

Vestibular Evoked Myogenic Potentials in Otitis Media before and after Surgery

Thesis Submitted to Kasr El-Ainy Faculty of Medicine Cairo University in
partial fulfillment of the Requirements of the Master degree in Audiology

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2014



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رسالة مقدمة للحصول على درجة الماجستير فى أمراض السمع و الصمم

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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.

LIST OF CONTENTS

Title	Page
Acknowledgement	II
List of Abbreviations	III
LIST OF FIGURES	V
LIST OF TABLES	VII
Introduction & Rationale	1
Aim of the work	3
Review of literature:	
• Chapter (1): Chronic Otitis Media	4
• Chapter (2): Vestibular Evoked Myogenic Potential	14
• Chapter (3): VEMP in Conductive Hearing Loss	45
Subjects and methods	48
Results	53
Discussion	87
Conclusions	97
Recommendations	99
Summary	100
References	103
Arabic Summary	-

Acknowledgement

First of all thanks to *Allah* the most merciful for giving me the strength to complete work.

Also, I wish to express my deep gratitude to *Prof. Dr. Mohamed Ibrahim Shabana* Professor of Audiology Faculty of Medicine-Cairo University, for his good support, continuous supervision and help during this work.

I wish to express my deepest gratitude to *Prof. Dr. Abeir Osman Dabbous* ; Professor of Audiology Faculty of Medicine-Cairo University , for her guidance, scientific supervision and support. She has generously devoted much of her time and effort helping me throughout the whole work.

I'm very grateful to *Dr. Badawy Shafeek Khalifa* Assistant Professor of ENT Faculty of Medicine- Cairo University for his support and guidance

I would like to thank My Patients for their cooperation and trust, and I wish for all of them the best of health.

All my thanks and love are offered to my family, for their continuous encouragement and support. I really can't express my thanks and love to my mother.

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-mastoid 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

LIST OF FIGURES

FIGURES	Title	Page
1.	VEMP circuitry	16
2.	Electrode placement and contraction of the SCM muscle	18
3.	Click- induced VEMPs	23
4.	Cervical VEMPs evoked by AC sound, BC vibration, head taps and GVS in a normal subject.	26
5.	Gender distribution in the patient and control groups	54
6.	Distribution of AC- VEMP response in the perforated ear of CSOM cases pre-operatively and control groups.	60
7.	Distribution of AC-VEMP response in the CSOM cases and controls.	61
8.	Distribution ofAC- VEMP response in the unilateral and bilateral cases of CSOM cases pre-operatively.	64
9.	BC- VEMP (traces A1 & A2) and air conducted VEMP (A3 & A4) in one and of the controls	65
10.	BC- VEMP (traces A1, A2 & A3) and air conducted VEMP (A4 & A5) in one of the patients with chronic otitis media pre-operatively (I) and post-operatively (II).	66

FIGURES	Title	Page
11.	Distribution of BC- VEMP amplitude response in the CSOM cases and controls.	67
12.	BC- VEMP P13, N23 latencies in the pre-operative perforated ears of CSOM cases and their controls.	69
13.	BC- VEMP P13-N23 amplitude in the pre-operative perforated ears of CSOM cases and their controls.	69
14.	BC- VEMP IAAD in the cases pre-operatively and in the controls.	70
15.	BC- VEMP parameters in the perforated ear (non-operated) of cases with bilateral perforation.	72
16.	BC- VEMP parameters in the intact (non- perforated) ear of cases with unilateral perforation.	73
17.	Comparison between pre-operative and post-operative BC- VEMP P13 and N23 latencies in CSOM cases.	74
18.	Comparison between pre-operative and post-operative BC- VEMP IAAD in CSOM cases.	74
19.	Comparison between pre-operative and post-operative BC- VEMP P13-N23 amplitude in CSOM cases.	75

LIST OF TABLES

FIGURES	Title	Page
1.	Age in years in the study and control groups.	53
2.	Gender distribution in the patient and control groups.	53
3.	The distribution of side, laterality, type of the perforation in the cases.	54
4.	Mean, SD and range of the air conduction pure tone thresholds in at different frequencies in the perforated ear of the cases pre-and post-operatively.	55
5.	Mean, SD and range of the bone conduction pure tone thresholds in at different frequencies in the perforated ear of the cases pre-and post-operatively.	55
6a.	Mean SD and range of the air bone gap improvement post- operatively at different frequencies in the perforated ear of the cases.	56
6b.	Distribution of the ABG change post- operatively at different frequencies in the perforated ear of the cases.	56
7.	Mean, SD and range of the air bone gap at different frequencies in the perforated ear of the cases pre-and post-operatively.	57
8.	Air conduction pure tone thresholds at different frequencies in the ear with intact tympanic membrane of the unilateral cases.	57