DETERMINATION OF THE CLINICAL-NEUROLOGICAL CHARACTERISTICS OF MULTIPLE SCLEROSIS AND THE RELATIONSHIP OF S-100 OXIDE AND LIPOPROTEIDS

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Abstract. It remains urgent to carry out scientific research on the identification of pathogenetic factors in the development of multiple sclerosis , clinical-neurological features, clinical forms of the disease, course, gender ratio . In particular, it is important to determine S-100 protein levels and lipoprotein metabolism, factors affecting degeneration and demyelination, and the role of lipoprotein metabolism in the degeneration process in multiple sclerosis.

Keywords. 100 proteins, sclerosis, dysmetabolic process, multiple sclerosis.

Multiple sclerosis is a disease that causes disability and serious complications, as well as significant deterioration of the quality of life. According to the World Health Organization (WHO), more than 2.8 million patients are diagnosed with multiple sclerosis in the world, and 1 million patients are added to these numbers every year . Recurrence of exacerbations and periods of remission in different forms and lack of specific symptoms in the initial period of the disease cause an increase in mortality rates. Early dysfunctional changes in patients with multiple sclerosis , low treatment efficiency lead to maladjustment, and determine the medical and social importance of the problem.(2, 3)

A number of scientific studies aimed at identifying pathogenetic processes occurring in multiple sclerosis, diagnosis and optimization of treatment criteria are being carried out worldwide. In this regard, to determine the risk factors for the development of the disease and the nature of the course of the disease ; determination of measures to prevent complications; to determine the clinical-pathogenetic structure of the disease; development of an algorithm for early diagnosis of the disease ; optimization of the individual approach to treatment; scientific research aimed at the implementation of modern innovative pharmacological treatment is being carried out. Assessment of prognostic factors in multiple sclerosis, achieving high efficiency in treatment processes, elimination of neurological disadaptation, and prevention of complications that may develop in patients are urgent issues. (4)

In our country, large-scale targeted measures are currently being implemented to improve the medical service, social protection and health care system provided to the population. Particular attention is paid to the specified tasks such as "prevention of diseases and their diagnosis, wide introduction of modern technologies, provision of high-quality and high-quality medical care". In the implementation of these tasks, it is important to improve the quality and efficiency of medical and social care for patients with multiple sclerosis, to reduce disability indicators, to form social adaptation in patients, to use modern technologies in the provision of qualified medical care, and to create optimal treatment measures. (5)

The purpose of the study is to determine the clinical and neurological characteristics of multiple sclerosis and, in this case, the relationship between neurospecific S-100 oxygen and lipoproteins in the pathogenesis of the disease.

Research materials and methods.

100 patients diagnosed with multiple sclerosis took part in the scientific research, they were treated inpatient and outpatient at the 3rd clinic of the Tashkent Medical Academy and the 1st Republican Clinical Hospital. Biochemical tests were performed in 54 patients. The control group consisted of 20 healthy individuals. Patients' age ranged from 19 to 55 years, with an average of 34.4±0.9 young The average duration of the disease was 6.46±0.62 years.

30 of the total cases (30%) were men and their average age was 33.5±0.8 years. Women were observed in 70 (70%) cases, their average age was 34.8±0.8 years. The results of the study were compared with a control group consisting of 20 practical healthy individuals (7 males (35%) and 13 females (65%)) matched by sex and age (mean age 34.1±0.5). The control group was considered to have no subjective complaints and no objective neurological symptoms.

Patients were evaluated based on the classification proposed by the ICD-10 (adopted by the 43rd International Assembly in 1990) , in which patients were divided into three groups: group 1 consisted of 6 (6%) patients with the cerebral form of multiple sclerosis, and group 2 - patients with multiple sclerosis 67 (67%) patients with cerebrospinal form, 26 (26%) patients with cerebral form made up the 3rd group.

Among 100 patients with multiple sclerosis: cerebrospinal form, 67 patients, 17 men (25.3%) and 50 women (74.6%). 6 patients with cerebral form, 2 men (40%) and 4 women (60%). 27 patients with cerebellum, 11 men (40%) and 16 (60%) women. The ratio between women and men in the cerebrospinal form of multiple sclerosis is 1:2.9; 1:2 ratio in the cerebral form; in the form of a brain, the ratio was 1:1.5. Patients were divided into groups according to the course of multiple sclerosis. Of them, 19 patients had secondary progression; 5 patients with primary progression; 73 patients with remitting course, 3 with progressive exacerbation. It was divided into 3 groups according to the duration of the disease. 33 33% of patients whose illness lasted up to

5 years, 37 (37%) patients whose illness lasted 5-10 years, and 30 (30%) patients whose illness lasted longer than 10 years. So, the cerebrospinal form of multiple sclerosis and the remitting course made up 70%. Gradation of these patients by gender is presented in Table 1.

Table 1

Distribution of patients with multiple sclerosis according to age and sex

According to the clinical form of multiple sclerosis	**Total number of patients**	**a woman**	**male**
cerebrospinal form	67 (67%)	50(74.6)	17(25.3%)
Cerebral form	6 (6%)	4(61%)	2(39%)
Brain shape	27(27%)	16(59%)	11(41%)
According to the course of multiple sclerosis			
Remitrative	73(73%)	51(69.8)	22(30.2%)
Secondary promoter	19(19%)	14(73%)	5(27%)
Primary-progressor	5(5%)	3(60%)	2(40%)
With secondary progressive outbreaks	3(3%)	2(66%)	1(34%)
According to the duration of multiple sclerosis			
The duration is 5 years	35 (35%)	30(85.7%)	5(14.3%)
The duration is up to 5-10 years	35 (37%)	27(77%)	8(23%)
patients whose disease lasted longer than 10 years	30(30%)	13(43%)	16(57%)

Clinical-neurological, neurovisualization, molecular-genetic and morphological examinations were performed on all examined patients. Nervous system activity in patients was evaluated using Kurtske's scale adopted in 1983 and the modified EDSS (Expanded Disability Status Scale) was used to assess the level of disability. When evaluating patients according to the EDSS scale, the activity of the following systems was taken into account: pyramidal system; visual system; brain stem activity; brain activity; activity of the sensory system; activities of the pelvic organs; higher nervous system activity.

In order to determine the state of the cerebral structure of the MNS, the anatomical substrate - the localization of the demyelination centers, a neurovisualization examination consisting of an MRI of the brain was carried out. An open-type "OPART" Toshiba device with a magnetic field strength of 1.5 Tesla was used.

Biochemical examination was performed in order to determine the biomarker of

TS in the blood serum of patients. The ELISA kit for S-100 Salcium Binding protein B (S-100B) was used to detect the neurospecific S-100 protein. A laboratory examination was carried out using the immunoenzyme analysis (IFA) method . In the determination of lipoprotein fractions, cholesterol HDL LPVP IFCC 5*100 ml #1F03100(dialabGmbX, AUSTRIA); cholesterol LDL LPNP test kit 5*50 ml #1F05365(dialabGmbX, AUSTRIA); cholesterol VLDL LPONP test kit 5*50 ml #1F07345(dialabGmbX, AUSTRIA) were used. The amount of S-100 in blood serum and the amount of lipoprotein fractions were analyzed and compared. The total cholesterol content and atherogenic coefficient in the patient were calculated using formulas.

- Total cholesterol = ZPLP+ZYuLP+ZJYuLP
- A K (Atherogenic coefficient) = (total XS – ZYuLP)/ZYuLPP.
- The coefficient of atherogenicity is 2-3.

In the statistical processing of the obtained results, the variational parametric and non-parametric statistics methods were used, taking into account the average arithmetic magnitude (M), mean square shift (± s), arithmetic mean errors (±μ) and relative magnitudes (frequency %) of the studied indicator. The statistical significance of the changes obtained in the comparison of mean sizes was determined by Student's test (t) 12 and the probability of error was calculated (P). A confidence level of $R<0.05$ was accepted for a change in statistical significance. Pearson's pairwise correlation coefficient (r) was calculated to analyze the correlation of indicators. A correlation was found between the amount of S-100 protein and ZPLP. All the above-mentioned research object and its methods are shown in tables.

Research results.

Patients with multiple sclerosis were analyzed according to the course of the disease: the primary progressive course of the disease begins late and is mainly manifested by changes in the cerebrum and pyramidal system (80-85%), strong pathological changes were observed in almost all systems; the relapsing course of multiple sclerosis (73%) was characterized by an early onset and slow development of neurological deficit, which may later progress to a secondary progressive course with an increase in exacerbations; in the secondary progressive course of multiple sclerosis (19%) the first remission period is short, exacerbations occur once a year, but the neurological deficit is stronger than in the remitting course; the primary progressive course of multiple sclerosis (5%) begins late, but the development is very rapid (within a year), the neurological deficit is high.

We also analyzed system dysfunction in patients according to the course of the disease. The function of the pelvic organs and the pyramidal system are disturbed to the extent expressed in almost all types of the disease. This is one of the main indicators of disability. In order to assess the level of disability in patients, we observed the

condition of patients according to the EDSS scale. In the results, we can see that the indicators of the EDSS scale increase as the duration of the disease increases. Sometimes it was observed that the scale increased by 1-2 points during each exacerbation.

100 patients with multiple sclerosis underwent MRI to evaluate foci of demyelination. We divided MRI findings into groups based on the size of pathological foci. According to him, 31% of patients have small (0.2-0.8 cm) foci; 45% of patients have medium-sized (0.9-1.4 cm) foci; In 24% of patients, pathological foci of large volume (1.5-1.9%) were detected. Foci of demyelination are mainly located in the subcortical (77%) and periventricular-subcortical area (60%). On MRI, 83% of patients had enlargement of the lateral ventricles and 78% of patients had asymmetry of the lateral ventricles.

Table 2

Incidence of focal changes on MRI in multiple sclerosis.

Area of damage	Multiple sclerosis n-100 (%)
A single subcortical focus	4 (4%)
A single periventricular focus	8 (8%)
Multiple subcortical foci	11 (11%)
Multiple periventricular foci	77 (77%)
Dilation of the lateral ventricles	83 (83%)
Asymmetry of lateral ventricles	78 (78%)

The relationship between the size of MRI foci, the duration of the disease and the indicators of the EDSS scale was analyzed. The result of this correlation analysis is presented in Table 4.

Table 3

Correlation of the size of MRI foci with the duration of the disease and the indicators of the EDSS scale

The number of patients N=100	Duration of the disease	Focal size on brain MRI	EDSS scale Ball
N=35	5 years	0.2-0.8mm	6.0 points
N = 37	5-10 years	0.9-1.4mm	7.2 points
N = 30	10 years	1.4-1.9mm	8 points

The serum of 54 patients and 20 healthy controls was examined to study neuron-

specific S100 protein and lipoproteins in patients with multiple sclerosis. Of these, the number of patients with TS was 54 (37 women and 17 men) (the main group). Patients are 21 to 45 years old. The average age is 33.82±0.9 years. There were 20 healthy people in the control group (13 women and 7 men). The average age is 34.11±0.1 years. The obtained results show that the amount of S100 in the blood serum of patients in the main group was 0.115±0.006 μg/l ($r<0.05$) (in a healthy person, this indicator is less than 0.09). In the control group, the level of s-100 protein was equal to 0.05±0.05. That is, a high level of S100 protein was found in patients. According to the results of the analysis, a high level of s-100 protein was detected in 69% (37) of TS patients.

A number of external environmental factors influence the development and activation of the degeneration process in multiple sclerosis. According to the conclusions of recent years of scientific research in multiple sclerosis stresses the importance of a special low-fat diet. That is, lipoprotein metabolism is also important in the development of multiple sclerosis. That is why we use lipoproteins in patients with multiple sclerosis we studied the quantitative change. We examined 3 groups of lipoproteins in mine analysis in 54 patients. The results of the analysis showed that only the amount of ZPLPs changed pathologically (3.53mmol/l) in patients. ZYuLP (0.7-1.9mmol/l) and ZJPLP (0.13-1.63mmol/l) indicators remain normal. The coefficient of atherogenicity was calculated using the special formulas given above. The coefficient of atherogenicity was also determined in patients with normal values. Therefore, it can be considered that the amount of ZPLPs in patients is high not due to atherosclerosis, but due to degeneration.

CONCLUSIONS

1. During the exacerbation of multiple sclerosis, due to the high concentration of s-100 protein in the blood serum of patients, this indicator can be used to distinguish the exacerbation and remission periods of multiple sclerosis and predict neurological maladaptation.

2. One of the prognostic factors of the course of multiple sclerosis can be an increase in the amount of low-density lipoproteins in the body, including the fact that this indicator increases from year to year in the primary and secondary progressive course of multiple sclerosis, as the disease progresses and the duration of the disease increases, low-density lipoproteins directly activate the demyelination process and may be a sign of aggravation of the course of the disease.

3. The observation that there is a correlation between the levels of s-100 protein and low-density lipoproteins in patients with multiple sclerosis allows for a deep study of the amount of neurospecific s-100 oxyl and low-density lipoproteins in patients with multiple sclerosis, prognosis of the disease, comparative diagnosis , and treatment procedures based on this. helps to be carried out on time.

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