Vestibular Evoked Myogenic Potentials in Otitis Media before and after Surgery

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Abstract

Objectives: The aim of this study was to evaluate the vestibular evoked myogenic potential (VEMP) in patients with chronic suppurative otitis media before and after surgery.

Subjects and Methods: This study was conducted on 20 patients with chronic otitis media preoperatively and postoperatively and 20 controls. All subject age ranged from 20 to 50 years. Each subject underwent history taking, otologic examination, basic audiological evaluation, air and bone conducted vestibular evoked myogenic potentials.

Results: All perforated ears showed a lost air conduction VEMP response pre-operatively without post-operative improvement. This could be due to absence of any statistically significant differences between the pre-operative and post-operative air bone gaps at all of the tested frequencies. Bone conduction VEMP was preserved in all CSOM cases pre-operatively and post-operatively. There were no statistically significant differences between the air conduction and bone conduction VEMP parameters in the controls except for statistically significant smaller P13-N23 amplitude of bone conduction VEMP compared to the air conduction VEMP. There was no statistically significant difference between the pre-operative perforated ears of CSOM cases and their controls regarding bone conduction P13, N23 latencies or P13-N23 amplitude. There was a statistically significant delayed P13 latency and statistically significant greater P13-N23 amplitude of bone conduction VEMP post-operatively than pre-operatively. But there was no statistically significant difference between preoperative and postoperative bone conduction N23 VEMP latency or IAAD. Bone conduction VEMP results were preoperatively affected by the ABG and bone conduction, but not post-operatively.

Conclusion: Air conduction VEMP in patients with chronic suppurative otitis media showed a zero % response rate pre-operatively that has not changed post-operatively. While bone conduction VEMP showed a 100% response rate pre and post-operatively. So we recommend using bone rather than air conduction VEMP for assessment of the sacculo-collic reflex in patients with chronic suppurative otitis media.

Key word:

Air bone gap; bone conduction ; chronic suppurative otitis media; conductive hearing loss; vestibular evoked myogenic potential.

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List of Abbreviations

ABR	Auditory brainstem response
ACS	Air conducted sound
AC-VEMP	Air conduction VEMP
ANs	Acoustic neuroma
AOM	Acute otitis media
BCV	Bone conducted vibration
BC-VEMP	Bone conduction VEMP
BPPV	Benign paroxysmal positional vertigo
CHL	Conductive hearing loss
COM	Chronic otitis media
CPA	Cerebello-pontine angle
CSOM	Chronic suppurative otitis media
C-VEMP	Click-evoked VEMP
EMG	Electromyography
EPSPs	Excitatory postsynaptic potentials
GORD	Gastro-oesophageal reflex
GVS	Galvanic vestibular stimulation
IBV	Idiopathic bilateral vestibulopathy
IAD	Inter aural latency difference
IPSPs	Inhibitory postsynaptic potentials
ISSHL	Idiopathic sudden sensorineural hearing loss
IVN	Inferior vestibular nerve
MD	Meniere's disease
MJD	Machado-Joseph disease
MS	Multiple sclerosis
MVST	Medial vestibule-spinal tract
NF2	Neurofibromatosis type 2
NIHL	Noise induced hearing loss

oVEMP	Ocular vestibular evoked myogenic potentials
RHS	Ramsay Hunt syndrome
SCA1	Spino-cerebellar ataxia-1
SCDS	Superior Canal Dehiscence syndrome
SCM	Sterno-cleido-mastioid muscles
SS	Superficial siderosis
STB –VEMP	Short tone bursts- VEMP
STBs	Short tone bursts
VEMP	Vestibular evoked myogenic potential
VN	Vestibular neuritis
VZV	Varicella-zoster virus
WS	Wallenberg syndrome

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