

**REVIEW: CHANGE IN LIPOPROTEIN WITH MULTIPLE SCLEROSIS IN THE  
PROCESS OF DEMYELINATION**Markhamat Mirakramovna Yakubova<sup>1</sup> and Mukaddas Arabbayevna Mukhiddinova<sup>2\*</sup><sup>1</sup>MD, Associate Professor of the Department of Neurological Diseases of the Tashkent Medical Academy.<sup>2</sup>Neurologist in Family Policlinic No. 46, Tashkent City.**\*Corresponding Author: Dr. Mukaddas Arabbayevna Mukhiddinova**

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**ABSTRACT**

The multiple sclerosis for today is one of the most actual problems. Statement of the given diagnosis - is the difficult process demanding the highest qualification of neurologists. In addition, multiple sclerosis methods are not developed reliable authentic diagnostic.

**KEYWORDS:** Multiple sclerosis, demyelination, lipoprotein, myelin, immune system.**INTRODUCTION**

Multiple sclerosis (MS) is a widespread immune-neurodegenerative disease of the central nervous system, which affects mainly young people and almost inevitably leads to disability at a certain stage of its development. MS has about 2.5 million people in the world.<sup>[1]</sup> The earliest age of the debut of a reliable, re-morphologically confirmed MS is considered and 10 months clinical case described.<sup>[2]</sup>

This disease is chronic, in most cases progressing, unpredictable in current and currently incurable. In recent years, there has been an increase in the incidence rate.<sup>[3]</sup>

The prevalence of MS significantly depends on geographical zones: it is the lowest in the equator zone and increases with distance from it. However, at this time, mostly people are sick mainly in Central Asia, Africa.

**Etiology**

Despite a large number of studies devoted to the study of the etiopathogenesis of multiple sclerosis, the reasons for its development are not completely clear. The multifactorial theory, which implies a combination of genetic predisposition and external factors (including infectious agents), is considered the most valid. Recent years have been of great interest in the PC theory of the process of axons. It is the axonal damage that is considered responsible for the development of an irreversible neurological deficit and the transformation of symptoms in the form of alternation of periods of deterioration and subsequent restoration of impaired functions into a secondary progressive disorder with a steady increase in the rates of disability in patients.<sup>[4]</sup>

To date, it is known that even in the early stages of the disease, there is damage to the most axons, and as a result, MS is now considered not only as an autoimmune demyelinating disease, but also as a neurodegenerative disease. At the same time, the issues of the relationship between recovery and neurodegeneration remain largely unclear.<sup>[5]</sup>

Axonal damage will help us understand the pathogenesis of multiple sclerosis. When axons are affected, the myelin sheath is first affected. This is considered a process of demyelination and it affects the course of multiple sclerosis.

First, briefly about the anatomy and physiology of the myelin sheath. Myelin consists of molecules of lipids of 3 classes: phospholipids, glycolipids, steroids. The outer layer of protein molecules forms a hydrophilic surface: the protein is a cholesterol-phospholipid complex.<sup>[6]</sup>

Lipids consist of 70% of the dry weight of the myelin sheath. They have an important structural and functional significance, their composition in demyelinating diseases undergoes pronounced changes. Participation of lipids in all 4 stages of development of demyelinating process is shown. In animal models, encephalitogenicity of myelin glycolipids was shown.<sup>[7]</sup>

**Human myelin lipids**

Cholesterol 27.7%

Phosphatidylethanolamides 15.6%

Sphingomyelins 7.9%

Plasmogen 12.3%

Free fats in consequence of acid.

The half-life of lipids is calibrated from 5 weeks to 2-4 months or up to a year.

### Protein composition of myelin of central nervous system

1. Proteolipid is 35-50% of the total protein content in myelin.
2. Main protein A1 is 30% of the total protein content in myelin.
3. Proteins Wolfgram 20% of the total protein content in myelin.

In myelin shell of peripheral nervous system (PNS), proteolipids are absent. The half-life of myelin protein is about 1 month. Proteolipids do not dissolve in water, but dissolve in a mixture of chloroform-methanol. These proteins make up almost half of all myelin proteins in the brain. We have revealed some peculiarities of protein and lipid metabolism in the case of multiple sclerosis, which affects the manifestations of the disease. Thus, the phenotyping of dyslipoproteinemia by Fredrokson with a reliable MS revealed the dependence of the course of the disease on the state of lipid metabolism. Antibodies in credits 1: 8, 1: 16, which indicated the autoimmune nature of lipoproteinemia.

According to several researchers, complexes of molecules similar to MHC-I complexes of histocompatibility, CD1, associated with certain glycolipids (gangliosides) T-cell receptors of different lymphocyte subpopulations are recognized.<sup>[8]</sup> In patients with multiple sclerosis antibodies to lipids are more often detected than in healthy individuals. In experiments with cell cultures and animal models, the ability of various lipids, both exogenous (bacterial) and endogenous, including some of the lipids that make up the myelin sheath, to participate in the reactions of innate immunity was demonstrated. The results of studies conducted on cell lines and peripheral mononuclear cells isolated from healthy donors indicate that lipids can stimulate or inhibit the production of various cytokines and chemokines, such as IL-8, MCP-1, etc.<sup>[9]</sup>

Thus, it seems likely that lipids can act as ligands of receptors of innate immunity or pro-inflammatory agents potentiating the activity of receptors of innate immunity, and influence on the course of the inflammatory process in demyelinating diseases. However, to date, the spectrum of antibodies to myelin lipids in MS and their significance are not fully understood. Characterization of the B-cell response to myelin lipids in MS, as well as the relationship between the presence of certain antibodies and the clinical features of the disease, can help identify important prognostic biomarkers in MS. The result indicates the development of tolerance of cells of innate immunity to proinflammatory stimuli in patients with rapid rates of disability and points to the possible prognostic value of the analysis of the innate immune response to myelin lipids in MS.<sup>[10]</sup>

In addition, lipoproteins play an important role in the regulation of metabolic functions in CNS; in addition, cholesterol is an essential component for the formation

of myelin. In recent years, it has been shown that vascular damage can be involved in the development and progression of multiple sclerosis. In a retrospective study, the results of which were reported at the Congress of the European Committee for the Study and Treatment of MS in 521 patients with multiple sclerosis, the lipid spectrum of the blood and the severity of the neurological disorders of the Advanced Disability Scale (ADS) were determined. The average follow-up period was 2.2 years.

The increase in EDSS score was significantly associated with a high level of low-density lipoproteins, triglycerides and total cholesterol in the initial examination. A high level of triglycerides was associated with the probability of developing foci accumulating contrast according to MRI. At the same time, the risk of developing active foci was significantly lower in patients with high levels of high-density lipoproteins (HDLP).

There was no correlation with the body mass index and with the use of statins. Researchers conclude that lifestyle and nutritional characteristics that affect lipid levels in the blood can play an important role in the progression of multiple sclerosis.

Such a role lipids show: in the course of MS, the lipidogram changes associated at the stage of exacerbation and remission.

Criteria for diagnosis (minimized variant)<sup>[11]</sup>

1. The young age at onset of the disease
2. Mnogoachagovoj lesions of the central nervous system (basically, this combination of pyramidal and cerebellar disorders with pelvic disorders)
3. The progredient-remitting current
4. Detection of foci of demyelination on MRI of the brain
5. Immunologically detectable sensitization to the main protein of myelin.

This pentada is sufficient for the diagnosis of the disease, but not the diagnosis of the patient.

The following is the diagnosis of focal, extrafocal and extra-neural disorders, the establishment of cause-effect relationships, which plays a decisive role in the appointment and monitoring of ongoing therapeutic interventions.

**Table 1: Pathogenetic factors of multiple sclerosis and peculiarities of their laboratory diagnostics.**

Factor	Diagnostics
virus-induced	induction of IFN-alpha on VBI and IFN-gamma on PHA and OBM
endocrine-dependent	the content of prolactin, cortisol, T3, T4, TSH in the blood plasma
hyperlipidemic	HDL / LDL blood, a lipogram of the CSF
immunodeficient	RTML with OBM, TRP, TNF, sVCAM-1
Atopic	skin allergic tests, IgE
infectious-allergic	CD4 / CD8, RTML with brain-specific proteins, protein, cytosin, Lange's reaction to the CSF

With the introduction of the practice of PMTC, it became possible to predict the stage of the disease and, together

with MRI, to create a functional morphological image of MS.

**Table 2: Functional-morphological diagnostics of stages of RS.<sup>[3]</sup>**

Stage	MRI	PMR
inflammation	perifocal edema	appearance of lipid peak
demyelination	focus of hyperintense signal	increase in the peak of inositol and choline
axonal lesion	Atrophy	decrease in the peak of NNA

The appearance of high amounts of lipids indicates to us the activity in the stage of inflammation. After the vaginal stage, the demyelination process develops.

It is definitely shown that the activity of the disease remains intact even in the case of complete clinical remission, which is confirmed by the appearance of new foci of demyelination (according to magnetic resonance tomography) damage to the axons of the central conducting systems and the violating disorders in the immune system. Thus, MS is not a "remissionary" disease in the full sense of the word.<sup>[5]</sup> The study shows even during remission or before the onset of symptoms of the disease in blood-borne MS patients the change in lipoproteins is revealed.

## CONCLUSION

Lipoproteins are involved in the processes of the immune system and the synthesis of the myelin sheath.

In the course of the disease the lipidogram changes, and these indicators give us information about the morphological stage.

The use of statins has a positive effect on the course of the disease. Hence, the lifestyle and nutritional characteristics that affect the level of lipids in the blood can play an important role in the progression of multiple sclerosis.

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