Cochlear Implantation for Meniere’s Disease

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**ABSTRACT**

**Background/objective:** Only a small number of patients with Meniere Disease (MD) go on to have bilateral severe-profound sensorineural hearing loss. These patients may benefit from cochlear implantation (CI) but only a few small studies have been published describing outcomes. Our goal was to describe our experience with 21 such patients.

**Methods:** Chart review and review of a large prospectively-gathered CI database. CI outcomes for patients with MD were compared to those for age-, sex- and device-matched controls.

**Results:** Patients in the MD group scored as well as controls on speech discrimination measures. They improved, but to a lesser degree than controls, on quality of life measures. Tinnitus did not significantly improve. There were few reports of vertigo postop.

**Conclusions:** Patients with MD with bilateral severe-profound SNHL are excellent CI candidates. Few reported postop dizziness.

**INTRODUCTION**

Patients with Meniere disease (MD) may go on to develop bilateral severe-profound hearing loss. Some of these patients may have bilateral MD, which is controversial because there are no clear diagnostic criteria or treatment paradigms.

Estimates of the proportion of patients with unilateral MD who progress to bilateral MD vary from between 10 and 50%. Besides hearing loss, patients with bilateral MD may have disabling vertigo or oscillopsia. Fortunately, the risk of profound deafness for patients with bilateral MD is small, at approximately 1-5%.

This study clearly demonstrates that patients with MD who go on to develop bilateral severe to profound SNHL benefit from CI. Significant benefit was seen in speech discrimination and quality of life. There was a non-significant trend of a large prospectively-gathered CI database. CI outcomes for patients with MD were compared to those for age-, sex- and device-matched controls.

**METHODS AND MATERIALS**

Patients were included if they met the AAO-HNS diagnostic criteria for MD in addition to having bilateral severe to profound sensorineural hearing loss (SNHL) as an indication for CI.

Implantation was performed by 2 surgeons at a single tertiary referral centre between 1992 and 2010. Various CI devices were implanted over this period of time. All patients were implanted in the poorer hearing ear except for one who had MD and contralateral anacusis from previous trans-labyrinthine excision of vestibular schwannoma (VS).

Charts were reviewed to confirm diagnosis and to establish the clinical course before and after CI. A prospectively-gathered database was used to determine pre- and postoperative speech discrimination, tinnitus (THI) and quality of life scores (SF-36) for subjects and controls. The majority of sentence testing was performed with the Hearing in Noise Test (HINT), but CNC and CUNY sentence tests were also used.

Controls were age, sex and device-matched patients with bilateral idiopathic SNHL who received CIs at our institution during the same time period. Pre- and postoperative scores for each group were compared using a paired 2-tailed Student’s t-test.

**RESULTS**

**Demographics:** In the MD group, 18 of 21 patients were considered to have bilateral MD. 2 others had MD plus contralateral SSNHL, and 1 had MD plus contralateral VS. The average age was 69.4 years (46-85), and 12 were male (57%).

**Clinical Data:** Previously, 2 MD patients had vestibular neurectomies (VN), 1 had a labyrinthectomy, 1 had bilateral endolymphatic sac surgery, and 1 had systemic streptomycin therapy. Postop reports of dizziness are listed in Table 1.

**Audiologic data:** See figure 1.

**Tinnitus:** The number of people reporting tinnitus decreased for both groups (p < 0.05 in the control group only) (figure 2). Average THI scores for those with tinnitus decreased for both groups after CI, but not significantly. In the MD group, average THI scores dropped from 43 to 25, while in the control group the corresponding drop was from 25 to 6.

**Quality of life measures.** Significant improvement was seen in fewer domains for the MD group, however. (Blue = preop; Purple = postop). * Denotes p < 0.05; N=21 per group

**REFERENCES**