

Category : **Brain: Neurologic disease**

A239 - Correlation between changes in sleep structure according to polysomnography, melatonin levels, MRI and FDG PET in patients with chronic disorders of consciousness

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Introduction:

Disorders of consciousness (DOC) patients often show severe sleep fragmentation, which is likely caused by structural changes in the brain areas responsible for sleep maintenance.

Methods:

The study was based on the results of examination and treatment of 43 DOC patients. The average duration of DoC - 4.4±0.7 months. The 1 group - patients with a total score CRS-R of 0-5 points, 2 group of 5-8, and 3 group - > 9. All patients underwent polysomnography (PSG) for 2 days, melatonin level was measured 6 times a day: at 8 am, 15 pm, 18 pm, 21 pm, 24 pm and 3 am, daily urine collection to determine 6-sulfatoxymelatonin in the daily and night portions of urine. MRI (3 Tesla) with a detailed assessment of structural changes in the brainstem, hypothalamus and thalamus according to the " MRI atlas of the human hypothalamus " by M. Baroncini. Also, PSG data were compared with PET CT of the brain.

Results:

41, 7 % of patients of group 1, there were no sleep cycles. The NREM/REM ratio in patients of the 1 group was almost twice as high as in patients of the 2 and 3 groups. In patients of 3 group total sleep time was higher, and sleep cycles were recorded in 58.3% of patients, the average value of the N2/total sleep time ratio was higher, but the average value of the N1/total sleep time ratio in patients of the third group was lower than in other groups. Melatonin level was maintained in patients of all groups. Relationship of PSG changes in the FDG PET data was not found. When analyzing macroscopic changes of the structure morphology (thalamus, hypothalamus, midbrain, corpus callosum), relationship with the assignment to the group and the PSG data was not identified.

Conclusion:

There are no clearly defined PSG patterns that reliably define each of the reviewed DOC states. We have received evidence indicating that sleep in DOC is under normal homeostatic control –level and rhythm of melatonin secretion were preserved in all groups

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