**The dynamic development of endolymphatic hydrops in patients with Meniere’s disease based on MRI findings following intratympanic injection of gadolinium**

Xuanyi Li, Qianru Wu, Yan Sha, Chunfu Dai

**Objectives/Hypothesis:**To deduce the development of endolymphatic hydrops (EH) in patients with Meniere's disease (MD) by comparing characteristics between the vestibule and cochlea, including cochlear apical turn (CAT), middle turn (CMT), and basal turn (CBT).

**Study Design:**178 patients with definite unilateral MD diagnosis were enrolled in the present study.

**Methods:** Gadolinium-enhanced inner ear magnetic resonance imaging was analyzed in all patients following bilateral intratympanic injection. With the images acquired, the incidence and degree of EH in different parts of the inner ear were evaluated, and the correlation of hydrops among various parts was statistically analyzed.

**Results:** The anatomic structures of cochleas and vestibules could be observed clearly on both sides of 178 unilateral MD patients. On the affected side, the incidence of EH in the CAT, CMT, CBT, and vestibule was, respectively, 97.2%, 97.2%, 94.9%, and 95.5%.The difference of incidences between the CAT and CBT, CAT and vestibule, CMT and CBT, CMT and vestibule was statistically significant (p<0.05), while no statistical significance was shown between CAT and CMT, CBT and vestibule. As for the degree of EH, the severity of EH decreased gradually from CAT to CBT. The correlation among turns of cochlea itself was greater than that between the cochlea and vestibule. Additionally, the correlation of hydrops between CAT and CMT was greater than that between CMT and CBT. However, on the unaffected side, asymptomatic EH could also be detected in 32 patients. Furthermore, incidence and degree of asymptomatic EH in the cochlea was greater than that in the vestibule (*p*<0.05), while no significant difference showed among various turns of the cochlea.

**Conclusion:** The process of EH tends to be directional, which initially develops in the cochlea. The order of severity gradually decreases from CAT to CBT and vestibule. EH in the vestibule is significantly associated with the attack of MD.

**Key Words:** endolymphatichydrops—Meniere’s disease