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COGNITIVE DISORDERS IN PATIENTS WITH MIGRAINE, THEIR CHARACTERISTICS AND POSSIBLE CAUSES

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Abstract

Currently, migraine is one of the most common forms of primary headache. According to the results of various studies, 11-15% of the world's adult population suffers from migraine. According to data shown by a number of studies, the prevalence of migraine among the adult population of Europe has reached 14%, in China - 9.3%, in the USA - 20.2%. According to similar studies, in Russia there is also a high prevalence of migraine - 20.3% of the population, but it should be noted that a significant portion of migraine cases in domestic healthcare is often not diagnosed, which significantly distorts the idea of the prevalence of migraine in Uzbekistan. Migraine is a neurovascular disease, a primary form of headache, significantly limiting the ability of patients to work, reducing the quality of everyday life. It is known that chronic migraine is the most common form of CHD (chronic daily headache). According to a number of studies, chronic migraine affects about 1-4% of the world's population and is the cause of long-term disability and, as a result, significant socio-economic losses. Chronic migraine is characterized by a higher frequency and severity of pain attacks than episodic headaches. Since 1990, the interest of foreign researchers has been attracted by the presence of clinically asymptomatic lesions of the white matter of the brain based on the results of MRI studies conducted on patients with chronic migraine. It is known that for a long time, magnetic resonance imaging (MRI) for migraine has been used primarily to exclude secondary forms of headache. However, with the development of radiation diagnostic methods, foreign researchers began to note the presence of concomitant areas of hyperintensive MR signal in patients with migraine. Quantitative studies of MRI data in patients with migraine with changes in the white matter of the cerebral hemispheres, performed in 2009, demonstrated signs of tissue damage in the hyperintensity zone . Neuroimaging studies (MRI) have revealed chronic, hyperintense foci in the supratentorial white matter in some of the examined patients with CM. The pattern of white matter lesions revealed is similar to that seen in ischemic brain injury. Structural changes associated with migraine may also be particularly noticeable in young patients and gradually decrease with age, against the background of age-related changes, since, as noted above, they are similar to ischemic changes. Older age is associated with other pathological conditions, such as hypertension or diabetes mellitus, which can lead to structural changes in the brain and may complicate the detection of migraine-related changes. These white matter changes may be so minor that they are often detected only in the intact brain of younger patients without other comorbidities that can affect the structure of the white matter. It should be noted that there are certain difficulties in diagnosing the cause of MRI changes in migraine, which is associated with the patient's age and concomitant diseases. In these cases, it is necessary to take into account

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the high probability of a relationship between MRI changes not with the pathogenesis of migraine, but with age or concomitant diseases. The problem of the relationship between MRI changes and HM as a whole remains open, since large longitudinal studies on this topic have not been conducted. Also, foreign studies have confirmed the presence of cognitive disorders and emotional spectrum disorders in various forms of headache, including migraine. At the moment, most studies have described a decrease in attention in patients with migraine (especially patients with migraine with aura), and a frequent impairment of executive function is also noted. Memory disorders, delayed and immediate reproduction are described less often. It should be noted that the cognitive impairment is relatively mild, which further complicates their diagnosis during a routine neurological examination. Currently, there is an insufficient number of studies on the relationship between higher mental function (HMF) disorders and CM, and the question of the relationship between cognitive impairment in CM and changes in the white matter of the brain, increasingly observed according to MRI studies, remains open. As is known, emotional and cognitive disorders negatively affect the course of chronic pain syndromes, aggravating their course, over time forming a kind of "vicious circle", thus, the correction of cognitive and emotional spectrum disorders will improve the course of the underlying disease. Cognitive function disorders in patients with migraine are extremely diverse. Also, of great importance in clinical practice is the determination of the degree of HMF disorders in chronic migraine, as well as combined (drug and non-drug) correction of cognitive and emotional disorders. According to many studies, a pronounced relationship is noted between the characteristics of the pain syndrome (intensity, frequency) and HMF disorders (mainly emotional spectrum - anxiety, depression). Taking into account the above, it can be noted that the question of the relationship of CM with changes in the MR picture of the brain matter and their relation to concomitant cognitive and emotional disorders remains open. The tactics of treatment of both pain syndrome and concomitant disorders of higher mental functions are determined by the individual characteristics of the patient, the intensity of the pain syndrome, the frequency of pain attacks, the neuropsychological characteristics of the patient, and the degree of disorders of higher mental functions. To improve further management of patients with CM and concomitant disorders of higher mental functions, it is currently necessary to use methods of combined therapy (drug and non-drug methods).

INTRODUCTION

The aim of the study is to determine the presence of cognitive and/or emotional disorders, as well as their relationship, and to compare them with neuroimaging characteristics in chronic migraine.

OBJECTIVES OF THE STUDY

To analyze typical medical practice in patients with chronic migraine and white matter lesions according to MRI data. To determine the presence and nature of cognitive impairment in patients with chronic migraine and white matter lesions according to MRI data. To determine the presence and nature of emotional impairment in patients with chronic migraine and white matter lesions according to MRI data.

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RESULTS OF THE STUDY

Migraine is a multifactorial neurovascular cephalgic syndrome related to primary headache. Migraine manifests itself in attacks of pulsating headache, most often unilateral (hemicrania). For most cases, nausea (less often vomiting), increased sensitivity to bright light (photophobia) and loud sounds (phonophobia) are also characteristic. The diagnosis of migraine, like other forms of primary cephalgia, is based on a thorough questioning of the patient, analysis of his complaints and anamnesis, and an objective examination. In most clinical cases, migraine diagnosis is not difficult and does not require additional examination methods. However, like any other form of pain syndrome, migraine headache is a subjective phenomenon in which there are no specific objective markers. The absence of such specific markers, as well as a pronounced subjective component, often forces doctors to conduct additional examinations. However, it should be noted that additional instrumental examinations, including MRI, are not indicated in the classic clinical picture of the disease. When making a diagnosis, one should rely on the diagnostic criteria of the ICHD-3 revised version of 2018. Most patients with migraine are characterized by an episodic form of migraine (uncomplicated or episodic migraine), less than 15 days of headache per month. In about 30% of cases, migraine attacks are preceded by an aura (visual disturbances, less often sensory or motor disorders), usually lasting no more than an hour, occurring shortly before an attack of headache or simultaneously with its onset. Chronic migraine (previously transformed) is a complication of episodic migraine, and is characterized by the presence in the clinical picture of more than 15 days with headache during a month, for more than 3 months. It should be noted that in this case, HA, which corresponds to the clinical picture of migraine, is observed at least 8 days a month in the absence of indications of drug abuse (which is an important difference between chronic migraine and drug-induced headache). Chronic migraine should be considered as one of the unfavorable outcomes of episodic migraine, especially often CM develops from migraine without aura. CM brings additional suffering to the patient not only due to frequent attacks of HA, but also due to the addition of comorbid disorders, especially emotional-affective disorders, and often against the background of inadequate and improper use of drug therapy (drug abuse), drug-induced headache develops in patients with CM. The combination of drug-induced headache and CM often leads to complicated diagnostics of these forms of HA and a weaker response to the treatment. The combination of frequent and intense attacks of HA and the above-mentioned comorbid disorders ultimately leads to significant maladaptation of the patient. Diagnosis of chronic migraine is often difficult because over time the clinical picture of HA undergoes significant changes, it often persists into old age, the intensity of the pain syndrome often decreases, the picture can become more "blurred". Among all forms of chronic daily headache (CDH), CM is the most common 60-75%. Every year, 2.5% of patients experience the transition from episodic migraine to CM. Often, a combination of different forms of migraine with various comorbid pathological conditions is noted, which can significantly reduce the quality of life of patients not only during an attack, but also in the non-attack period. According to the obtained data, emotional-affective disorders (often represented by anxiety disorder and depression), panic attacks, decreased quality of night sleep, dysfunction of pericranial muscles, as well as other forms of headache combined with migraine, are the most significant in the structure of comorbid disorders in patients with migraine. During the conversation with the patient, it is necessary to

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determine the risk factors for the chronicity of migraine. Risk factors for the chronicity of migraine include female gender, age, frequent attacks in the early stages of the disease (at the onset, more than three per month), combined disorders of higher mental functions (cognitive impairment, depression, anxiety, somatoform disorders), as well as inadequate and incorrect use of painkillers (drug abuse). Also, the factors of migraine chronization include concomitant chronic pain syndromes, uncontrolled caffeine consumption, history of head or neck trauma, use of oral contraceptives, and obesity. The patient's personality and pain behavior are also significant factors in migraine chronization . Currently, the pathophysiological mechanisms of migraine formation continue to be studied; involvement of central and peripheral sensitization , dysfunction of the antinociceptive system, neurogenic inflammation, and hyperexcitability have been noted. cortex of the cerebral cortex (especially the occipital lobes). It is also assumed that repeated migraine attacks lead to sensitization of the trigeminal nerve, which ultimately leads to a decrease in the activation threshold of this system, an increase in the frequency of headache attacks with the subsequent formation of chronic migraine. An important issue in understanding the neurobiology of migraine is the study of the mechanisms of primary dysfunction of the brain that provoke spreading cortical depression and trigeminal activation. Migraine attacks often occur against the background of emotional stress, weather changes, menstruation, hunger, stuffiness (in some cases cold), alcohol or certain foods, sleep hygiene disorders. A characteristic feature of migraine headache is its occurrence at a young age, before 20 years. However, in old age, some patients may continue to have migraine attacks, in which case there is a decrease in the intensity of headache, a more diffuse localization of pain, which can significantly complicate diagnosis. In such cases, a misconception about the causes of headaches is often formed, and such patients are often diagnosed with cerebrovascular disease, which in turn leads to the prescription of ineffective treatment and an increased risk of migraine chronification and further maladaptation of the patient. Today, migraine is one of the most common forms of primary headache. According to various sources, migraine affects 11% to 15% of the adult population. Migraine is more common in women (approximately 2-3 times more often) and usually debuts between the ages of 10 and 20. In the United States, 18% of women and 6% of men have suffered at least one migraine attack. The peak prevalence of different forms of migraine in both men and women occurs at the age of 35-45 years, while some studies have noted a relationship between the prevalence of migraine and the socioeconomic well-being of families, so the prevalence of HA in the group with the lowest income (<10,000 US dollars) is more than 60% higher than in the 2 groups with the highest income (more than 30,000 US dollars). At the same time, the number of patients with severe maladjustment and decreased ability to work did not depend on gender, age, income level or place of residence (urban or rural area). According to a number of studies, migraine is the second most common form of primary cephalgia after TTH; in the European Region, 16 to 20% of the adult population suffers from migraine, while the primary incidence of migraine and TTH is almost equal. All patients suffering from migraine report a significant decrease in quality of life, 17.7% of men and 28% of women report a loss of more than 10% of their productive time due to headaches. Migraine significantly increases the burden on the country's economy, as indirect costs (associated mainly with a drop in productivity) amounted to 1.8% of GDP in Uzbekistan. There is a high level of comorbid affective disorders among patients with migraine (about 25%), 11% of

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patients with migraine noted frequent anxiety disorders, 15% of patients noted avoidance of daily activities, which was associated with a high frequency and severity of headache attacks. Neuroimaging changes in patients with migraine, their relationship with clinical characteristics of attacks. Performing additional neuroimaging studies in the absence of indications for MRI ("red flags" or "danger signals") is not highly informative in relation to the diagnosis of migraine and comorbid disorders, and is indicated in cases of atypical migraine, as well as when there is a suspicion of a symptomatic nature of headache. However, when performing magnetic resonance imaging (MRI), some patients are found to have damage to the white matter of the brain, the genesis and clinical significance of which are currently not fully understood. In most cases, patients with migraine undergo magnetic resonance imaging (MRI) of the brain to exclude secondary causes of headache (space-occupying lesions, infectious lesions of the central nervous system, aneurysms, etc.), and in some cases focal and infarct-like changes in the brain matter are detected on tomograms. Also, when conducting MR morphometry (a method of post- processing an array of MR data, with the calculation of the volume of various anatomical structures of the brain), such patients have a decrease in the volume of gray and white matter of the brain. According to a number of studies, the frequency of detecting changes in brain matter in patients with chronic migraine during MRI varies from 12 to 46%, while it should be noted that the side of the foci on MRI in this series of cases did not always correspond to the side of the characteristic aura or headache. The duration of cephalgia, the intensity and frequency of attacks, as well as the intake of triptans and ergotamine drugs do not have a significant effect on the degree of damage to the white matter of the brain. For patients under 40 years of age, the predominantly subcortical location of foci in the central and frontal white matter of the brain is characteristic. Visual assessment of MRI tomograms can reveal focal lesions of the white matter and changes that a number of authors define as small cerebral infarctions, however, due to the lack of a complete understanding of the mechanism of their occurrence, the most preferable term is “ infarction-like changes in the brain matter” (in foreign literature Infarct-like lesions (ILLs) or "white matter abnormalities" (White matter abnormalities (WMAs)).

CONCLUSIONS

Thus, patients with migraine and signs of leukoencephalopathy have cognitive impairments that cannot be explained by damage to the brain substance. The development of cognitive impairments is significantly affected by the negative impact of chronic pain, probably mediated by central sensitization processes , as well as emotional disorders that are associated with chronic pain and lead to additional deterioration of cognitive functions. Preventive treatment of migraine is accompanied by both a decrease in the number of days with headaches and a decrease in emotional disorders, and an improvement in cognitive functions. Preventive treatment of migraine and associated emotional disorders seems to be the most effective way to improve cognitive functions.

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