Long-Term Results of the Treatment of Idiopathic Sudden Sensorineural Hearing Loss

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Abstract

Objective: To better determine at what point in time, hearing levels plateau after completion of medical intervention for idiopathic sudden sensorineural hearing loss (ISSNHL).

Study Design: A combination of retrospective chart review and prospective participation

Setting: Tertiary referral center

Patients: Records from April 2007 to October 2014 for patients treated for ISSNHL were reviewed. Patients were asked to return for repeat audiometric testing if a one-year or greater post treatment audiogram was not documented.

Interventions: Oral steroids and intratympanic steroids

Main outcomes measures: Change in audiometric pure-tone average (PTA) and word recognition score (WRS) between one month and one year or greater after start of treatment. Patients were grouped into two treatment groups: oral steroid alone or oral steroid plus intratympanic steroids.

Results: A total of fifty-seven patients were identified. Thirty-one patients had sufficient data to be included in the study. Six were in the oral steroid group and twenty-five in the oral/intratympanic steroid group. The average PTA improvement was 5.1 dB and 16.5 dB in the oral steroid, oral/intratympanic steroid groups, respectively. There was no significant difference in PTA or WRS between the one-month and one year or greater follow up.

Conclusions: The PTA and WRS remained statistically unchanged between one month and one year or greater after treatment for ISSNHL. These results do not differ based on treatment of oral vs. oral and intratympanic steroids. The information regarding recovery pattern after treatment for ISSNHL is helpful to determine the appropriate time for hearing loss intervention.

Introduction

Invariably, patients suffering from idiopathic sudden sensorineural hearing loss (ISSNHL) will ask, “Will my hearing ever return to normal?” In the absence of an abundance of long-term prognosis data, this study was designed to observe at which point in time patients could no longer expect gains in their hearing after treatment for ISSNHL. Knowledge of the time at which hearing level stabilizes after treatment for ISSNHL is helpful to determine when, if necessary, hearing loss intervention strategies are most appropriate.

Methods and Materials

Records from the Ear Institute of Chicago (EIC) from April 2007 to October 2014 were reviewed for patients treated for ISSNHL. ISSNHL was defined as sensorineural hearing loss of ≥30 decibels (dB), affecting at least 3 consecutive frequencies with onset over 72 hours. Treatment consisted of oral or oral and intratympanic steroids. A typical oral steroid dose was prednisone 60 mg daily for four days, then 10-mg taper every two days. Intratympanic steroid treatment consisted of four separate treatments of 0.3cc of 10mg/ml of dexamethasone given over a one to two week period.

Only those patients with one year or greater follow up audiometric data were included in the study. Patients were asked to return for repeat audiometric testing if a one-year or greater post treatment audiogram was not documented. Prospective participants were required to consent to one standard audiogram by a licensed audiologist at EIC. Patients were compensated onsite for their involvement.

All patients had a negative MRI with contrast of the internal auditory canals to exclude the presence of retrocochlear disease. Patients were excluded from the analysis if there was a previous history of unilateral or bilateral sudden, fluctuating or progressive sensorineural hearing loss.

Pretreatment (T0), one month post treatment (T1), and one year or greater (T3) post treatment pure-tone average (PTA) and word recognition score (WRS) were recorded. Patients were grouped into two treatment groups: oral steroid alone or oral steroid plus intratympanic steroids.

The study was approved by the AMITA Health institutional review board, IRB #2015000202.

Results

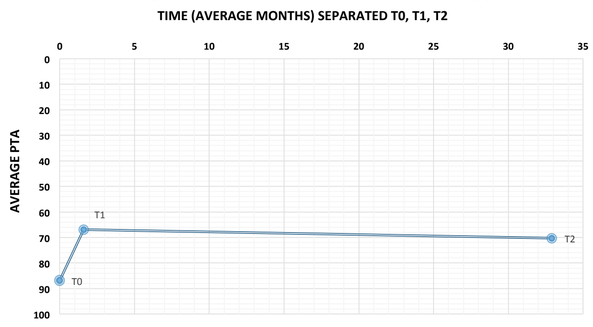
A total of fifty-seven patients were identified. Thirty-one patients had sufficient data to be included in the study. Six were in the oral steroid group and twenty-five in the oral/intratympanic steroid group. The average PTA improvement was 5.1 dB and 16.5 dB in the oral steroid, oral/intratympanic steroid groups, respectively. There was no significant difference in PTA or WRS between the one-month and one year or greater follow up.

Table 1. Study Characteristics

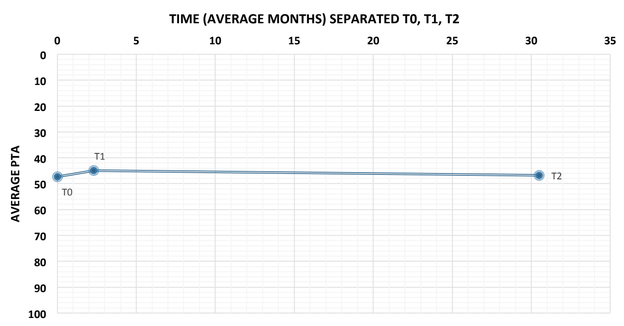
Pre = pretreatment, Post = after treatment, PTA = Pure-tone average, WRS = word recognition score, IT = intratympanic

	Average								
	N	**Age**	**Time from onset to treatment**	**PTA (dB) Pre**	**PTA (dB) post 1 mo.**	**PTA (dB) post 1 yr.**	**WRS (%) Pre**	**WRS (%) Post 1 mo.**	**WRS (%) Post 1yr.**
Oral Steroid Group	6	65.7	11.5 days	47.29	45	46.67	47.8	71.33	72
Oral Steroid/IT Combo Group	25	50.7	10.6 days	86.85	66.9	70.25	10.91	26.6	31.8

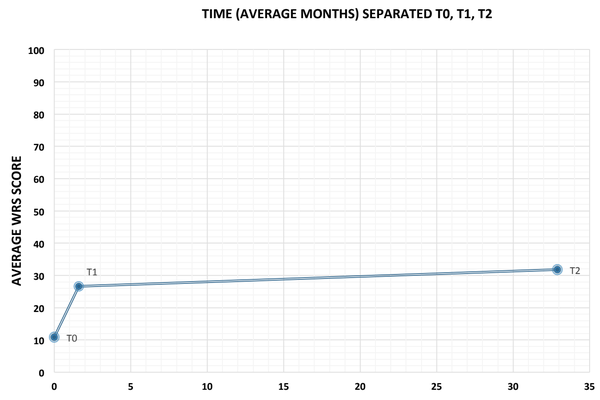
Average PTA vs. Time (Combination Therapy)



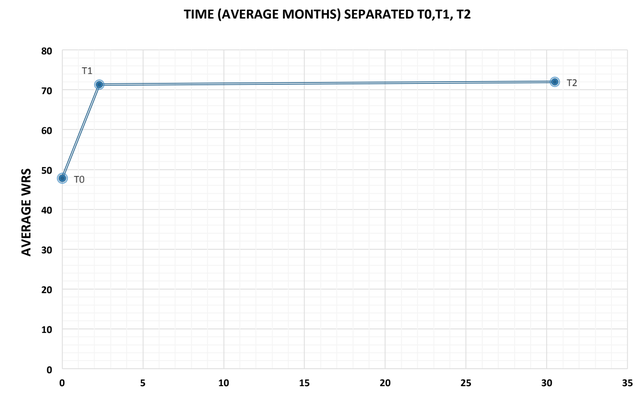
Average PTA vs. Time (PO Steroids Only)



Average WRS vs. Time (Combination Therapy)



Average WRS vs. Time (PO steroids Only)



Discussion

Idiopathic sudden sensorineural hearing loss affects approximately 5 to 20 persons per 100,000 or approximately 4,000 new cases annually in the United States[1]. It is estimated that 32% to 65% of cases of ISSNHL recovery without any treatment[2,3]. The greatest spontaneous hearing improvement occurs in the first two weeks after onset of hearing loss[2]. Prognosis for recovery is dependent on a number of factors, including patient age, presence of vertigo at onset, degree of hearing loss, audiometric configuration, and time between onset of hearing loss and treatment[4-6].

Our data show no significant change from the one-month post treatment and the one-year or greater post treatment hearing evaluations in patients treated for ISSNHL. These results were found regardless of treatment type, oral steroids alone or oral steroids and IT steroids.

A review of the literature shows similar findings to our results. Yeo, et al in 2007 reported on 156 ISSNHL patients treated with oral prednisolone who were followed for 8 months[7]. Only 3.5% had hearing improvement after 3 months post treatment. Filipo, et al, treated 122 patients with ISSNHL treated using intratympanic prednisolone and were followed for one year[8]. There was no statistical change in hearing between the 10-day and one year post treatment audiometric results. In a study by Jo, et al, 42 patients with severe to profound ISSNHL were treated with intramuscular (IM) prednisolone, followed by intratympanic dexamethasone for salvage[9]. The vast majority of hearing gains occurred in the first 3 weeks after treatment. There was a “slight recovery” during the period between 3 weeks to 3 months. Hearing recovery was rarely seen after 3 months. Other studies have shown no significant hearing improvement after 2[10]or 3[11] months post treatment.

Based on the results of our study and the results of others, hearing improvement is quite rare after the third month post treatment for ISSNHL. It seems prudent, therefore, to begin the discussion of hearing rehabilitation 3 months after treatment for ISSNHL for those patients whose hearing has not improved to pretreatment levels.

Contact

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