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A STUDY OF SLEEP QUALITY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS COMPLICATED BY DIABETIC POLYNEUROPATHY

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Annotation

This article examines the sleep quality of patients with type 2 diabetes mellitus (T2DM) complicated by painful diabetic polyneuropathy (DPN). Sleep disturbances occur in 50-80% of patients with chronic pain, with the severity of sleep disturbances depending on pain intensity. Sleep disturbances and neuropathic pain are interrelated and should be treated simultaneously. To improve sleep, one factor influencing sleep—treatment of the painful form of DPN—leads patients to improved sleep quality and, simultaneously, quality of life. The relationship between neuropathic pain and sleep disturbances is bidirectional. Patients with neuropathic pain are more likely to develop sleep disturbances, and these disturbances, in turn, lead to increased pain. A positive correlation has been found between pain sensitivity and sleep disturbances. Decreased pain tolerance was found in patients suffering from chronic pain and insomnia. Our study included 120 patients with type 2 diabetes. The disease duration ranged from 3 to 12 years, the average age of the subjects was 56.6 ± 9.8 years, 79 women (65.8%), 41 men (34.2%). The control group included 20 patients without diabetes, 5 of whom (25%) had hypertension, the average age was 55.9 ± 7.5 years. Patients were divided into two groups: one with sleep quality disorders and the other without sleep quality disorders. Sleep quality disorders of varying degrees were found in 100% of patients with type 2 diabetes complicated by the painful form of DPN. The most common complaint among patients in Group 1 was "feeling tired after waking up from sleep." This complaint was reported by 100% of patients, compared to only 45% of patients in Group 2. Other complaints affecting sleep quality were also more common in Group 1. This, in turn, further confirmed the impact of the painful form of DPN in type 2 diabetes on sleep quality in different patients.

Keywords

type 2 diabetes mellitus, diabetic neuropathy, peripheral neuropathy, neuropathic pain, sleep disorder, sleep quality, neuropathy and pain, pain and sleep.

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In 2015, 170,000 people with diabetes were registered in Uzbekistan, and by 2018, more than 230,000 patients had been registered and examined. The number of people with diabetes has increased by nearly 60,000 over the past three years. According to analysis, this figure could exceed 550 million by 2030.

Currently, the most common complications of diabetes are a group of clinical syndromes involving damage to the peripheral and autonomic nervous systems. Syndromes leading to diffuse and focal damage to the nervous system, commonly referred to as various forms of neuropathy, occur in almost half of patients with diabetes.

The most common form of diabetic peripheral neuropathy (DPN) is painful polyneuropathy, or neuropathic pain.

Painful DPN can be acute or chronic. The chronic form of the pain-type DPN is characterized by a wave-like course of pain, periods of remission and exacerbation, and a pain syndrome lasting more than 3 months. Neuropathic pain is characterized by a circadian rhythm of symptoms, intensifying in the evening and night. Symptoms can vary: aching, sharp, stabbing, excruciating spasms, and vascular spasms. In most cases, along with the above symptoms, sensory disturbances or loss of sensation, and decreased or absent reflexes are observed.

The painless type develops slowly, with sensorimotor deficits occurring with minimal symptoms and no pain. Typical complaints include numbness in the legs and decreased sensation. Physical examination reveals various types of sensory loss and decreased or absent reflexes.

Nerve damage sometimes precedes the development of other complications of diabetes and may be the first clinical sign of a carbohydrate metabolism disorder. Pathological changes in the nerves develop at the stage of impaired glucose tolerance, and damage to unmyelinated nerve fibers occurs significantly earlier than myelinated ones, which leads to an increase in the level of disability and even death.

Current approaches to treating diabetic neuropathy are aimed at improving glycemic control, lifestyle modification, and reducing neuropathic pain. The optimal therapeutic approach for patients with diabetes includes lifestyle modification with an emphasis on diet and exercise, as well as optimal lipid and blood pressure control. Glycemic control with a target HbA1c level of <6% increases mortality in patients with diabetes and has little effect on diabetic neuropathy, so this goal is not recommended as a standard of care. Within a broader approach to good glycemic control, individualized treatment is the optimal choice for patients with diabetes.

Neuropathic pain causes sleep disturbances in patients, and sleep disturbances, in turn, can exacerbate pain. Therefore, it can be said that when treating neuropathic pain, it is necessary to simultaneously improve sleep. Currently, there is debate about the use of drugs that simultaneously reduce pain and improve sleep in patients. Anticonvulsants such as pregabalin and gabapentin relieve neuropathic pain and are effective in treating comorbid sleep disorders. Opioids and antidepressants reduce pain but do not affect sleep.

Sleep disturbances occur in 50–80% of patients with chronic pain, and the severity of sleep disturbances depends on the pain intensity. Sleep disturbances and neuropathic pain are interrelated and should be treated simultaneously. Although improving sleep can reduce pain, the primary focus of modern treatment is pain relief.

The topic of sleep disturbances in patients with obesity and type 2 diabetes is extremely relevant due to the high prevalence of these conditions, their interrelationships, their impact on cardiometabolic risks, the underreporting of the problem, and the complexity of treatment. Understanding these issues and developing effective prevention and treatment strategies can improve the health and quality of life of millions of people worldwide. This clinical case is of interest to practicing physicians due to the need for early diagnosis and prevention of complications in patients with obesity, type 2 diabetes, chronic insomnia, and OSA. Analysis of the presented observation will help physicians increase their alertness regarding sleep disorders in patients with metabolic syndrome, promptly identify OSA, insomnia, and other sleep disorders, and take measures to prevent the development of cardiometabolic and microvascular complications of diabetes.

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