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REHABILITATION THERAPY FOR PATIENTS WITH TYPE II DIABETES WITH POLYNEUROPATHY AFTER COVID-19

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Abstract

This article presents data on rehabilitation therapy of type 2 diabetes mellitus with polyneuropathy using wobenzyme according to the indications of functional diagnostics in comparison with the standard treatment method. The physiological effect of wobenzyme enzymes is manifested in an increase in the amount of plasma plasminogens, while simultaneously reducing the formation of fibrin and lysis of the formed blood clots. The conducted analysis of the use of wobenzyme enzymes in diabetic polyneuropathy indicates the validity of prescribing patients with type 2 diabetes in order to directly reduce the number of patients with diabetes mellitus. "inflammatory mediators" and reduction of oncotic pressure, tissue edema and compression of nerve endings, normalization of microcirculation by direct proteolysis of neuropathic symptoms and neuropathic deficiency.

November 17, 2019 was the date of registration of a new disease – COVID 19, which subsequently became a pandemic. A particularly severe course of the disease was observed in patients with diabetes mellitus due to the peculiarities of their immune status and immune response to a viral attack, excessively high virus activity in conditions of hyperglycemia, comorbidity and obesity.

Keywords: diabetes mellitus (DM), electroneuromyography(ENMG), polyneuropathy (PNP), COVID-19, wobenzym.

摘要

本文根据功能诊断的指征，与标准治疗方法进行比较，介绍了使用沃酶对2型糖尿病合并多发性神经病进行康复治疗的数据。沃酶的生理作用表现为增加血浆纤溶酶原的量，同时减少纤维蛋白的形成和已形成的血凝块的溶解。对 wobenzym 酶在糖尿病多发性神经病中的使用进行的分析表明，为2型糖尿病患者开具处方以直接减少糖尿病患者的数量是有效的。“炎症介质”和渗透压的降低、组织水肿和神经末梢的压迫、通过神经病症状和神经病缺陷的直接蛋白水解使微循环正常化。

2019年11月17日是一种新疾病的登记日期 – COVID 19，随后成为大流行病。由于糖尿病患者的免疫状态和对病毒攻击的免疫反应的特殊性，在高血糖、合并症和肥胖症的情况下病毒活性过高，在糖尿病患者中观察到了特别严重的疾病过程。

关键词：糖尿病（DM），肌电图（ENMG），多发性神经病（PNP），COVID-19，wobenzym。

Introduction

Of the total number of patients with DM, the second type of the disease is diagnosed in 85-90% of cases. Chronic hyperglycemia leads to hypoxia, and circulatory disorders in the capillaries contribute to the development of diabetic polyneuropathy [1, 2, 3, 4], which is detected in almost 54% of patients with DM. Due to severe autonomic disorders and diabetic foot syndrome that occur due to damage to the somatic and autonomic nervous systems, patients eventually become disabled [5, 6, 7, 8]. Studies of nervous system lesions in DM and COVID 19 indicate the presence of problems related to the viral nature of the previous disease, its late diagnosis and the lack of accurate information about the duration of the course COVID 19. For the treatment of type 2 diabetes in patients who have been ill COVID 19 antihypoxic drugs are often prescribed. One of these drugs with a multidirectional complex metabolic action is "Wobenzym", which is manifested in improving

the work of intracellular enzyme systems of the body of a patient with type 2 diabetes mellitus, contributing to an increase in the protein-synthesizing function of cells, in its immunomodulatory effect, as well as in improving the metabolic activity of microvascular endothelium [9, 10, 11]. Wobenzym also promotes the processes of repair and regeneration, as well as the possibility of accelerating the revascularization of ischemic zones. However, the main justification is Its application is the concept of the significance of oxidative stress in the pathogenesis of DPN. Oxidative stress is associated with damage to the vascular endothelium and a decrease in effective blood flow, which exacerbates hypoxia of the nervous tissue [12, 13, 14, 15].

Aim of the research was to study methods of rehabilitation and antioxidant therapy in patients with type 2 diabetes mellitus with polyneuropathy after treatment. COVID-19 at

various stages of the disease under the control of the electroneuromyography apparatus.

Materials And Methods

A total of 39 patients with type 2 diabetes were examined, including 27 women and 12 men (the average age of men was 51.2 ± 0.3 years; the disease duration was 8.4 ± 0.49 years; the average age of women was 54.2 ± 0.3 years; the disease duration was 9.9 ± 0.51 years). Patients with type 2 diabetes mellitus were evaluated according to the standard: the level of glycated hemoglobin, glucose tolerance test and electroneuromyography apparatus. The therapeutic effect of Vobenzym was evaluated in patients with type 2 diabetes with polyneuropathy after the first stage of treatment. COVID 19 compared to the standard treatment regimen.

Results And Discussion

As a result of the survey, 39 male and female patients with type 2 diabetes were diagnosed with diabetic peripheral polyneuropathy in 74% of cases (29 patients). Motor responses of the fibular, tibial, and median nerves, sensory responses of the calf and median nerves, and F-waves of the tibial nerve were studied; motor and sensory responses of the ulnar nerve were determined using an ENMG device. On examination, patients showed a decrease in pain and temperature sensitivity in the legs, and Achilles reflexes were not always reduced, motor manifestations were minimal. 17(44%) patients with neuropathy had severe type 2 diabetes, and 29 (74%) patients were obese. Studies with the ENMG device: by detecting demyelinating lesions of peripheral nerves with a decrease in the speed of pulse conduction along the peroneal nerve from 2

sides, it was possible to identify patients with sensory-motor damage of a moderate polynural type, as well as ENMG signs of radiculopathy of the lumbosacral spine [16, 17, 18].

After the revealed pathology, patients were treated according to three schemes: a group of patients with type 2 diabetes after COVID-19 Of the 10 patients treated with standard insulin, the second group consisted of patients with type 2 diabetes with polyneuropathy. COVID-19 (10 patients) the insulin treatment regimen was also used in the third group of patients with type 2 diabetes with polyneuropathy after COVID-19 (19 patients) the treatment regimen with insulin and vobenzym was used according to the scheme of 3 tablets 3 times a day for 14 days, followed by a dose reduction of 1 tablet 3 times a day for 4 weeks daily. Results of the study of the therapeutic effect of vobenzym in comparison with the standard treatment regimen in patients with type 2 diabetes, who have had the following diseases: COVID-19 it is shown in Table 1.

Table 1. Results of the study of the therapeutic effect of vobenzym in comparison with the standard treatment regimen in patients with type 2 diabetes, who have had the following diseases: COVID-19.

No	Patients	Number of patients	Treatment regimen	The number of people who recovered and the time of recovery
1	Type 2 diabetes	10	Insulin	8 patients

	+ COVID-19			in 25-30days, 1 patient in 32 days, 1 patient in 35 days
2	Type 2 DM with PNP+COVI D-19	10	Insulin + Actovegin	7 patients in 30-40days, 1 patient in 62 days, 1 patient in 64 days, 1 patient in 67 days
3	Type 2 DM with PNP+COVI D-19	19	Insulin + Actovegin + Wobenzyme	10 patients in 18 days, 4 patients in 20-22 days, 2 patients in 25 days, 3 patients in 27-30 days

After treatment, all patients regained their conductivity, the symptoms of the disease disappeared, and according to the results of ENMG, the speed of conduction along the motor fibers of the peripheral nerves of the lower extremities was recorded within the normal range. These phenomena were observed in patients of the first group within 25 to 35 days, the second group-from 30 to 67 days, and the third group-from 18 to 30 days.

Hyperglycemic intoxication in patients diagnosed with type 2 diabetes complicated by polyneuropathy dictated the need for insulin therapy. From the data presented above, it follows that the study using the ENMG device allows you to make a timely diagnosis, which in turn makes it possible to treat and prevent the appearance of ulcers on the feet that lead to gangrene (diabetic foot).

The Wobenzyme used by us is a combination of natural enzymes of plant and animal origin, which after absorption enter the bloodstream and accumulate in the area of the pathological process. The immunomodulatory, anti-inflammatory, fibrinolytic, and secondary analgesic effects of these enzymes are reflected in acceleration of the breakdown of the formed inflammatory mediators, increased phagocytic and cytotoxic activity of the body, regulation of cytokinin production. The physiological effect of wobenzyme enzymes is manifested in an increase in the concentration of plasma plasminogen, in a decrease in the formation of fibrin and lysis of formed blood clots.

The analysis of the use of wobenzyme enzymes in diabetic polyneuropathy indicates the validity of prescribing patients with type 2 diabetes in order to reduce direct proteolysis of "inflammatory mediators" and indirect effects in the form of reducing oncotic pressure, tissue edema and compression of nerve endings, eliminating ischemia by normalizing microcirculation by direct proteolysis of neuropathic symptoms and neuropathic deficiency.

The drug has a positive effect on the course of the inflammatory process, limits the pathological manifestations of autoimmune and immuno-complex processes, has a positive effect on the indicators of immunological reactivity of

the body, which contributes to a faster recovery of the body after a disease. COVID-19.

Wobenzym accelerates the lysis of toxic metabolic products and necrotic tissues, restores the permeability of vascular walls, normalizes blood viscosity, thereby improving its microcirculation and the supply of oxygen and nutrients to tissues [19, 20]. Thus, taking into account the multifaceted effect of wobenzym on the body, as well as the results of our research in studying the therapeutic effect of this drug in the treatment of patients with type 2 diabetes with polyneuropathy who have had a viral infection COVID-19 the following conclusions can be drawn.

Conclusions

In 74% of patients who have undergone surgery, COVID-19 was diagnosed Type 2 diabetes with various degrees of polyneuropathy; 44% - with signs of severe polyneuropathy.

The use of the ENMG device makes it possible to diagnose neuropathy before clinical manifestations.

Timely diagnostics with the use of the ENMG device will allow us to include in complex therapy drugs that have an antioxidant effect and the ability to restore impaired functions.

The analysis of wobenzym use in patients with DPN indicates the validity of wobenzym administration to patients with type 2 diabetes after treatment. COVID-19 to reduce neuropathic symptoms and neuropathic deficits.

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