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Effects on cochlear frequency selectivity after hypobaric pressure exposure

Jonas Brännström[a] and Jan Grenner[b]
[a]Department of Audiology, Malmö University Hospital and Lund University, 205 05 Malmö, Sweden
[b]Department of Audiology, Lund University Hospital, 221 85 Lund, Sweden

The effects of hypobaric pressure chamber exposure was measured in noise in ten patients with monaural fluctuating low-frequency hearing loss (FLFHL) such as Ménière's disease using psychophysical tuning curves (PTC), transiently evoked otoacoustic emissions (TEOAE), binaural pitch matches and speech recognition scores (SRS) in noise. In the literature, reversible hearing losses have been observed in about 50 % of the patients, but sometimes improved SRS can be observed in patients without hearing threshold improvement. This indicates possible effects of pressure treatment on cochlear frequency selectivity. The relative overpressure in the middle ear obtained after repeated exposures in hypobaric pressure chamber (total duration 18.5 to 28 minutes) was used to impose pressure gradients to the inner ear. The results indicated that the treatment effects were small, but slightly improved SRS in noise, TEOAEs emission strength and PTCs were observed after treatment. Pure tone hearing thresholds improved only for patients exposed to longer treatment durations. Subjective improvement at follow-up could not be predicted from the results. Although the effects were small, the data suggest that hypobaric pressure treatment may improve cochlear frequency selectivity in the affected ear in patients with monaural FLFHL.