

Category : **Brain: Neurologic disease**

A75 - Blood metabolomic profiling of chronic disorders of consciousness.

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Introduction:

Aim of the study was to investigate the main differences in metabolic disorders in DOC patients (VS/UWS, MCS) and to identify changes in the metabolome depending on the phase of sleep or wakefulness.

Methods:

Metabolomic plasma profile of 10 VS/UWS (group 1), 6 MCS (group 2). etiology: group 1 (TBI - 2, hypoxia - 8), group 2 (TBI - 5, hypoxia -1). Jugular vein was catheterized in all patients, blood sampling was carried out in a waking state during the daytime for 2 days. Aliquots of pooled plasma samples were purified from protein components and analyzed by high-performance liquid chromatography in two modes – reversed-phase and hydrophilic. Mass spectrometric detection was carried out in full ion current scanning mode: registration of positively charged ions in the m/z range from 50 to 1300 a.e.m. Data alignment and normalization were performed using MS-DIAL ver software. 4.70 Statistical analysis - MetaboAnalyst 5.0 software

Results:

A non-target metabolomic analysis of patient groups in VS/UWS and MCS, on the reversed-phase column four metabolites (with VIP> 0.5), the level of which is most modulated depending on the group under consideration, were identified: 4 (m/z 124.0867, $R_t=17.67$, $p < 0,01$), 33 (m/z 782.5722, $R_t=17.69$, $p < 0,01$), 6 (m/z 125.0904, $R_t=18.43$, $p < 0,01$) and 1 (m/z 463.2304, $R_t=15.78$, $p < 0,01$), and there were no any significant differences between daytime and nighttime blood sampling. Analysis on a hydrophilic column showed significant quantitative differences of 3 metabolites in groups

Conclusion:

In the course of the study, a set of metabolites was established - the use of biomarkers for the differential diagnosis of VS/UWS and MCS – they are 4, 33, 6, 1 for an experiment on a reversed-phase column and 14, 35, 41, 48 for an experiment on a hydrophilic column, based on their significant contribution to the manifestation of intergroup and intragroup differences.

References:

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