

## ANSWERING REVIEWERS



January 24, 2014

Dear Editor,

Please find enclosed the edited manuscript in Word format (file name: 8743-review.doc).

**Title:** VEMP

**Author:** Toshihisa Murofushi

**Name of Journal:** *World Journal of Otorhinolaryngology*

**ESPS Manuscript NO:** 8743

The manuscript has been improved according to the suggestions of reviewers:

1 Format has been updated

2 Revision has been made according to the suggestions of the reviewer

**#503680**

VEMP, as a developing technology, has a lot of questions needed to be clarify. the paper give us many information about VEMP. I prefer to publish. but there is minor mistake in the abstract. "A prominent feature of VEMP in Meniere's disease is s a---" There should be no "s"

Thank you. I deleted "s".

**#503703**

This is an informative review presenting the state-of-the-art on the subject of VEMP with clinical relevance. In our opinion, several topics should be addressed in order to further improve the quality of the manuscript. Page 3: please use the term "responsiveness" instead of "responsibility".

I changed responsibility to responsiveness.

Page 4: cVEMP: please mention what is considered to be a "large" interaural asymmetry of p13-n23 amplitudes or "abnormal" response thresholds in quantitative terms.

I added the following sentences. (P.4)

For assessment of interaural asymmetry of amplitudes, percent cVEMP asymmetry has been used (15,16).

Percent cVEMP asymmetry =  $100 (CA_{cu} - CA_{ca}) / (CA_{cu} + CA_{ca})$

CA<sub>cu</sub>(a) = corrected amplitude of p13-n23 on the unaffected (affected) side

The upper limit of percent cVEMP asymmetry in our laboratory is 41.6. The above-mentioned guideline indicated 50.0 as a strict standard of the upper limit of percent cVEMP asymmetry (15). As latencies can be affected by recording conditions, each laboratory should set their own normal range. The upper limit of p13 latency in our laboratory is 17.7 msec (125dB SPL 500Hz STB ACS)(16). Thresholds lower than 95 dB SPL (500Hz STB ACS) are definitely abnormal.

Is there a cutoff air-bone gap of human ears with middle ear problems that makes recording of cVEMP useless?

I added the following sentence. (P.4)

Air-bone gap more than 15dB makes recording of cVEMP to ACS useless.

What is the impact of sensorineural hearing losses on cVEMP?

I added the following paragraph. (P.8)

Sensorineural hearing loss

Sensorineural hearing loss itself does not affect cVEMP or oVEMP. Patients with total hearing loss showed normal responses (1,3,44,45).

And I added 2 references (44,45).

**44) Ozeki H, Matsuzaki M, Murofushi T.** Vestibular evoked myogenic potentials in three patients with bilateral profound hearing loss. *ORL* 1999; 61: 80-83

**45) Chihara Y, Iwasaki S, Ushio M, Fujimoto C, Kashio A, Kondo K, Ito K, Asakage T, Yamasoba T, Kaga K, Murofushi T.** The output of ocular vestibular-evoked myogenic potentials (oVEMP) is dependent on the existence of extraocular muscles but independent of facial and cochlear nerve activities. *Clin Neurophysiol* 2009; 120: 581-587

oVEMP: please mention what is considered to be a “large” interaural asymmetry of N1-P1 amplitudes, prolonged peak latencies or “abnormal” response thresholds in quantitative terms. What is the impact of sensorineural hearing losses on oVEMP?

I added the following sentences.(P.5)

For assessment of interaural asymmetry of amplitudes, percent oVEMP asymmetry has been used (16). The formula is basically the same as percent cVEMP asymmetry. The upper limit of percent oVEMP asymmetry in our laboratory is 44.3. The upper limit of N1 latency in our laboratory is 13.6 msec (125dB SPL 500Hz STB ACS) (16). As latencies can be affected by recording conditions, each laboratory should set their own normal range. Thresholds lower than 105 dB SPL (500Hz STB ACS) are abnormal.

I added the following paragraph. (P.8)

Sensorineural hearing loss

Sensorineural hearing loss itself does not affect cVEMP or oVEMP. Patients with total hearing loss showed normal responses (1,3,44,45).

And I added 2 references (44,45).

**46) Ozeki H, Matsuzaki M, Murofushi T.** Vestibular evoked myogenic potentials in three patients with bilateral profound hearing loss. *ORL* 1999; 61: 80-83

**47) Chihara Y, Iwasaki S, Ushio M, Fujimoto C, Kashio A, Kondo K, Ito K, Asakage T, Yamasoba T, Kaga K, Murofushi T.** The output of ocular vestibular-evoked myogenic potentials (oVEMP) is dependent on the existence of extraocular muscles but independent of facial and cochlear nerve activities. *Clin Neurophysiol* 2009; 120: 581-587

Page 5 : Pathways of VEMP: a schematic diagram (as a figure) showing the respective neural pathways reported in the manuscript would considerably add to the educational value of the manuscript.

I added a new figure (Fig.3)

According to this insertion, Fig.3 in the first version was changed to Fig.4 in the revised version.

Vestibular neuritis: please provide reference(s) supporting the conventional diagnostic criteria of VN

I indicated a reference (22).

Page 6: BPPV: do reported findings on BPPV involve BPPV of the posterior semicircular canal? If yes, please add this information regarding the canal type of BPPV in the manuscript.

I added that authors cited in this review studied patients with posterior canal BPPV.

**#503691**

It may be wise to summarize the abstract as it contain 328 words and better to be 250 words.

I removed some sentences. Now it is within 250 words.

little spelling mistakes e.g. word patent in the following paragraph. Idiopathic otolithic vertigo Murofushi et al. reported that some patients complained of lateral tilting sensation in the roll plane, or tilting or translational sensation in the pitch plane without rotatory vertigo (41,42). Majority of patients with these symptoms had absent or decreased responses of oVEMP and/or cVEMP (Fig.3). Patients with tilting sensation in the roll plane had tendency to show abnormal oVEMP, while patients with tilting or translational sensation in the pitch plane had tendency to show abnormal cVEMP. Murofushi et al. (41,42) proposed “idiopathic otolithic vertigo” as a new clinical entity, because the otolith organs are sensors of linear acceleration and dysfunction of them could result in illusion of linear movement (43). Abnormal VEMP findings may be essential for diagnosis of otolithic vertigo. As a next step, pathophysiology of idiopathic otolithic vertigo should be clarified. Idiopathic otolithic vertigo

I corrected typographic errors..

3 References and typesetting were corrected

Thank you again for publishing our manuscript in the *World Journal of Otorhinolaryngology*.

Sincerely yours,

Toshihisa Murofushi, MD PhD  
Professor  
Department of Otolaryngology  
Teikyo University School of Medicine  
Mizonokuchi Hospital  
3-8-3 Mizonokuchi Takatsu-ku  
Kawasaki 213-8507 Japan