

# 9<sup>TH</sup> MULTIDISCIPLINARY INTERNATIONAL Conference of Biological Psychiatry

## «Stress and Behavior»

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### CONFERENCE ABSTRACTS

#### 6. GENERAL QUESTIONS: PSYCHIATRY OF STRESS

##### ESTIMATION OF ADAPTIVE REGULATION AT EARLY CLINICAL STAGES OF CEREBRAL ATHEROSCLEROSIS PATIENTS WITH OCCUPATIONAL DISEASES

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Primary prevention of cerebrovascular (CVD) and other diseases inducing vascular lesions of the brain, remains the most perspective way of therapy [Odinak, Mihailenko, 2003]. Adaptations involve limbic-reticular complex structures, and sensory-motor, mental and vegetative activity integration [Vein, 1988; Soloveva, 1988]. Desynchronization and synchronization of EEG are objective indices of activity of ascending activating systems. Analysis of alpha rhythms [Alekseev, 1988; Vein et al., 2003] allows the most adequate assessment of these systems. Our present study assessed functional condition of nonspecific brain systems in patients with chronic dust bronchitis (CDB) and early clinical forms of a cerebral atherosclerosis (ECFCA). Subjects were 95 CDB patients (38–63 y.o.) diagnosed with ECFCA, proved by ultrasound dopplerography of head main arteries and functional REG. This group consisted of 25 experienced miners working in dust conditions without signs of ECFCA (aged 27–42 years, mean 33.6). Based on respiratory failure (RF) classification, the patients were divided as follows: 21 CDB patients without RF signs, 32 CDB patients with primary RF signs, 42 CDB patients with secondary RF signs. The functional condition of brain was analysed by one-stage EEG, ECG and galvanic-skin reflex (GSR) recording at rest, on repeated 1<sup>st</sup>, 5<sup>th</sup> and 10<sup>th</sup> inert sound stimuli, and emotional simulation. The speed and order of fading of tentative reaction (TR) components assessment was based on activation of EEG (desynchronization test, DT), nonspecific answer (NA) in EEG and GSR indicators. Numerous EEG results of CDB patients with secondary signs of RF and developing ECFCA show moderate increase of alpha index up to  $55.42 \pm 3.25$ ). The CDB patients with primary RF signs, however, show a remarkable decrease ( $32.57 \pm 4.12$ ;  $p < 0.001$ ). During functional testing and simulation of the intense wakefulness, the CDB patients' with RF secondary signs also showed considerably lower degree than those of the second group. Much greater alpha rhythm both at the moment of audio signals, and during emotional stimulation, also confirm these findings. Thus, the RF progress of CDB patients with growing ECFCA is characterized by synchronizing change intensity of EEG expressed by rapid alpha-rhythm reduction in the intense wakefulness state. TR data show that the SGR group faded away first, then DR and NA. Our results show that all AR components lasted longer in CDB patients with primary RF signs. Faster attrition of reactions to a shown stimulus was recorded in CDB patients with secondary RF signs rather than in CDB patients with primary RF signs, and of the control. Thus, the TR study of CDB with ECFCA patients confirms disturbance of adjustment cerebral processes due to destabilization of synchronizing and desynchronizing influences. The reactions of brain nonspecific systems in CDB patients with ECFCA to assertion of afferent stimuli at secondary signs of RF reflect the expressed inaccuracy of adaptive processes. Thus, the analysis of adaptive functions of CDB patients with ECFCA, given their complex and universal regulation of nonspecific cerebral systems, suggests close links between the disturbance of adaptive response and the extent of respiratory failure.