

to affection as neurons and the glia cells which are responsible for neurons trophies, conduction of nervous impulse, processes of irritation and inhibition of neurons. This autoimmune reaction entailed by destruction of axon membrane and glia cells producing myelin. Many patients in all studied groups were sensitized to Gal-C-1. It defined an involvement of external membranes of myelin and oligodendrocytes where galactocerebrosides are localizing in pathological process.

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The cerebroprotective effects of Semax and Selank in primates at different types of neurosis

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It is known that at stresses, the immune system and its interactions with nervous and endocrine systems are disturbed (Leonard 2000). At present the great role of brain function disturbances correction belongs to biologically active peptides such as Selank (Sel) and Semax (Sem). The newly obtained data show that Sel has immunomodulatory features (Myasoedov 2007). It has been shown, that the application of Sem and Sel exerts positive therapeutic effect in different neurological diseases. There are no data on cerebroprotective effects of Sem and Sel in primates. The present work is devoted to the study of Sem and Sel role in the compensation of mentally disturbed (mnestic, cognitive) and vegetative functions in primates (*Macaca mulatta*). The experiments were performed in two series. The first series was made with freely moving animals, while the second one used monkeys placed into primatological chair with multiparametrical registration of objective (EEG, vegetative and motor) components of Higher Nervous Activity. It has been established that in monkeys the compensatory effects of drugs are dose dependent, being more effective with intranasal administration and having differential effects at various types of neurosis. It has been shown that the intranasal administration of Sel induces long lasting changes in monkeys' disturbed behaviour during neurosis (loss of fear, disappearance of aggression, the facilitation of handling reactions and communications relations). The long duration compensation of the mentally disturbed (memory processes, its EEG and homeostatic parameters) took place on the Sel (30–50 mg/kg) background. EEG indicators of delayed conditional reflexes (DCR) have been recorded mainly at the delay phase. The delay time is increased up to 90 s (in neurotic monkey it is about 10 s). The antistressor effects of Sel are independent on neurotic type disturbances, and are long lasting (till 6 months). The cerebroprotective effects of Sem are especially significant at the administration of drug small (0.3–0.5 mg/kg) doses. At the Sem background the operative memory is intensified. After Sem ultra-small doses administration sedative effects take place during 10–14 days. The data obtained may serve as neurophysiological background for differential application of Sem and Sel in neurological clinic.

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Immunosuppressive therapy (IT) with autologous hematopoietic stem cell transplantation (AHSCT) as a new treatment modality in multiple sclerosis (MS)

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During the last decade IT+AHSCT has been used with increasing frequency as a therapeutic option for MS patients. The goal of our research was to study long-term treatment outcomes in MS patients after IT+AHSCT.

Fifty-six patients with different types of MS (secondary progressive SP – 27, primary progressive PP – 10, progressive-relapsing PR – 1, relapsing-remitting RR – 18) were included in this study (mean age – 32.0, range: 17–51; male/female – 22/34). Median EDSS at base-line was 6.0 (range 1.5–8.0). The median follow-up duration was 18 months (range 6–84 months). Neurological evaluation was performed at baseline, at discharge, at 3, 6, 9, 12 months, and every 6 months thereafter following IT+AHSCT; MRI examinations – at baseline, at 6, 12 months, and at the end of follow-up.

No transplant-related deaths or unpredictable severe adverse events were observed. All of 45 patients included in the efficacy analysis experienced improvement ($n=28$) or clinical stabilization ($n=17$). Among the patients with improvement there were 15 SPMS, 4 PPMS, 8 RRMS, and 1 PRMS. Among the patients with stabilization there were 9 SPMS, 4 PPMS, and 4 RRMS. Two patients (SPMS and PPMS) deteriorated to a worse score after 18 months of stabilization; 2 others (SPMM and RRMS) progressed after 12 and 30 months of improvement. Results of MRI scans were available in 37 patients. Sixteen patients (43.3%) had active lesions at baseline and all turned to inactive status except two cases. Of the 21 patients without active lesions pretransplant 20 remained inactive; one patient showed disease activity after transplantation. No active, new or enlarging lesions were registered in patients without disease progression. All the patients without disease progression were off therapy throughout the post-transplant period.

In conclusion, the results demonstrate high efficacy of IT+AHSCT in MS patients. Further studies should be done to establish the best timing for transplantation and to validate treatment regimens.

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Immunological and multifractal ECG analysis and analysis of status in patients with progressive forms of schizophrenia and schizotypic disorders

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It is well known that stressful life events trigger neurotransmitter changes in the brain providing biological links between stress and the changes in endocrine, immune and neurotransmitter system. But the link of immune system with cognitive disorders in the development of various mental disorders is still not clear. Based on investigation of parameters of the immune system, the results of psychological study and multifractal ECG analysis, we try to point some biological peculiarities of patient with progressive forms of schizophrenia and schizotypic disorders.

An immunological investigation was carried out with 54 schizophrenic patients. Distribution in groups according to the disease forms of the ICD-10 was as follows: paranoid schizophrenia (F 20.0) – 22 patients, simple form of schizophrenia (F 20.6) – 15 patients, schizotypic disorder (F 21) – 11 patients, and schizoaffective disorders (F 25) – 6 patients. The control group was constituted by patients' relatives – 22 persons.

In previous study it was shown that the multifractal analysis of 1/f^β EEG rhythms fluctuations may be a very effective and promising method for the clinical evaluation of schizophrenia and schizophrenic disorders. So we supposed that other biological markers could correspond to this item.

The immunological status evaluation was performed over the following parameters: 1) number (in percent) of subsets of lymphoid cells – CD3⁺; CD4⁺; CD8⁺; CD20⁺; immunoregulatory ratio (CD4⁺/CD8⁺); 2) concentration of immunoglobulins of classes A, G, M; 3) activity of neutrophils-cells – NBT-test 4) degree of lymphocytes sensitization to neurospecific antigens (S-100 protein, neuronal membranes protein, myelin basic protein, galactocerebrosides of C-1 type).

Schizophrenia is characterised by neuroimmune disturbances including both general disturbances and those characteristics of the corresponding form of schizophrenia. General alterations characteristics can comprise: by pathology of biological membranes (neuronal membranes, external membranes of myelin and oligodendrocytes, sheaths of axons and glial cells), redox processes disbalance in neutrophyles, global change of immunity (cellular and humoral branches), trophic function of neurones, afferent conductivity and