

Efficacy of endolymphatic sac decompression for Ménière's disease: Long-term follow-up by electrocochleography.

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Abstract

Abstract Objectives To explore the long-term efficacy and possible mechanism of endolymphatic sac decompression (ESD) in the treatment of Meniere's disease (MD) by electrocochleography. **Design** Prospective cohort study. **Setting** "Blinded for review" **Participants** A total of 85 patients with MD who underwent unilateral ESD between June 2015 and November 2019 at "Blinded for review" were enrolled. **Main outcome measures** The Dizziness Handicap Inventory (DHI), Tinnitus Handicap Inventory (THI), pure tone audiometry, and electrocochleography were used for assessment. The mean follow-up time was 26 months (range: 7–60 months). **Results** The number of vertigo episodes was significantly reduced following ESD compared to before the surgery ($P < 0.005$), and all patients achieved complete or basic control of vertigo as evidenced by a decrease in DHI score ($P < 0.005$). THI scores of patients with tinnitus were also lower after as compared to before ESD ($P < 0.005$), whereas no significant change in average hearing threshold of the affected side was observed ($P > 0.05$). The cochlear summing potential (SP)/auditory nerve action potential (AP) area ratio in the electrocochleogram of the affected side was negatively correlated with DHI score ($r_s = -0.159$, $P = 0.0074$). **Conclusions** ESD achieved effective long-term control of vertigo in MD patients and improved the associated tinnitus without any obvious damage to hearing. Electrocochleography was useful for postoperative monitoring; the SP/AP area ratio of the affected side was closely related to the improvement of postoperative vertigo, possibly reflecting greater relief of pressure in the endolymphatic sac. **Keypoints** *ESD provided long-term control of vertigo in MD patients and improved the accompanying tinnitus without obviously damaging hearing. *ECochG is useful for monitoring the postoperative outcome of ESD. *The SP/AP area ratio of the affected side was closely related to the improvement of postoperative vertigo. *The endolymphatic sac is a "decompression reservoir" of the membranous labyrinth. *ESD may provide space for expansion of the endolymphatic sac and relieve pressure within the membranous labyrinth caused by endolymphatic hydrops, thereby reducing the risk of sac rupture and restoring pressure balance to reduce the sensation of vertigo.

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