

Interhemispheric differences of sleep EEG complexity

Waldemar Szelenberger¹, Jiří Wackermann², Michał Skalski¹, Jacek Drojewski¹ and Szymon Niemcewicz¹

¹Department of Psychiatry, Medical Academy, 27 Nowowiejska St., 00-665 Warsaw, Poland, Email: wald@psych.waw.pl; ²Neuroscience Technology Research s.r.o., 26 Žitná St., CZ-120 00 Prague, Czech Republic

Abstract. Complexity of EEG (Ω), a global measure reflecting degree of spatial synchronization, was computed for whole night recordings of sleep EEG of 10 healthy volunteers, 9 males and 1 female (age 21-53) and 6 depressive patients, 5 males and 1 female (age 23-64). Sleep was scored visually in 20 s epochs, Ω was calculated in 2.5 s segments and the median from 8 segments (20 s) was calculated. Ω was calculated for the whole field of 21 electrodes and for the left and right hemisphere separately (2 x 8 electrodes). Measure of global power (Σ) and generalized frequency (Φ) were also computed for the same data. In healthy subjects the complexity was higher over the right hemisphere during waking, and the difference shifted to higher complexity over the left hemisphere in slow wave sleep ($F=5.15$, $df_1=4$, $df_2=6856$, $P<0.0005$). The opposite trend was found in depressives ($F=10.51$, $df_1=4$, $df_2=3960$, $P<0.0001$).

Key words: sleep, interhemispheric differences, EEG complexity, depression

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