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The sensitivity and specificity of the extra tympanic electrocochleography (ECoChG) in Meniere's disease

M-Basel Alassi

Emirates Hospital, Dubai

Background: Electrocochleography (ECoChG) is one of the tests used in the diagnoses, monitoring and follow-up of patients with Meniere's disease (MD). Extra-tympanic ECoChG is a non-invasive method to record the amplitude of summing potential (SP) alone or the amplitude ratio of SP and action potential (AP) and conclude the AP/SP amplitude ratio.

Objectives: The study aimed to study the SP and AP amplitude and the SP/AP amplitude ratio in individuals with normal hearing and in those with definite Meniere's disease, and to conclude the sensitivity and the specificity of the ECoChG test in differentiating the patients of Meniere's disease from normal people.

Materials and Methods: In this retrospective chart review, the study population is composed of 25 subjects (35 ears), consisted of 18 ears of 10 normal people and 17 ears of 15 definite Meniere's disease patients. Extra-tympanic non-invasive ECoChG recording was done for all the participants.

Results: The measurements of the mean SP latency, SP amplitude, AP latency, AP amplitude and SP/AP amplitude ratio in the normal individuals group are: (0.92 msec, SD=0.2), (0.18 μ V, SD=0.12), (1.55 msec, SD=0.18), (0.18 μ V, SD=0.12), (1.03 μ V, SD=0.69) and (SP/AP ratio=0.21, SD=0.09) respectively. While the Meniere's disease individuals group showed values of (0.98 msec, SD=0.27), (1.09 μ V, SD=2.83), (1.58 msec, SD=0.29), (0.86 μ V, SD=0.62) and (SP/AP ratio=0.45, SD=0.15) respectively. There was no significant difference between the two groups in the values of SP latency, SP amplitude, AP latency and AP amplitude. The SP/AP amplitude ratio values of both groups revealed a significant difference between the two groups ($p < 0.00001$). The study also concluded the values of The ECoChG sensitivity (88%), ECoChG Specificity (94%).

Conclusion: The elevation of the SP/AP amplitude rate of the ECoChG test is a powerful method to discriminate between Normal individuals and Meniere's disease patients. Extratympanic ECoChG has a high sensitivity (88%) and high specificity (94%) in the diagnosis of definite Meniere's disease patients.

e: basel81@hotmail.com