ABSTRACT: Objective: To compare the efficacy of conventional medical treatment versus transtympanic dexamethasone application into middle ear as treatment modality in Meniere’s disease.

Study Design: Prospective randomized study

Setting: Tertiary referral centre

Method: Forty patients of Meniere’s disease were treated, 20 by conventional method and 20 by transtympanic dexamethasone applications.

Intervention: Therapeutic.

Results: Vertigo control of 85% achieved in study group when compared to 80% in control group. 15% of patients had hearing improvement in study group while 10% had hearing improvement in control group. Aural fullness and tinnitus control were identical in both groups.

Conclusions: Both modalities of therapy were found to have almost equal efficacy, with Intratympanic steroid (ITS) therapy having an edge over conventional therapy in cases with severe attacks and shorter duration of symptoms.

Key Words: Meniere’s disease, Dexamethasone, Intratympanic steroid

INTRODUCTION
Meniere’s disease is a pathophysiologic state characterized by the presence of recurrent, spontaneous episodic vertigo, hearing loss, aural fullness and tinnitus due to a disturbance in inner ear mechanisms. The multifactorial etiology, varied treatment options make the disease an enigma.

Mc Cabe’s clinical report on autoimmune sensorineural hearing loss in 1979 had stimulated the research in immunologic mechanisms of inner ear pathologies. A subgroup of patients with Meniere’s disease have an autoantibody against Raf-1 protein seen in the membranous labyrinth. Inner ear specific antigens are found in specific locations like lateral wall of cochlea, organ of Corti, modiolus, vestibule. Gulcocorticoid receptors have also been found to be located in inner ear tissues.

Since autoimmunity is a strong etiology, the use of steroids for Meniere’s disease, is an important treatment modality. In earlier days the standard line of treatment had been medical with low salt diet, caffeine free diet, in conjunction with diuretics and at times with a vasodilator. Our study is proposed to compare the efficacy of conventional medical treatment against transtympanic application of dexamethasone in patients with Meniere’s disease.

MATERIALS AND METHODS
This was a prospective study conducted during the period from Jan 2001 to June 2002. Forty definitive cases of Meniere’s disease, as defined by the 1985 Committee on Hearing and Equilibrium Guidelines were included.

Apart from routine investigations, whenever possible transtympanic electrocochleography was used to confirm the diagnosis. The control group had 20 patients who received conventional medical treatment for 3 months, comprising of salt and caffeine restricted diet, nicotine and alcohol restrictions, Tab. Cinnarizine 25 mg TDS for acute episodes and Tab. Betahistine hydrochloride 16 mg TDS for maintenance therapy. These patients were followed up for 6 months from the initiation of therapy and the results were periodically assessed at 1, 2, 3 and 6 months.

The study group had 20 patients who underwent transtympanic dexamethasone application. Under local anesthesia, a Sheperd ventilation tube (grommet) was inserted into the posteroinferior quadrant of tympanic membrane. Dexamethasone eye/ear drops available commercially in the concentration of 1 mg/cc were diluted to 0.20 mg/cc using distilled water. 5 drops of medication was instilled into the middle ear. The patients were made to lie supine with medicated ear up for 30 minutes. Later self instillation of drops were done by the patients for 3 months duration. The patients were followed up to 6 months and the results were assessed. The patients in the study group were not prescribed any drugs or diet restriction.
RESULTS

The age of the patients in study group ranged from 24 to 56 years with mean age of 38.50 years and in the control group it ranged from 17 years to 78 years, with a mean age of 40.30 years. 13 patients were male and 7 female in both the groups.

We have used the Sakata’s criteria for reporting the vertigo control. In the study group vertigo control was achieved in 17 patients (85%) (Table 1). Two patients (10%) had only limited control. One patient (5%) had worsening of vertigo during treatment.

In the control group, vertigo control was achieved in 16 patients (80%). Four patients (20%) had only limited control. None of the patients worsened in the control group.

Most patients in both the groups had unchanged hearing level, with 3 patients and 2 patients showing improvement in study and control groups respectively. Two patients (10%) had drop in hearing level in the study group. The speech discrimination score improved in three patients (15%) in study group and 2 patients (10%) in control group. For the rest, the SDS remained the same.

In the study group 2 patients (10%) showed complete relief from tinnitus while tinnitus improved in 12 patients (60%). In the control group 3 patients (15%) showed complete relief from tinnitus while 10 patients (50%) showed some improvement in their tinnitus.

In the study group, 3 patients (15%) showed complete relief from aural fullness and 13 patients (65%) some improvement. In the control group, 5 patients (25%) showed complete relief from aural fullness and 11 patients (55%) showed some improvement.

DISCUSSION

Standard initial line of treatment in old days for Meniere’s disease was medical. Patients who were uncontrolled with medical treatment were considered candidates for surgical therapy in the form of a non destructive endolymphatic sac surgery. Now intratympanic steroid injections have been proposed as the initial surgical procedure of choice with endolymphatic sac surgery reserved only for patients who do not respond to intratympanic injections.

Ours is the first study to present the comparative results of conventional medial treatment versus intratympanic dexamethasone therapy in Meniere’s disease.

The vertigo control between the two groups were almost identical, with overall good vertigo control of 85% in the study group and 80% in the control group. The differences were not statistically significant. There was significant correlation between the severity of vertigo and duration of illness when compared with vertigo control between the two groups, proving that, ITS therapy is more effective in patients with severe vertigo and those with shorter duration of illness. This observation goes in accordance with the results published by Itoh and Sakata.

Santos et al has evaluated the effect of diuretic treatment and diet modifications and reported a good vertigo control in 79%, limited control in 19% and worsening in 2% and hearing improvement in 35% of cases, unchanged hearing in 24% and worsening 22%. Aantaa et al had studied the effect of Betahistine and reported 80% improvement in his patients. Our results in control group go in accordance with the results mentioned in literature.

With intratympanic dexamethasone therapy, literature reports a vertigo control for 96.4% to 43% with Shea et al showing the best possible result. Vertigo control in our study group also has been similar to earlier studies.

Hearing improvements with ITS therapy ranges from 16% to 67.9% in literature. In our study group we observed hearing improvement in only 3 patients (15%) with 2 patients (10%) having a 20dB improvement in threshold and 1 patient (5%) having a 10dB improvement in threshold. Drop in hearing level was seen in 10% of our patients in the study group. Tinnitus control and aural fullness control in our study showed no significant difference between the two groups.

One important feature we have noted form our study was the fall in efficacy of the steroid therapy in the follow up duration. At 1st month we have seen a control of 85% with complete disappearance of attacks, which had fallen to 80% at the end of 3rd month and further to 45% at the end of 6 months. Barrs et al had noted a similar trend in his study on ITS.

In the patients who had worsened, we restarted the steroid