A PRELIMINARY STUDY ON THE EFFECT OF AUDITORY ATTENTION ON CONTRALATERAL OTOACOUSTIC EMISSION SUPPRESSION.

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ABSTRACT

Introduction: The descending olivocochlear system is known to provide parasympathetic input to the cochlea to reduce the outer hair cells activity in the event of exposure to loud noises. It could be measured by using otoacoustic emission with contralateral suppression. This signal routing is affected by auditory attention through the top down effect. This study is looking into the effect of auditory attention on otoacoustic emission suppression by using different listening hierarchy skills.

Methods: 12 young adults volunteered for this experiment. All participants have normal hearing and normal tympanometry result during the measurement. Transient evoked otoacoustic emissions (TEOAE) was measured using 80ms non-linear clicks, at 60 dB peakSPL on the ipsilateral ear. The contralateral ear was presented with the masking white noise at 65 dB SPL, embedded with train of 100ms tone bits. The first condition is all participants were not required to count the train of tone bits during the recording. The second condition was participant had to detect and count the 1000Hz tone bits. The third condition required participants to detect, discriminate and count the combination of 1000Hz and 4000Hz tone bits. TEOAE responses being analysed from 3.5 ms to 16.6 ms with 32 samples per set and a maximum of 1000 set.

Results: A paired sample t-test for auditory detection shown no significant difference of suppression effect between attention and without attention on the right ear, $t(11)=-2.178$, $p>0.05$; but there is statistically significant for auditory discrimination condition, $t(11)=-3.114$, $p<0.05$. However, there is no significant effect of attention on the left ear for both variable, $t(11)=-1.129$, $p>0.05$ and $t(11)=-1.601$, $p>0.05$.

Conclusions: This result showed there was an influence of level of attention on the auditory periphery via descending pathway and there was an ear difference that might be a contributing factor that affects the attention.

Keywords: Auditory attention, Otoacoustic emission with suppresion, Otoacoustic emission

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