**Frequency-Specific Electrocochleography and Traveling Wave Time as a Clinical Test for Meniere’s Disease**

**Robert Conway, DO; Eric Sugihara, DO; David Lee, BS; Seilesh Babu, MD**

**Introduction:** Meniere’s disease is a clinical entity with no definitive objective testing. Traveling wave velocity (TWV) has been proposed as an objective test to aid in the diagnosis. The theory behind TWV includes stiffening of the basilar membrane due to increased endolymphatic fluid which would lead to increased conduction of a stimulus and a decreased time to action potential. The objective of this study was to compare electrocochleography frequency-specific action potential latency, basilar membrane traveling wave time, and summation to action potential (SP/AP) ratio in Meniere’s and non-Meniere’s patients.

**Methods:** Retrospective chart review of patients at a single neurotology tertiary referral center. Adults older than 18 years who underwent electrocochleography were included. Those with conductive hearing loss or retrocochlear pathology were excluded. Tympanic electrocochleography was performed with tone burst (500, 2000, and 4000 Hz) and click (1000 Hz) evoked stimuli. Frequency-specific action potential latency time and SP/AP ratio data were collected respectively. Patient demographics, symptoms, audiogram data, academy classification of Meniere’s disease, management interventions, and follow up were recorded. Statistical analysis was performed to compare outcome measures across patient groups, demographics, and clinical data.

**Results:** Ninety-one patients (182 ears) were included. There was a significant difference between Meniere’s classification groups and the pure tone average (PTA) at 250 Hz on the affected side (p<.05). There was no statistical difference between the different Meniere’s classification and AP latency at any frequency. There was also no statistical difference between the affected and non-affected ear at AP latency at any frequency.

**Conclusions:** It was hypothesized the underlying endolymphatic hydrops in Meniere’s patients stiffens the basilar membrane leading to increased speed of the acoustic wave or decreased latency time to cochlear nerve stimulation, however, this was not seen in the statistical analysis. No correlation was found with low frequency hearing loss, which is to be expected according to the 2015 AAOHNS classification guideline. Our study fails to show significance to the TWV as an objective test for Meniere’s disease, leaving it still a largely clinical diagnosis.