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Characteristic Features of the Content of Natural IgG Class Autoantibodies to Nervous Tissue Proteins in Neuroaids

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Characteristic Features of the Content of Natural IgG Class Autoantibodies to Nervous Tissue Proteins in Neuroaids

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I. Introduction

According to UNAIDS, about 50 million people are HIV-infected on the planet. People (less than 10% know about their illness) 16 million already died of AIDS. HIV infection is registered in152 countries of the world. More than 60000 newly diagnosed HIV carriers are registered on a monthly basis in the world, every 4 minutes a new AIDS patient, every 15 seconds a new infected HIV [1, 3 and 6]. It is known that neurospecific antibodies to hippocampus and other neuronal structures contribute to the implementation of the launch and further maintenance of the generator pathologically intensified excitation and hence the development of neurological complications with HIV [4, 5].

The purpose of the study: To establish the role of natural autoantibody (AAB) class IgG to nerve tissue proteins (S-100, GFAP, NF-200 and Main Protein of Myelin (MPM)) in the pathogenesis of the nervous system lesions in HIV.

II. Materials and Methods

The level of autoantibodies to neurotropic proteins was determined in the blood serum of 99 patients with HIV Infection. The average age of patients was 38,9±1,2 years, of them 44,4 % (44) were women, 55,6% (55) were men. In the course of the study, 4 groups of the patients were identified: defeats of the neurosystem, conditionally not connected with HIV and caused by stress, toxic-allergic influence, presence of somatic pathology and other factors (48 patients, 48.5%; 1st group); with the primary lesion of nervous system of HIV without significant immunodeficiency in the blood and symptoms of lesions of other organs and systems, but concurrent with the violation of immunologic constants (primary neuroAIDS S-9.1% (9 patients); 2nd group); With the secondary lesion of the nervous system as a manifestation of intensified opportunistic infection and progressed expressed immunodeficiency (secondary neuroAIDS-22, 2 % (22 patients); 3rd group); Patients without lesions of the nervous system (20 patients, 20.2%; 4th group). A quantitative definition of serum immune reactivity antibodies (AB1 and AB2) to the receptors of neurotransmitters was carried out with the help of solid Immunoassay method ELI-N-Test and the same name test-sets, production of "MITS Immunkulus" (Russia). 20 clinically healthy people, comparable in sex and age were monitored.

III. Results

In clinically healthy people (control group), the defined indices were as follows: AAB S100-77.5±7.6 y.e., AAB GFAP -57.9±5.7 y.e., AAB NF-200-72.9±7.1 y.e, AAB MPM-58.8±5.6 y.e. When evaluating the results of immunological research it was established that all groups of patients differed from the control group, both in level and in the degree of dispersion of studied immunological indices. And the nature of immune disorders directly depended on the presence of lesions of the nervous system. So, the highest among the studied AAT in all groups was the level of AAB to S100 and in patients with the defeat of the nervous system against the background of HIV, this figure exceeded the normative values on average 1.9 times ($p < 0.01$), and in patients without the defeat of the neurosystem 1.6 times ($p < 0.05$). Such a significant increase in the level of AAB to the protein S100, which is a calcium-binding protein, can be a confirmation of the hypothesis that one of the links of the pathogenesis of lesions of the neurosystem with HIV is to increase the permeability of neural membranes for ions Ca^{2+} with the increase of their concentration in the intercellular space. It should be noted that AAB to the protein S100, Depolarized the membrane of the neuron, change its potential (table1).

The level of whey autoantibodies to neurotropic proteins in patients with symptomatic and idiopathic epilepsy, y.e.

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Table 1

Indicators	1st group (n=48)	2nd group(n=9)	3rd group (n=22)	4th group (n=20)	Control (n=20)
NF200	127,6±8,9*	137,6±6,9*	121,8±8,2*	101,8±6,2^a	72,9±7,1
GFAP	100,4±7,2*	118,4±5,2*	102,5±8,3*	92,5±7,3a	57,9±5,7
S100	130,3±11,8*	150,3±11,8*	124,1±4,6*	104,1±5,6^a#	77,5±7,6
MPM	118,8±7,7*	119,6±6,7*	102,4±8,0*	82,4±5,0*^a#	58,8±5,5

Note: *-reliability of data in relation to the control group (p<0.05-0.001; ^ reliability of data in relation to 1st group (p < 0.05); A – reliability of data on the relation to the second group (p<0.05); # - data reliability in relation to 3rd groups (p<0.05)

Given the fact that the soluble Ca-binding protein neural tissue S100 is a trophic factor for Serotoninergic neurons, regulates the permeability of ion channels the detection of autoantibodies in this protein has a great clinical value in neurological practice and can be used as a marker for brain tissue damage in patients with HIV. Analysis of the level of AAB to the protein NF200 also showed a reliable increase in their titles in patients in all groups, including patients without defeating the NS against the background of HIV (on average 1.7 times with the defeat of the NS and 1.3 times without defeat, respectively, p<0.05). At the same time there was a reliable prevalence of the level of AAB to NF200 in patients with non-defeated NS (101.8±6.2 y.e. against 72.9±7.1 y.e, p<0.05),which indicates the excess plasticity, which is likely to preserve more durable pathological connections of the neurological system in patients with HIV.The level of whey AAB to Neurospecific protein MPM also reliably exceeded the values of the control group in all groups on average 1.7 times in patients with the defeat of the NS, (p<0.01) and 1.3 times in patients without defeat NS, respectively, (p<0.05). It is known, that myelin possesses the expressed immunogenic property, and its destruction is the universal mechanism of reaction of nervous tissue on various damages. The emergence of elevated indices of antibodies to MPM in the blood serum indicates a violation of the brain barrier, the most significant in patients without defeating the NS against the background of HIV. It should be noted that GFAP plays fundamental role in maintaining the normal functioning of both individual astrocytes and CNS as a whole. The change of its content has an important clinical value in diseases of the Nervous System. In patients with HIV, both with the defeat of the NS and without defeat a reliable increase in the group with the defeat of the NS on average 1.8 times was established, and without hitting the NS 1.6 times (p<0.05).

IV. Conclusion

Thus, the clinical-immunological analysis revealed a clear regularity of the content of antibodies to neurotropic proteins depending on the presence of the NS lesion in HIV, which evidence of the worsening of neuroimmune irregularities as increase in the level of defeat of the NS in patients with HIV.

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