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Abstract

Beyond the labyrinth: The role of Vestibular Evoked Myogenic Potentials in Neural Pathway Assessment

Vestibular evoked myogenic potentials (VEMPs) are short latency surface responses produced through activation of otolith receptors by sound or vibration. While commonly used to assess otolith organ function, VEMPs also provide valuable information regarding the function of the vestibular nerve and central reflex pathways. Reduced or absent VEMPs have been observed in conditions affecting the vestibular ganglion, vestibular nerve, brainstem, and even the neuromuscular junction.

This presentation will review research findings and selected cases, highlighting typical VEMP outcomes in common VIIIth nerve disorders such as vestibular neuritis and vestibular schwannoma, as well as in rarer neurodegenerative conditions. When interpreted alongside auditory evoked potentials, such as auditory brainstem responses (ABRs), VEMPs contribute to more precise phenotypic profiling. This multimodality approach enhances diagnostic accuracy, particularly in complex cases where pathology involves auditory, vestibular and neurological processing. Early identification of auditory and/or vestibular involvement can support timely, targeted interventions aimed at maximising function, prolonging independence, and improving quality of life.

Bio

Dr Rachael Taylor is an audiologist and neuroscientist from the University of Auckland with over 20 years' experience in diagnostic vestibular and oculomotor function assessment. After completing her Masters in audiology, she pursued her clinical and research interests abroad, focusing on the vestibular system and neuro-otology. Her training included positions at the National Hospital for Neurology and Neurosurgery in London, and the Royal Prince Alfred Hospital in Sydney, Australia, where she also completed her PhD. Her doctoral work involved the application of vestibular-evoked myogenic potentials and video head-impulses across several commonly encountered vestibular disorders, contributing to the development of new diagnostic profiles. Rachael joined the University of Auckland in 2018 where she established a human vestibular research facility to support translational research into vestibular and neurological disorders. Her current research interests centre on the intersection between auditory and vestibular pathway function in central nervous system conditions. This work involves active collaboration with the University of Auckland's Centre for Brain Research, Neurogenetics Clinic. Rachael also serves on the committee of the New Zealand Society for Balance Dizziness and Vertigo and is actively involved in the teaching and mentoring of students from the University of Auckland's Master of Audiology programme.