**Oral glycerol attenuates the enhanced eye velocity response in the video head impulse test of semicircular canal function**

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**Background.** On testing with vHIT (MacDougall et al., 2009) some patients with Menière’s Disease show an enhanced eye velocity response, so that eye velocity exceeds head velocity during the head impulse. Previously we have suggested (and modelled (Grieser et al., 2014)) that this enhanced eye velocity response may be due to endolymphatic hydrops. The changes in auditory responses after oral intake of glycerol is a clinical test for identifying endolymphatic hydrops (Klockhoff). Comparable changes in otolithic responses after glycerol have been reported (Murofushi et al., 2001). Here we report the results of applying the glycerol test to measures of semicircular canal function using the video head impulse test (vHIT). We reasoned that if the enhance eye velocity is due to hydrops, then the dehydration glycerol test should reduce the enhanced eye velocity response.

**Methods**. We tested 6 such patients before and at hourly intervals, after oral glycerol intake. All the patients were given orally 86% glycerol at a dosage of 1.5 ml/kg of body weight, dissolved 1:1 in physiological saline. Because vHIT testing is so simple, fast, and innocuous, it was possible to test the patients at 4 epochs: at an initial examination before glycerol intake (time 0) and at 1, 2, and 3 hours after the glycerol intake. The testing was conducted with the patient’s approval as part of the standard clinical assessment. The procedures were in accord with the Helsinki convention.

**Results.** In 5 patients we found that the enhanced eye velocity these patients showed before glycerol diminished over time after glycerol. Control testing over the same time intervals with saline instead of glycerol had no effect on the enhanced eye velocity.

**Conclusion.** The glycerol dehydration test when combined with video head impulse testing appears to be a new tool to probe the changes within the labyrinth during hydrops.

Grieser B, McGarvie L, Kleiser L, Manzari L, Obrist D, Curthoys I. Numerical investigations of the effects of endolymphatic hydrops on the VOR response. J Vestib Res. 2014;24:219-.

Klockhoff I, Lindblom U. Endolymphatic hydrops revealed by glycerol test (preliminary report). Acta Otolaryngol (Stockh) 1966; 61: 459-461

MacDougall HG, Weber KP, McGarvie LA, Halmagyi GM, Curthoys IS. The video head impulse test: diagnostic accuracy in peripheral vestibulopathy. Neurology. 2009;73:1134-41.

Murofushi T, Matsuzaki M, Takegoshi H. Glycerol affects vestibular evoked myogenic potentials in Meniere's disease. Auris Nasus Larynx. 2001;28:205-8.