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## **КОСТНО-МЫШЕЧНАЯ СИСТЕМА У ПАЦИЕНТОВ С РАССЕЯННЫМ СКЛЕРОЗОМ**

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## **MUSKULOSKELETAL STATUS OF PATIENTS WITH MULTIPLE SCLEROSIS**

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**Резюме.** Эта работа посвящена изучению костно-мышечной системы у пациентов с рассеянным склерозом (РС), а также сравнению тяжести заболевания в разных исследуемых группах в зависимости от возраста, пола и типа данного заболевания. Установлено, что повреждение костно-мышечной системы у пациентов с РС чаще выявляется у женщин, чем у мужчин симптомы заболевания проявляются у женщин средней и старшей возрастной группы чаще, чем у молодых людей.

**Ключевые слова:** рассеянный склероз, костно-мышечная система, пол, возраст.

**Resume.** This work is about the study of the musculoskeletal status of patients with multiple sclerosis (MS), and comparison the disease severity in different study groups depend on age, gender and type of disease. It was established that musculoskeletal damage in patients with MS is revealed more often in women compared to men and symptoms of the disease are manifested in women of middle and older age group more than in young adults.

**Keywords:** multiple sclerosis, musculoskeletal status, gender, age.

**Relevance.** Multiple sclerosis (MS) is a disease caused by auto-immune inflammatory disease that cause destruction of myelin sheath and axons in central nervous system [4]. These changes can decrease human life quality in major extend, disturbances caused by MS may be but are not limited to vision, sensory, coordination, musculoskeletal disorders [6, 8]. These disturbances are usually unpredictable, some patients may have one or some of these disturbances and the other person might not have them regardless of type of disease and age [3]. The predisposing factors to MS are categorized in following groups: Environmental factors, Immune factors, Infectious factors, and genetic factors [5].

Environmental factor: MS is known to occur more frequently in areas that are farther from the equator [1]. Studies have shown that people born in an area with a high risk of MS who then migrate to an area with a lower risk before the age of 15 take the risk of their new area. This means that exposure to some environmental agent before puberty may predispose a person to develop MS later on [10]. Vitamin D plays an important role. Vitamin D support immune function and may help protect against immune-mediated diseases like MS [7].

The evidence is also growing that smoking plays an important role in MS [2]. Studies have shown that smoking increases a person's risk of developing MS and is associated with more severe disease and more rapid disease progression. Fortunately, the evidence also suggests that stopping smoking — whether before or after the onset of MS — is associated with a slower progression of disability. MS “clusters” — the perception that very high

numbers of cases of MS have occurred in a specific time period or location [9].

**Infectious factor:** since viruses are well-recognized as causes of demyelination and inflammation, it is possible that a virus is the triggering factor in MS.

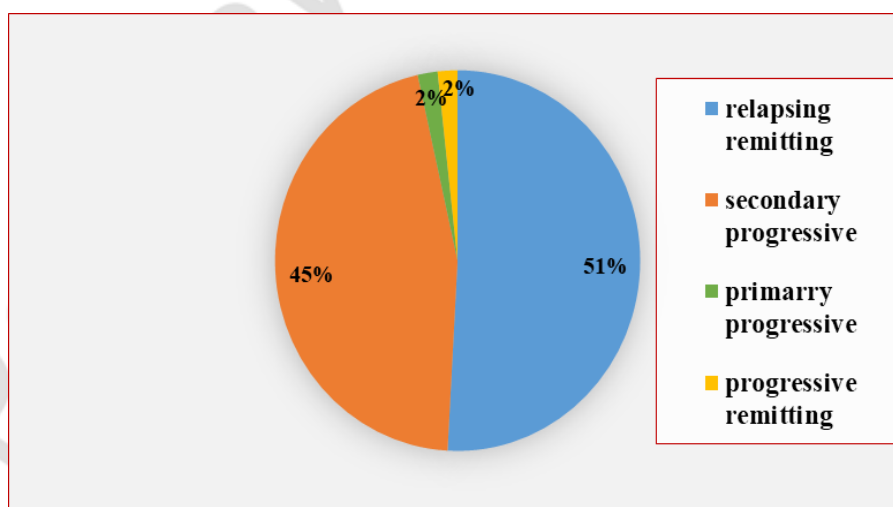
**Genetic factor:** Studies have shown that there is a higher prevalence of certain genes in populations with higher rates of MS [2]. Common genetic factors have also been found in some families where there is more than one person with MS. Some researchers theorize that MS develops because a person is born with a genetic predisposition to react to some environmental agent that, upon exposure, triggers an immune-mediated response [8].

In Multiple Sclerosis some antigen presenting cell such as microglia, B lymphocytes and macrophages will activate T lymphocytes, then T lymphocytes will secrete proinflammatory cytokines, including interferon gamma and tumor necrosis factor alpha, which will pass through blood brain barrier and cause inflammation of myelin sheath, antibodies against myelin may also appear in periphery, activated microglia may release free radicals, nitric oxide, and proteases that may contribute to tissue damage [10].

**Goal:** is to study the musculoskeletal status of patients with Multiple sclerosis, and comparison the disease severity in different study groups depend on age, gender and type of disease.

**Material and methods.** The material is taken from the Department of Neurology of the 9th Clinical Hospital in Minsk. The investigation was performed on 60 case histories of patients with multiple sclerosis (35 women and 25 men) aged 22 to 64 years. The investigation of the musculoskeletal status of the patients included the study of medical documentation to establish the type of multiple sclerosis and its musculoskeletal damage.

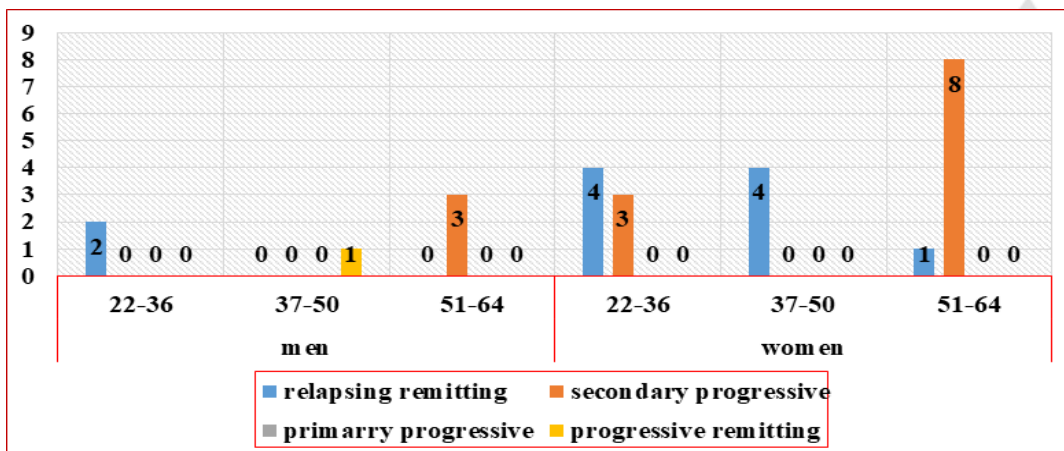
**Results and their discussion.** The results of a quantitative analysis of patients with multiple sclerosis showed the most common type of Multiple sclerosis was relapsing-remitting - 30 cases (50%). Secondary progressive type was revealed in 28 patients (46,6 %). As for primary progressive type and progressive remitting type of Multiple sclerosis each of these types were revealed in one patient (1,6%) appropriately (picture 1).



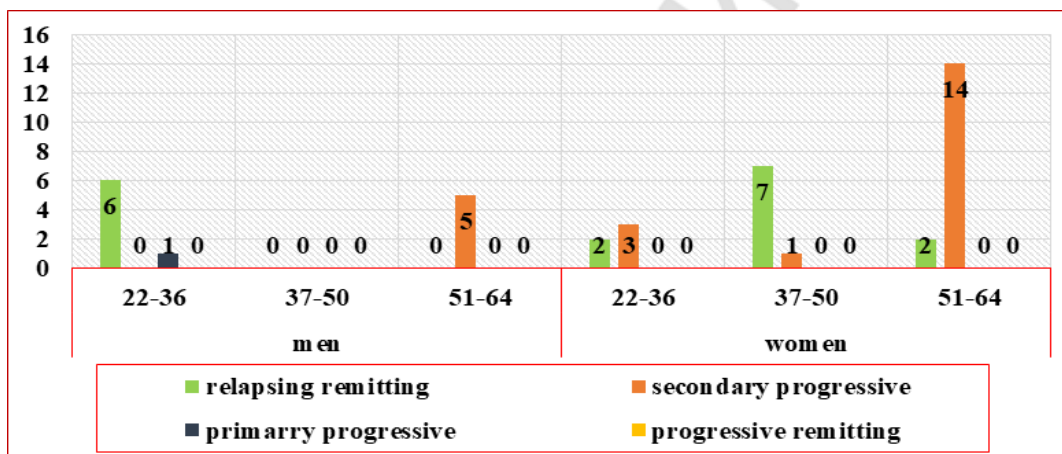
**Pic. 1** – Frequency of different types of multiple sclerosis

Muscle tone disturbances is seen in women more than in men, so that in relapsing remitting type, 8 men and 6 women with of 22-36 age, 11 women of 37-50 age and 6 women

of 51-64 age group had muscle tone disturbance, hence in secondary progressive type most commonly women of older age so that 22 women and 8 men of this age group had this disturbance (picture 2, 3).

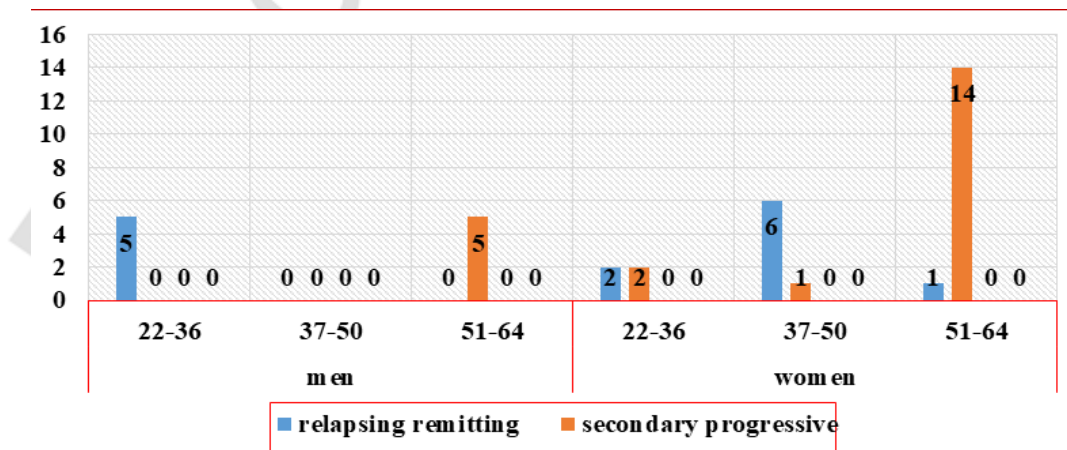


Pic. 2 – Upper limb muscle tone disturbances



Pic. 3 – Lower limb muscle tone disturbances

Paresis is relatively higher in women too. In relapsing remitting type affects middle age more often than in any other age group. The secondary progressive type affects elder women in higher quantity (picture 4).



Pic. 4 – Frequency of paresis among patients

## Conclusions:

- 1 Musculoskeletal damage is revealed more often in women compared to men.
- 2 Symptoms of the disease are manifested in women of middle and older age group more than in young adults.

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