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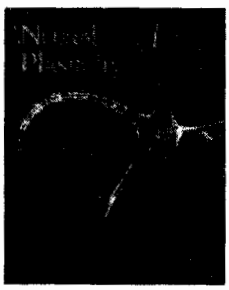

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95%CI=1.61-4.58) frequency and decrease of the *239/*239 genotype (OR=0.42, 95% CI=0.24-0.72) frequency were registered in the depressive group compared to those in the control group. No significant differences in genotype or allele frequency distribution in the rs6651806 of the MAOB gene were found between UD patients and control groups in individuals of Russian or Tatar descent. Conclusion: Our study supported the hypothesis of the involvement of polymorphisms of MTHFR and MAOA genes in the development of unipolar depression in Russian and Tatar descents. We conclude that the polymorphisms of the MAOB genes are unlikely to have a major role in the pathogenesis of UD. The research was supported by the Russian Humanitarian Research Fund (the grant № 06-06-00163a) and Russian Science Support Foundation.

AUDITORY INFORMATION PROCESSING (ODDBALL PARADIGM): AN IMPACT OF COMT POLYMORPHISM

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Introduction: The aim of the study was to determine to what extent the different stages of auditory information processing were influenced by a molecular-genetic factor (catechol-o-methyl transferase (COMT) gene polymorphism), which was shown to modulate the dopamine activity in the prefrontal cortex. Considering the role of dopamine in the pathogenesis of some mental illnesses, the study was also conducted in patients with schizophrenia and schizoaffective psychosis. Methods: 57 patients (F20, F25, ICD-10) and 52 mentally healthy relatives of the patients (controls) were examined. Auditory ERPs in the "active" oddball paradigm were recorded on the Brain Atlas mapping system (Bio-logic, USA), with 80% of non-targets (1000 Hz, 60dB) and 20% of targets (2000 Hz, 60dB) stimuli. Peak amplitudes and latencies of N100, P200 (ERP to non-targets), N100, N200, P300 (ERP to targets), MMN (difference wave) were analyzed. DNA was extracted from the white cells of venous blood by Master Pure kit (Epicenter, Madison WI). The COMT Val158Met polymorphism was assayed using an ABI SnaPshot ddNTP Primer Extension kit and the products were analyzed in an ABI 310 DNA analyzer. An impact of different COMT genotypes on ERP was assessed statistically separately for each group (all tested subgroups were matched for age, sex and, in case of patients, for the diagnosis). Results and discussion: In both groups, COMT polymorphic variants were associated with ERP to targets. In patients, the carriers of the Val/Met genotype had the longest N100 and N200 latencies, while in controls the Met/Met genotype was associated with the shortest N100, N200 latencies and largest P300 amplitudes. Also in controls, the carriers of the Val/Val genotype had the longest P200 (ERP to non-targets) latencies. There was no statistically significant association between the COMT polymorphism and MMN. The findings show the relationship between the higher dopamine activity in the prefrontal cortex (due to the tested genetic factor) and "better"processing of significant auditory information in norm with deterioration of such correlation in schizophrenia. The specific impact of prefrontal cortex dopamine activity on generation of different waves of auditory ERP, in respect to "involvement" of latencies in case of the earlier components and amplitudes - for P300, also merits attention. The study was partially supported by RFH grant N08-06-00084a.

MENTAL STATUS AND HEART RATE VARIABILITY

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Introduction: A number of studies have shown that heart rate variability (HRV) and especially power of high frequency spectral range (0.15 – 0.5 Hz) relates to mental status. But, there are not reliable psycho-diagnostic techniques based on analysis of HRV so far. "Complex and largely undiscovered physiology" (Taylor & Studinger, 2006) of HRV is a probable reason of

this. The purpose of this study was to discover the features of heart rate variability which are actually related with mental status. Methods: Three groups of 64, 39 and 19 healthy volunteers were in study. Actual mental status was evaluated by the Russian questionnaire technique POMS (Profiles of Mood States). In order to avoid a contradiction when series of time intervals (RR) are analyzed as a function of the same time, we analyze them as a function of number. 150 harmonics were defined by digital Fourier transformation technique. In order to normalize the distribution of frequency values they were transformed logarithmically. To investigate the frequency structure of heart rate oscillations, the factor analysis of the frequencies was performed. Results and discussion: The results in each group were similar. The factor loadings diagrams of the four first factors have forms like a wave. If the waves were interpreted as physiological phenomena of periodical modulation of heart rate, we can conclude that there are at least three such phenomena in high frequency range instead of the one mainly being discussed now. The second factor has the wave at about 0.14 – 0.24 1/beat and peak at 0.18 1/beat. This may only be the frequencies of respiratory sinus arrhythmia. The next two factors have not yet been physiologically interpreted. The wave of the third factor is about 0.21 – 0.31 1/beat with peak is at 0.26 1/beat. The first factor which has a grates eigenvalue has the wave at frequencies from 0.25 up to 0.5 1/beat and peak 0.35 1/beat. The periodogram values at the frequencies of the first factor have significant positive correlations with the POMS scale of Vigor. Stepwise methods of multiple regression analysis allow for a good model with R-square equal to 0.83. Conclusion: The results let us suppose that there are at least three periodical phenomena of HRV in frequency range related with mental status. Two of them have not been discovered and physiologically explained yet. The most powerful of these phenomena relates to mental status. It has frequencies from 0.25 to 0.5 1/beat and peak 0.35 1/beat. Despite the difference of the peak frequencies, the waves of factor loadings are overlapped. Therefore, regression models would be more fit for useful evaluation of mental status, rather than the power of spectral density within any frequency range.

S 4. ANIMAL MODELS OF BRAIN DISORDERS

Chairs: Yuriy Pastuhov (Russia), Irina Ekimova (Russia)

BEHAVIORAL DIFFERENCES BETWEEN GENDERS IN ANIMAL MODELS OF DEPRESSION IN MICE

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Introduction: One of the most prevalent psychiatric diseases is depression, with an incidence nearly two times higher among women than men.The goal of our study was to determine whether this difference between genders in humans can also be detected in mice using two animal models of human depression: tail suspension and forced swimming. Materials and methods: Male and female NMRI and DBA mice were used with normal or reversed light-dark diurnal cycle to examine contingent differences between inbred and outbred strains. The effects of two well known antidepressants: citalopram (SSRI) and imipramine (TCA) have been tested in these models. Results: In the tail suspension test, no difference was found between genders in NMRI mice housed in normal light-dark cycle. However, a significant difference has been detected within groups housed with a reversed diurnal cycle: females spent significantly more time in immobility (average: 54 s, $p<0.05$) than males. Male DBA mice displayed similar behavior to male NMRI mice, as there was no difference in time spent in immobile state between the two strains. Experiments with DBA female mice were not evaluated, since these animals displayed an atypical behavioral response (climbing up on the tail). Citalopram (5 mg/kg) and imipramine (25 mg/kg) showed antidepressant-like effect in both strains following intraperitoneal administration. In the forced swimming test, there was no difference in immobility