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MODERN APPROACH TO THE PROBLEM OF DIAGNOSIS OF CHRONIC MIGRAINE

[1]*Matlyuba Sanoyeva, PhD, [2]Munisahkon Gulova, [3]Rakhimbayeva Gulnora, [4]Saidvaliev Farruh DSc and [5]Mekhriniso Avezova

[1]Senior Researcher, Department of Neurology, Bukhara State Medical Institute, A.Navai Str., 1, Bukhara, Uzbekistan.

[2]Master Degree, Department of Neurology, Bukhara State Medical Institute, A.Navai Str., 1, Bukhara, Uzbekistan.

[3]DSc, Professor, Farabi Str., 2, Tashkent, Uzbekistan.

[4]Professor, Neurology Department of Tashkent Medical Academy, Farabi str.2, Tashkent Uzbekistan, 100109.

[5]Master Degree, Ophthalmology Department of Bukhara State Medical Institute, A.Navai Str.1, Bukhara, Uzbekistan, 200100,

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***Corresponding Author**
Matlyuba Sanoyeva
Senior Researcher,
Department of Neurology,
Bukhara State Medical
Institute, A.Navai Str., 1,
Bukhara, Uzbekistan.

ABSTRACT

Complex pathobiochemical mechanism of chronic migraine development and difficulty of relieve and preventive therapy, thepolymorphismof clinical picture and frequent vascular complications, such as acute or chronic circulatory disorders in brain vesselslends great relevancein the study of this issue. The only way to prevent the consequences of migraine is to treat itconstantly, prevention of complications and maintenance of general health. The purpose of the study was to study the clinical and neurological and bioelectric features of the course of chronic migraine. We studied 82 (100%) patients with chronic migraine, aged 12 to 47 years. We analysed clinical, neurological, and electroencephalographic researches, the ID-migraine questionnaire, the MIDAS scale with the determination of migraine severity, and the Hamilton scale with the assessment of psychopathological statewere used. Based on the study, it was found that headache by type of hemicrania plays a significant role in the formation of autonomic nervous system (ANS) dysfunction and clinical vascular manifestations. Prolonged migraine paroxysms change the sleep formula, disrupting

the normal alternation of sleep-rest mode, undermining the vitality with the development of the psychopathological state, thereby significantly reduces the quality of life. In chronic migraines, there are more severe psychopathological conditions in the form of depression and anxiety disorders, which are associated not only with reactive, but also organic, structural changes in the limbic system of the brain,caused by dystonia/cerebral vascular dyscirculation. Psychopathological status aggravates the course of the disease, disrupts the neuroplasticity of the brain, thereby negatively affects the inter-neuronal connection, with the formation of cognitive dysfunction, daily activity decrease, and a slowdown the recovery of lost neurological functions.

KEYWORD: migraine, chronic migraine, ID-migraine questionnaire, MIDAS scale.

RELEVANCE

Chronic migraine is an exacerbation of episodic migraine, which ischaracterized by prolonged headaches for several weeks a month, often accompanied by short light intervals. It occurs in about 14% of the world's population, often leads to the development of social maladaptation, disability, and thus worsens the quality of life.[5,6,12,14] Over 20% of women suffer from migraine and more than 10% of men in the population, it has a genetic basis, however, some paroxysms are provoked by internal or external influences.[4,16,18] According to the world Health Organization (2012), migraines are among the top 40 serious states that cause disability worldwide, as well as stroke, meningitis and epilepsy, while chronic migraine[2,16] in particular, according to some data, bring a significant economic burden on society and the states as a whole.[3,15] According to the classification of the international headache society (ICHD), chronic migraine refers to patients with frequent headaches that are considered biologically migraine (Headache Classification Committee of the International headache society, 2013).[2,5] The Diagnosis of "chronic migraine" has been modified over the past two decades and replaced an earlier terminology such as "chronic daily headache" and "transformed migraine".[11,12,14] The increasing interest in pathophysiology, epidemiology, and treatment is associated with the concept of scientists who have mistaken migraine as a chronic disease.[10]

In migraine attacks, the main role is played by successive stages of changes in vascular tone: spasm, dilation, edema of vascular walls and periarterial tissues, which determines the clinic of the disease (pulsating pain that increases by physical activity, nausea and/or vomiting, phone-and photophobia).[7,14] A characteristic sign of the disease is the migraine aura in the

form of transient neurological symptoms that precede a headache attack. In total only about 20% of migraine sufferers experience an aura prior to beginning of thehemicrania, and mostly it is visual - positive (floating objects, flashes of light, moving or expanding zigzag patterns, etc.), negative (loss of vision, causing blind spots) and sensory (tingling, numbness, spreading to the arm, forearm, face, lips, and tongue on one side of the body). Up to 20% of migraine patients experience migraine prodromes within 48 hours before the onset of migraine attacks (fatigue or abnormal bursts of energy, neck stiffness, yawning, and frequent urination).[11,17] Scientists discovered hyperactive brain sites during the prodrum period.[3] Within 3-7 days after stopping the attack, patients may experience a post-syndrome phase (diffuse headache, bruising in the head, fatigue and nausea, drowsiness, intolerance to noise, light and smell).[13,14]

Complexpathobiochemical mechanism of chronic migraine development, the difficulty of cupping and preventive therapy, the polymorphism of clinical picture, and frequent vascular complications in the form of acute or chronic circulatory disorders in the vessels of the brain attach particular relevance to explore this problem. The only way to prevent the consequences of migraine is to treat it permanently, prevent complications, and maintain general health.[16,17]

The purpose of our research was to study the clinical, neurological, and bioelectric features of the course of chronic migraine.

Methods of research and material

We studied 82 (100%) patients with chronic migraine, aged 12 to 47 years; the average age was 31.9±3.8 years. A thorough analysis of clinical, neurological, and electroencephalographic studies was carried out, for this purpose, the ID-migraine questionnaire, the MIDAS scale, was used to determine migraine severity. The Hamilton scale with the assessment of psychopathological state, andcognitive function was studied, with the definition of attention, memory, and information processing speed.

RESULTS

In analyzing the clinical course of chronic migraine, we monitored the history of the disease, the duration and frequency of attacks, the presence of light intervals between migraines paroxysms, the Duration of the disease varied from seven to 27 years. It has been determined that the severity of the clinical course of migraine was inversely proportional to the duration

of the disease and the age of patients. So, through an anamnesis of over 10 years, , the risk of development vascular complicated forms increased by 2.6 times, while, the older the patients were, the easier it was to tolerate a migraine attack, despite the existence of vascular deficit, and at a younger age, with a shorter anamnesis, attacks took more difficult, both in psychological and physical terms. Thecredible evidence for this was a reliably long history of the disease, a long period of attacks (up to 21 days, often without light intervals), and the frequency of attacks in chronic migraine was on average 4.7±0.7 times every 3 months. The light intervals had a fairly short period, accounting for 4.6±0.7 days, in contrast to uncomplicated forms of migraine (P<0.05).

Provoking factors of chronic migraine were various causes, among which prevailed physical exertion, sleep disorders, catamenal factor, and lack of adequate therapy and resistance of migraine attacks to drugs (Fig. 1).

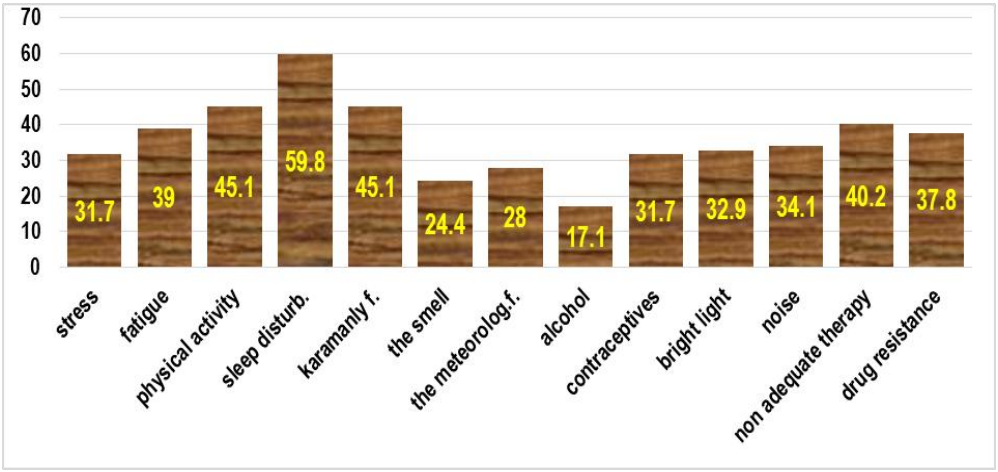


Fig. 1: Factors that provoke attacks of chronic migraine.

In the hereditary factor, the female line played a significant role. Men of fathers suffering from migraine headaches were 2.4 times less than mothers with migraines (P>0.005). However, in patients whose both parents suffered from migraines, aura attacks and hemicrania were observed twice as often (P>0.05), runs more severe and longer than in patients where suffered only one parent (Fig. 2).

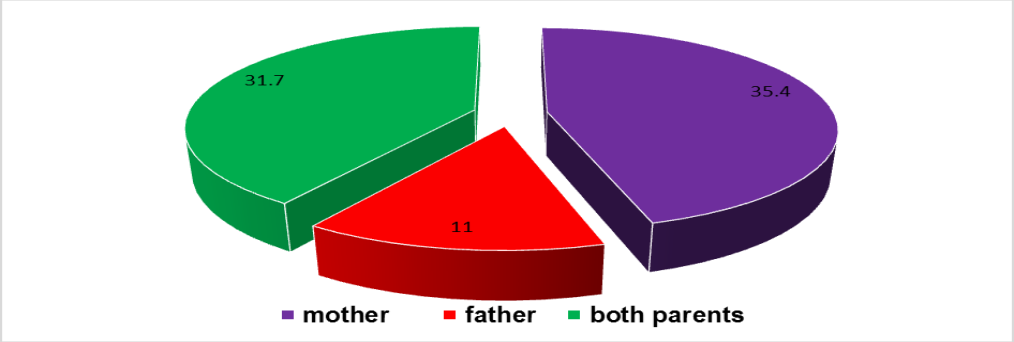


Fig. 2: Distribution of patients with chronic migraine by hereditary factor.

The analysis of cause-and-effect factors in chronic migraine confirmed the polyethologicity and polymorphism of its pathogenesis, and a great influence hadexogenous and endogenous factors in the formation of attacks. Particular attention was drawn to the fact that exogenous factors prevailed in uncomplicated forms, while endogenous factors prevailed in chronic migraines.

Migraine with aura was observed in 32 (39.0%) patients with chronic migraine, which lasted up to 35 minutes. Patients of childhood suffering from migraine with aura (MA) were characterized by the longest aura (up to 40-50 minutes), in the form of visual-sensory symptoms – Alice in Wonderland syndrome, 8.6% of children who had generalized convulsions with loss of consciousness had migraines with aura, and almost always the convulsions developed against the background of intense attacks of hemicrania. The presence of an aura was 3 times more prevalent compared to uncomplicated forms of migraine ($P<0.05$).

The ID-migraine assessed the main complaints of patients such as nausea and vomiting, intolerance to light and sound, restriction of workability, study and daily living activities at least for one day in the background of headaches, the questionnaire analyzed patients admission in the last three months. The questionnaire allowed quantifying the impact of subjective data on a patient's physical and emotional state, which was especially helpful for dynamic control under the course of treatment.

Chronic migraine was more difficult to endure due to prolonged migraine paroxysms, and the attacks, starting with a pressing character, increased to an intense pulsating one by 5-6 days. Multiple vomiting two times more prevailed in the group of patients with uncomplicated migraines ($P<0.05$). Children suffering from migraines, both with uncomplicated and chronic

migraines, suffered nausea and vomiting a lot heavier than in other age groups (P<0.05), vomiting was characterized mainly by recurrence , did not bring relief, and after the termination transmittedan urge to vomit.

Patients due to intolerance to the light and sound became anxious, agitated, aggressive, lost appetite, hyperosmiawas observed – they could not stand the smell of food, spices and perfumes, which increased the headache. The attacks led to a sharp decrease in performance and daily activity, which were the vital symptom of patients with chronic migraines prevailing the group with uncomplicated migraines by 2 times (p<0.05), in the majority (53.5%) of patients, it lasted for 3-5 days. After relief of migraine paroxysm-patients noted General lethargy, a feeling of heaviness and whole body fatigue, as well as drowsiness.

Nausea in chronic migraines was often combined with short-term systemic vertigo, which passed after deep sleep and taking NSAIDs. Comparing the indicators of ID-migraine, along with the classic symptoms revealed hyperosmia, hypersalivation, systemic vertigo, heaviness in the head during migraine attacks, restless legs syndrome, which were characterized by persistence and duration. In contrast to the main group in the comparison group, vomiting brought relief – headaches decreased, nausea stopped, the post-seizure period was easier for patients, and it ended within 3 to 6 hours. The psychoemotional background was more stable in contrast to the group of patients with chronic migraine (Fig. 3).

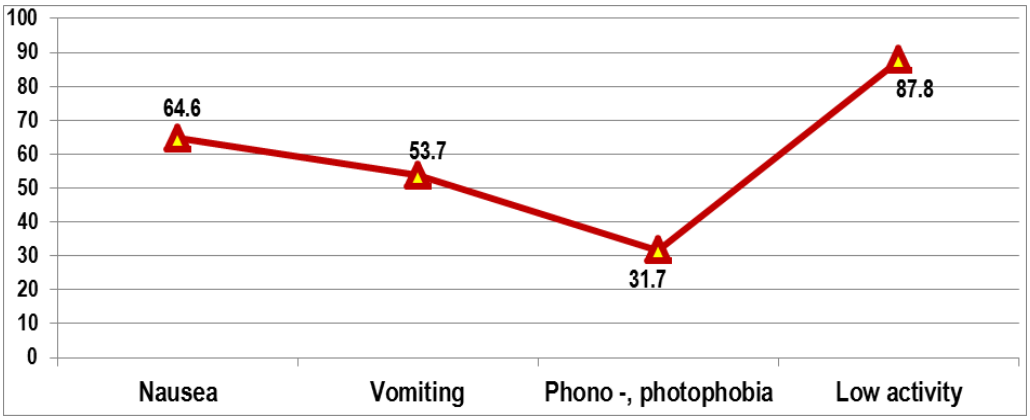


Fig. 3: Analysis of the results of the ID-migraine questionnaire.

The combination of photo-and phonophobia prevailed in chronic migraine, in contrast to its uncomplicated forms (P<0.05). Phonophobia was the predominant symptom of chronic migraine, in contrast to photophobia (P<0.05), which was apparently associated with the stimulation of nociceptors, causing cortical depression. As can be seen, the ID-migraine

questionnaire was a significant diagnostic marker for patients suffering from chronic migraine and provided differential diagnosis of the nature of migraine headaches in chronic Cephalgia and uncomplicated forms of migraine.

As the study shows, the ID-migraine questionnaire was a companion for patients, and these signs became the primary diagnostic marker for the differential diagnosis of chronic migraine from other types of headaches, the criteria of which were nausea, vomiting, phonophobia, and photophobia and decreased performance.

The impact of migraines on general health carried out by using the MIDAS scale, which allowed us to study the loss of performance due to GB in three main areas of life: study/work, housework and family, and sports/social activities. In this regard, we evaluated the completely "lost" days, as well as the number of days with a decrease in activity (by 50%), by daily recording them in the "Migraine" diary according to the sum of answers to all five questions for 3 months. The assessment of migraine severity was performed by dividing the examined patients with migraine into 4 groups, where group I corresponded to a minimal decrease or absence of decrease in performance and I degree of migraine severity, and group IV characterized by severe degree of migraine with complete loss of performance (table 1). The intensity of GB for qualitative and quantitative signs was characterized by testing patients with a one-dimensional scale of pain intensity –NRS, VRS and VAS, comparing them with the facial pain scale (Fig. 4).

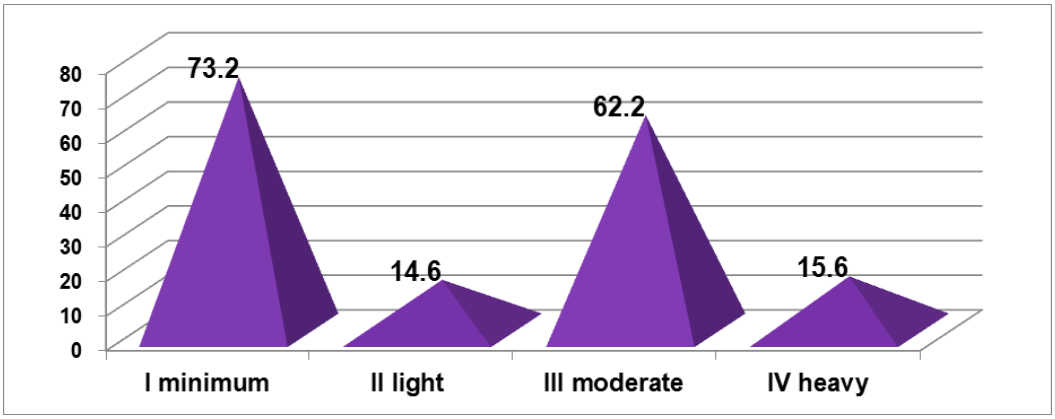


Fig. 4: Clinical severity on the MIDAS scale.

II mild and IV severe severity were observed 2 times more often than I mild ($P<0.05$), while the most frequent (8.5 times) were patients with III degree of migraine with complete loss of performance during migraine paroxysms ($P<0.001$) (table 1).

Table 1: Co-presentation of migraine severity levels on the MIDAS scale in patients with chronic migraine (n=82).

Severity	VRS	NRS	VAS	FPS	Кол-во пациентов	
					абс	%
I minimum	minorpain	1-3 Lin/city	nopain	1-2 points	6	7,3
II light	moderatepain	4-6 lines/city	nopain	3 points	12	14,6*
III moderate	intensepain	7-10 Lin/city	strong	4 points	51	62,2**
IV heavy	severepain	7-10 Lin/city	strong	5 points	13	15,6*

Note: - differences are significant relative to the minimum degree I (*- P<0.05, * * - P** - P<0.001)

Along with the qualitative and quantitative assessment of headache, the analysis of its nature and localization was performed.

The typical localization of hemicrania did not differ statistically from pain with diffuse spread, but the frontal-parietal localization of pain prevailed by 25% (P<0.05). By nature, pulsating GB prevailed by 33%, than pressing headache (P<0.05), and by 71.5%, than bursting headache (P<0.001) (Fig. 5).

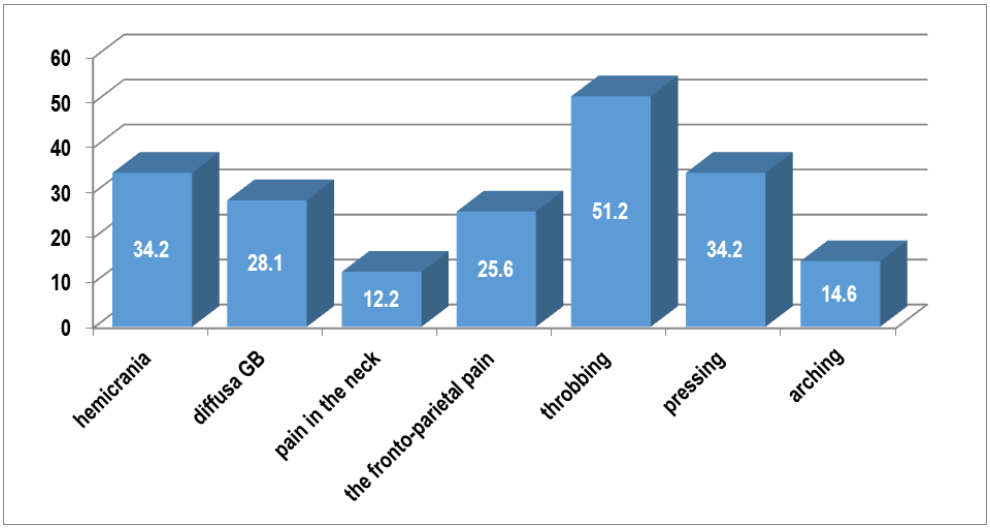
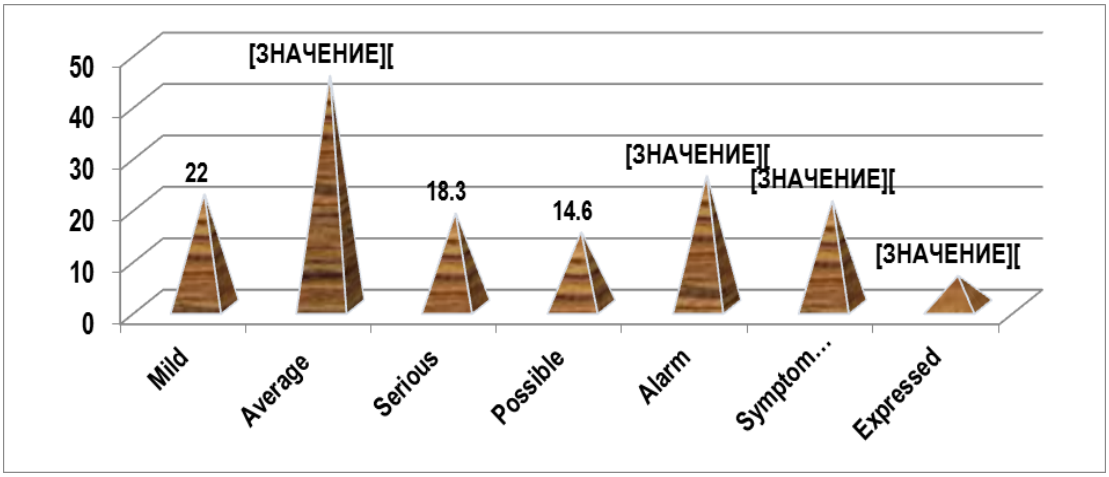


Fig. 5: The nature and localization of headaches in chronic migraine.

As can be seen, the MIDAS scale is one of the most sensitive and practically beneficial methods for timely identification the severity of the condition, evaluating the performance of patients with migraine, depending on the intensity and duration of migraine attacks. The MIDAS scale can be used in algorithms for differential diagnosis and the choice of therapeutic approaches to the treatment of chronic migraine, depending on the severity of the disease.

One of the certainly factors that provoke migraine was the state of the psychoemotional background. The study of patients with chronic migraine shown a direct correlation of psychobehavioral reaction with the intensity, duration and frequency of GB, therefore the psycho-emotional background of patients with chronic migraine was investigated (Fig. 5)that revealed depression and anxiety in varying degrees. Depression manifested itself by apathy, moodiness, isolation, reluctance to communicate with others, refusal to eat, constant lethargy and reluctance to the vigorous activity.



Note: - differences are significant relative to light degrees of the trait (*- P<0.05)

Fig. 5: Psychoemotional background in chronic migraine on the Hamilton scale (HDRS-21, HAM-A).

The medium degree of depression was twice as frequent as mild and severe degrees (P<0.05). Severe depression was mainly observed in patients with severe and long-term migraine paroxysms, that were resistant to therapy and age of the disease was more than 5 years old. Among the degrees of anxiety, anxiety prevailed (1.8 times) and symptomatic anxiety (1.4 times) with a reliability P<0.05 and P<0.01, respectively. Anxiety disorder in patients with migraine, apparently, was associated with sudden, frequent severe and painful migraine attacks, waiting for the next exacerbation, which proved the severe course of the disease, it manifested itself by hyperactivity, restlessness, restless gait, various anxious and obsessive thoughts (fixed idea with incurability of disease, intrusive questioning of every spoken word and prescribed treatment). Explicit anxiety was detected in patients who had frequent concomitant symptoms, in the form of vegetative reactions, and in turn, as a feedback, the psychopathological background often increased the existing vegetative reaction, sleep disorder and other additional symptoms. It must be emphasized that the depressive state

exceeded the anxiety state, but this difference was not statistically credible (P>0.05). Along with the main migraine symptoms, we were able to identify and analyze additional subjective symptoms (table 2).

Table 2: Additional subjective signs of complicated forms of migraine.

Indicators	Chronic migraine (n=82)	
	abs	%
Dissomnia	44	53,7
Sleepinessafterattacks	52	63,4
The lability of the CNS	59	72,0
Irritability	64	78,0
Hyperactivity	14	17,1
Hyperventilation	12	14,6
AD fluctuations	6	7,3
Chills	28	34,1
Diarrhea	8	9,8
Constipation	32	39,0
Increasedurination	23	28,0
Palloroftheface	12	14,6
Hyperhidrosis	47	57,3
Reduced appetite, refusal of food	62	75,6
Coldextremities	23	28,0
Restlesslegssyndrome	38	46,3

Dyssomnia, drowsiness, labiality of Central nervous system and irritability were statistically prevailed over vegetative symptoms. Of the vegetative symptoms, the most common were chills, constipation, and hyperhidrosis. More than half of patients noticed a decrease in appetite during the entire period of the migraine attack. Gastrointestinal dysfunction apparently had a Central Genesis, which was observed during the attack and within 3 to 4 days after its termination. Restless leg syndrome was an irritating factor and characteristic symptom of chronic migraines, that worsened sleep and increased the frequency of migraine attacks. Formation of vegetative dysfunction among variety of symptoms is a reactive state and/or response of the body to a long-existing pain syndrome, and confirms the serotonin, dopamine, and trigeminal-vascular theory of migraine attacks,[1,5,8,9,11,16]

Based on the analysis, it can be saidthat a headache by the type of hemicrania plays a significant role in the formation of ANS dysfunction and clinical vascular manifestations of migraine. Prolonged migraine paroxysms change the sleep formula, disrupting the normal alternation of sleep-rest mode, undermining the vitality with the development of psychopathological state, thereby significantly reducing the quality of life. In chronic

migraine, there are observed more severe psychopathological conditions in the form of depression and anxiety disorders, which are associated not only with reactive, but also organic, structural changes in the limbic system of the brain, caused by dystonia/cerebral vascular dyscirculation. Psychopathological status aggravates the course of the disease, disrupts the neuroplasticity of the brain, thereby negatively affects the inter-neuronal connection, with the formation of cognitive dysfunction, decrease in daily activity, and slowdown the recovery of lost neurological functions. Analysis of the psychovegetative system can become a diagnostic marker for chronic migraine, which has a great importance for General practitioners and neurologists.

CONCLUSIONS

1. Chronic migraine by its clinical course, psychovegetative and psychopathological changes can become a disabling disorder of the brain.
2. Prolonged migraine paroxysms, intense headaches observed in chronic migraines can cause the formation of a psychopathological state of the patient and reduce the patient's life quality.
3. The severity state in chronic migraine is directly correlated with the intensity of headaches, the severity of psychovegetative and psychopathological dysfunctions.

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