, otosclerosis, Ménière's disease, noise-induced hearing loss (NIHL), ototoxicity, and acoustic neuroma, in decreasing order of frequency, were the diagnoses for these patients. Tinnitus was mild in 81%, moderate in 18%, and severe in only 1% of the patients. Drugs such as vestibular suppressants, calcium channel blockers were effective in patients. The limitation the study is small sample size.

CONCLUSION

Authors found that intratympanic dexamethasone injections decreases both tinnitus rating scale scores and handicap scores for patients with chronic

idiopathic tinnitus patients. IT steroid treatment can be safely used for patients with chronic tinnitus.

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