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THE COURSE OF SLEEP DISORDERS IN PRIMARY HEADACHES AND THE IMPORTANCE OF MELATONIN IN THE BODY

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Abstract:

The article discusses the course and spread of sleep disorders in primary headaches and the development of measures to prevent them

Keywords: *Headache, melatonin, sleep disturbance, environmental factors, distribution.*

Introduction

Relevance: the article discusses the pathophysiological and behavioral mechanisms for the development of chronic insomnia in headaches. Particular attention is paid to the effect of sleep disorders on the main headache - migraine and cluster headaches. There are data on the use of melatonin in the complex treatment of chronic headaches.

Sleep disorders affect more than 45% of the world's population, and in recent decades they have become a global health problem [1].

The relationship between sleep and headache is well known: lack of sleep can cause another attack, and good sleep can relieve pain. M. In 1853.Romberg suggested that" (migraine attack) usually ends in deep and refreshing sleep " [2]. And in 1873 E. Living expressed the view that" the easiest way to stop a migraine attack is to sleep " [3].

In the International Classification of Headache Disorders, the third revision (MKGB-3, 2018) mentions sleep 38 times [4] and the headache is listed in the International Classification of sleep disorders among the symptoms of Sleep Disorders [5]. The American Academy of Sleep Medicine calls sleep-related headaches one of the characteristic complaints of headaches (migraines or other types).

The study of the pathophysiology and function of the hypothalamus in concurrent headaches and sleep disorders can explain the relationship between trigeminal pain perception and sleep induction. The trigeminoservical complex, which plays an important role in the formation of headaches, is connected by a number of root structures. Patients before a migraine attack often yawn, experience hunger and drowsiness, which can occur due to changes in the hypothalamus and orexin neurons, and are confirmed in their studies using functional magnetic resonance imaging before and during a migraine attack [10]. In this way, a connection is established between the systems that regulate the processes of sleep and wakefulness and the systems involved in the formation of headaches.

A biocultural model of the mechanisms of association between chronic insomnia and chronic headache has been proposed, which includes three main points:

- ✓ attempts to overcome headaches can accelerate and exacerbate sleep disorders;
- ✓ impaired sleep physiology increases susceptibility to headaches;
- ✓ over time, these cycles interact and serve to transition from episodic headaches to chronic headaches [11].

Important conditions include the characteristics of the anxious individual and the tendency to activate the sympathetic nervous system, which, together with psychological stress, can be the trigger for sleep disorders. Efforts to eliminate sleep disorders (compensatory daytime sleep, taking sleeping pills before bed, and caffeine during the day) lead to the continuation of chronic insomnia. This model explains the interaction of biological and psychological factors in the development of sleep disorders [11].

Sleep disorders and comorbidity of different types of headaches

According to MKGB-3 (2018) there are:

- ✓ the main headache that is not the result of any disease;
- ✓ secondary or symptomatic headache, in which pain is a symptom of the underlying disease;
- ✓ cranial neuralgia and other facial pain;
- ✓ pain due to psychiatric disorders.

The primary headache group includes migraines, tension headaches, cluster headaches, and other less common options. Primary headaches are more common in the population, accounting for 85-90% of headache cases. It is a major headache such as migraines and cluster headaches, which are often accompanied by sleep disorders.

The relationship between headaches and sleep disorders is multifaceted. On the one hand, headaches can be the result of sleep disorders, a typical example of which is hypnotic headaches. Patients with migraine and trigeminal vegetative cephalgia, which include cluster headaches, report attacks of headaches during sleep. On the other hand, insomnia can lead to the development of headaches. Population studies have identified comorbidity between migraine and restless legs syndrome, migraine and narcolepsy.

Another aspect is that some medications used to treat headaches can cause sleep disorders. Beta blockers, the first line of preventive treatment for frequent migraine attacks, cause difficult dreams and frequent awakenings at night. They reduce the secretion of endogenous melatonin, which leads to suppression of the sleep signal and can lead to sleep disturbances and sleep breakdown. Thus, according to polysomnography, increased arousal compared to placebo has been shown when taking propranolol. Tricyclic antidepressants (amitriptyline), often used to treat migraine attacks, not only shorten the overall duration of sleep, but also increase morning and daytime sleep. Tryptans-specialized drugs selected to eliminate migraine attacks are included in the standards and recommendations for the treatment of migraines. Frequent drowsiness can be one of the side effects

of this group of drugs, which is the result of direct exposure to the serotonergic system. Benzodiazepines prescribed for sleep disorders can not only exacerbate headaches, but also cause them. Headaches due to substance abuse are exacerbated by prescribing drugs that affect the central nervous system. On the contrary, in the preventive treatment of migraines with anticonvulsants (topiramate and valproate), first of all, sleep improves, which gives the first quick effect - a decrease in the intensity and frequency of migraine attacks is observed [12].

The first large-scale epidemiological study was conducted in Denmark to assess comorbidity conditions between headaches and sleep disorders [13]. 68,518 people took part in the survey, most of them under the age of 55 (80% answered questions offline, 20% answered questions online). 18.1% of people were simultaneously exposed to headaches and insomnia (the high frequency of these diseases is associated with common pathophysiological mechanisms). Another 16.3% suffered from headaches only, while 21.1% had sleep-only problems. Comorbid pathology was more common in women and middle-aged people.

Of all types of headaches, the attention of scientists is primarily attracted by migraines as a disease that significantly impairs working capacity [13]. The frequency of migraines in the population is 14.5%. Migraine headaches are usually pulsating, unilateral and less bilateral. Migraines are often accompanied by nausea, photo and phonophobia. Women suffer from migraines more often than men, in a 5: 2 ratio.

In this study, as in the previous series, migraine patients experienced more anxiety symptoms than control group patients. It is interesting to note that patients with sleep migraines are more tired during the day than patients with regular migraines. There is an assumption that the low "excitability" of patients with sleep migraines may be associated with periaqueductal gray matter, which plays an important role in migraine pathogenesis [19].

Statistical analysis has shown that the most important and independent factor in the increase in migraine attacks was the duration of sleep. Findings suggest that changing sleep duration opens up new perspectives in the treatment of migraine patients [21].

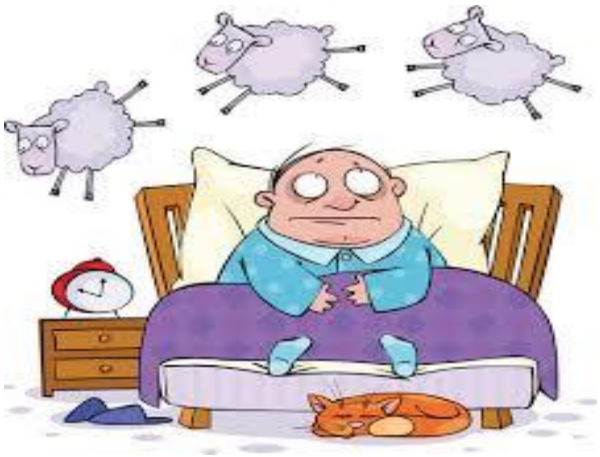
Another type of primary headache is cluster headache, which is most common among trigeminal autonomic cephalgias. It is characterized by severe one-sided headaches and is accompanied by vegetative syndromes: redness of the eye / face, lacrimation, rhinorrhea, nasal congestion. The pain affects the frontotemporal region and the orbital area, usually reaching 10 points on the visual analog scale, and is painful for the patient. This is accompanied not only by vegetative symptoms in the area of the face, but also by excitement and agitation. Cluster headaches occur in 0.1% of the population and are more common in men than women, with a ratio of 4: 1. An important feature of the disease is a series of headache attacks with a long range of attacks [22]. Cluster pain is distinguished from other headaches by the apparent association of attacks with circadian rhythm. More than 75% of episodic and chronic cluster headache attacks start between 21:00 and 10:00, usually between 05:00 and 07:00. In six out of ten patients, cluster headaches are accompanied by obstructive sleep apnea, and in some cases, a remission of this headache is achieved as a result of apnea treatment.

A number of studies have been conducted on the relationship between cluster headaches and hormone secretion: melatonin, cortisol, testosterone, luteinizing and follicle-stimulating hormones, prolactin, growth hormone, thyroid-stimulating hormone, and beta-lipoprotein. In cluster headaches, the concentration of most of them changes only during an attack. A decrease in melatonin levels in urine in patients with cluster headaches was found during a series of headache attacks. According to the results of neuroimaging, including positron emission and functional magnetic resonance imaging, during an attack, neural activation of the hypothalamus, closely related to the secretion of these substances, is recorded on the side of the headache. Taking into account the data obtained, it is

necessary to further study the possibility of active use of melatonin in the treatment of cluster headaches.

Another rare variant of primary headache is hypnotic headache. It develops only during night sleep, first appearing after 50 years of age and growing with age. Many patients record an episode of headaches that appear in the middle or second half of sleep and cause arousal. In a study of 255 patients with hypnotic headaches, many developed attacks that lasted more than two hours, starting from two to four in the morning at the same time.

Melatonin at a dose of 3-5 mg / day, used in the treatment of chronobiological diseases, was proposed for the treatment of hypnotic headaches and showed high positive results [23]. The data obtained indicate the need for additional study of the possibility of using melatonin for headaches, taking into account not only the effects of hypnosis, but also the analgesic and antinocyseptive effects.



Research objective:

The studies carried out made it possible to collect a huge amount of materials that indicate the connection between various sleep disorders and headaches and the general pathophysiological and psychological causes of the development of these conditions. The data obtained allows melatonin to be used not only to normalize the circadian rhythm and treat sleep disorders, but also in the complex treatment of headaches, especially chronic diseases.

Materials and research methods:

Polysomnography data confirm a reduction in sleep duration in patients with primary headache and Dissirculatory encephalopathy 1-2 degrees cefalgic syndrome. In addition, disturbances in the slow wave sleep and REM sleep phases in migraines were found to be accompanied by changes in beta rhythm, a decrease in cortical activity, according to the results of electroencephalography at night before a migraine attack [18].

Research results: From 133 people aged 18-59, we conducted a survey by experts among 108 patients with frequent primary headaches and Dissirculatory encephalopathy 1-2 degrees cefalgic syndrome. The result was 63 patients with chronic primary headaches (migraines and tension-type headaches), of which 38 (81%) were diagnosed with daytime drowsiness. A number of interesting results were achieved. Thus, there was no difference between patients with chronic migraines and tension-type headaches. Daytime drowsiness is more common in patients with a high frequency of headache attacks (more than 80 attacks in three months). The link between migraine's disability scale in everyday life, drug abuse, and intervention in daytime sleepiness activities has not been established. The authors concluded that active detection of sleep disorders in patients with chronic headaches and simultaneous treatment of both conditions is necessary to increase the effectiveness of therapy and improve its results.

Conclusion: the development of new drug strategies aimed at specific receptors can provide new insights into the relationship between sleep regulation mechanisms and sleep arousal and headache-inducing systems. New molecules acting for control purposes (orexin receptors, calcitonin gene-dependent peptide, and 5-HT1F receptors) must be studied to simultaneously affect sleep disorders and headaches. Risk Factors included low socioeconomic status, unhealthy lifestyle (overweight/obesity), high stress levels, anxiety, and depression. The researchers concluded that in clinical practice it is necessary to actively identify patients with headaches and sleep disorders

Prevention of lifestyle changes, reducing the effects of stress, checking depression and anxiety can be of great importance for the treatment and Prevention of a combination of headaches and sleep disorders

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