

Acute effects of sleep deprivation on the central auditory processing in healthy adults

Paulo Breno Noronha Liberalesso¹

Liberalesso PB. Acute effects of sleep deprivation on the central auditory processing in healthy adults [thesis]. Curitiba: Universidade Tuiuti do Paraná; 2011.

Objective: To evaluate the impact of 24 hours of sleep deprivation on central auditory processing in healthy adults. **Methods:** Thirty healthy adults were selected, 17 (56.7%) were female and 13 (43.3%) male, aged 30.75 ± 7.14 (average years \pm SD). The volunteers were submitted to audiological evaluation by pure tone audiometry test, speech recognition threshold, percentage index of speech recognition, acoustic immittance measures, the Staggered Spondaic Words test (SSW) and Random Gap Detection test (RGDT). The central auditory processing evaluations were performed in two situations: without sleep deprivation and after 24 hours of absolute sleep deprivation. The average results in both situations without sleep deprivation and after sleep deprivation were compared using the Student's *t* Test. **Results:** The mean value of RGDT before the sleep deprivation was 6.4 ± 2.8 ms and post-sleep deprivation was 8.0 ± 2.9 ms ($p=0.0005$). The average of the results of RGDT in males, without sleep deprivation, was 4.7 ± 2.7 ms and after sleep deprivation was 6.6 ± 2.9 ms ($p=0.0066$). The average of the results of RGDT female without sleep

deprivation was 7.7 ± 2.4 ms and after sleep deprivation was 9.0 ± 2.5 ms ($p=0.0208$). The average of the SSW test results for the right ear before the sleep deprivation was $98.4 \pm 1.8\%$ and post-deprivation was $94.2 \pm 6.3\%$ ($p=0.0005$). The average of the SSW test results for the left ear before the sleep deprivation was $96.7 \pm 3.1\%$ and post-deprivation was $92.1 \pm 6.1\%$ ($p=0.0000$). The average of the results of SSW male without sleep deprivation for the right ear was $98.5 \pm 1.3\%$ and after sleep deprivation was $93.9 \pm 5.2\%$ ($p=0.0080$). The average of the results of SSW male without sleep deprivation for the left ear was $96.5 \pm 2.9\%$ and after sleep deprivation was $93.9 \pm 5.2\%$ ($p=0.0076$). The average of the results of SSW female without sleep deprivation for the right ear was $98.4 \pm 2.2\%$ and after sleep deprivation was $94.4 \pm 7.3\%$ ($p=0.0143$). The average of the results of SSW female without sleep deprivation for the left ear was $96.9 \pm 3.4\%$ and after sleep deprivation was $93.9 \pm 5.2\%$ ($p=0.0010$). **Conclusion:** The results demonstrated statistically significant worsening in RGDT and SSW in healthy adults volunteers when deprived of sleep for 24 hours.

Study conducted at the Graduate Program in Human Communication Disorders – Otoneurology, Universidade Tuiuti do Paraná – UTP – Curitiba (PR), Brazil, for obtention of the Doctorate in Human Communication Disorders – Otoneurology, under supervision of Prof. Dr. Ari Leon Jurkiewicz.

Conflict of interests: None

(1) Department of Pediatric Neurology and Service of Neurophysiology/EEG/Video-EEG, Hospital Pequeno Príncipe, Curitiba (PR), Brazil.

Correspondence address: Paulo Breno Noronha Liberalesso. R. Benjamin Constant, 90, Centro, Curitiba (PR), Brasil, CEP: 80060-020. E-mail: paulo.neuroped@gmail.com