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Are Diuretics Useful in the Treatment of Meniere Disease?

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BACKGROUND

Since first described in the early 1800s, Meniere disease (MD) remains a puzzle in etiology, prognosis, and treatment. Histologically, endolymphatic hydrops with stretching of the Reissner membrane is seen, likely due to either the overproduction or reduced absorption of endolymph. The subsequent microperforation of the Reissner membrane, resulting in the mixture of endolymph and perilymph, is thought to be responsible for acute attacks of MD. Low salt diet with or without diuretics is the most common treatment regimen. Dietary salt restriction has been recommended to reduce inner ear fluid in a manner similar to its use in the treatment of hypertension to reduce total body fluid. Similarly, diuretics have also been recommended to control disease symptoms by reducing the endolymphatic pressure, volume, or even production. In this Triological Society Best Practice, we review the evidence to determine if diuretics are effective in the management of MD.

LITERATURE REVIEW

In their comprehensive review of medical management of MD, Coelho et al. recommended diuretics as a second-tier treatment for persistent vertigo following the failure of lifestyle modifications such as low salt diet and abstaining from caffeine, tobacco, and alcohol.1 Given the episodic nature of MD with periods of recurrent symptoms followed by prolonged quiescence of disease, the authors recommended that cessation of diuretic therapy be considered after 3 months of treatment if vertigo subsides. The authors tempered the strength of their recommendation by citing the lack of high-quality evidence to support the use of diuretics in MD.

Indeed, the literature investigating the efficacy of oral diuretics in controlling the symptoms of MD is low-quality; limited in number; and largely limited to small, underpowered studies. Ruckenstein et al., in their review of treatment of MD published in 1991, evaluated about 150 papers published after 1975 as well as “classic” papers; additionally, they re-analyzed some of the most quoted control trials that assessed diuretic efficacy in Meniere treatment.2 They found serious flaws in both experimental design and statistical analysis evaluating the evidence of diuretics in the treatment of MD. Consequently, with re-analysis of the published data, they showed how previous statistically significant improvement became nonsignificant and concluded that there were no data to support the use of diuretic therapy in the literature. Subsequently, a Cochrane Database review in 2006 and an update from 2009 reviewing the effect of diuretics treatment in MD found that there were no trials of high enough quality to meet the standard set for their systematic review.3

In a 2016 systematic review of evidence for the use of diuretics in the management of MD, Crowson et al. evaluated 19 studies from 1962 to 2012 with level 4 evidence or higher. They found multiple low evidence-level studies reporting benefit of oral diuretic therapy in diminishing the frequency of vertigo.4 On the other hand, evidence for improvement in hearing was less convincing. They concluded that despite low evidence-level studies, oral diuretic therapy may be beneficial in the management of MD. A more recent literature review in 2018 by Rosenbaum et al. used Epistemonikos, the largest database of systematic reviews in health maintained by screening multiple information sources, including MEDLINE, EMBASE, and Cochrane among others, to determine if diuretics are effective in treatment of MD.5 They identified three systematic reviews that included 19 studies; however, only two were randomized controlled trials. The two randomized studies, published in 1967 and 1986, compared treatment with hydrochlorothiazide to control in a total of 63 patients. They concluded that the certainty of evidence to be very low for symptomatic improvement of vertigo or an objective decrease in hearing loss with the use oral diuretics in patients with MD. Like Ruckenstein et al. and other before them, the authors opined that level of evidence should be...
downgraded, taking into consideration the small sample size and the methodology limitations of the trials. On other hand, the use of diuretics was relatively safe. They found moderate certainty of evidence to support that diuretic use was associated with minimal adverse effects.

BEST PRACTICE
To date, there is an absence of high-quality data demonstrating the efficacy of oral diuretic therapy in the treatment of vertigo or hearing loss associated with MD. Support for diuretic use is inappropriately based on studies with low level of evidence, and its use likely persists because of its minimal adverse effects. There is a critical need for high-quality randomized control trials to determine if diuretics are effective.

LEVEL OF EVIDENCE
There are three systematic reviews of randomized control trials (level 1a) and case control studies (level 3a) being described.

BIBLIOGRAPHY