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# Study of Emotional State in Patients with Trigeminal Neuralgia

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**Resume.** Paroxysmal facial pains are a common group of human neurological diseases, characterized by the peculiarity of the clinical picture, a pronounced effect on the quality of life and persistent disability. Among them, the most severe is trigeminal neuralgia, which is one of the most stable pain syndromes in clinical neurology. Among pain syndromes of the face, trigeminal neuralgia ranks first in frequency and is common with a frequency of up to 30-50 cases per 100,000 population, and the incidence, according to WHO, is in the range of 2-4 people per 10,000 population. At the same time, more than 90% of cases are observed in people over 40 years of age and predominantly in women (60-70%).

It should be noted that the study of the characteristics of pain is still a rather complex and urgent task, in the implementation of which one has to face a complex of a number of problems. Within the framework of the medical-biological paradigm and in various psychological concepts, a large arsenal of approaches and methods for studying pain has been developed. However, until recently, a pain assessment test has not been developed that allows, without a long time investment, with a sufficient degree of reliability to assess the patient's condition in order to conduct adequate therapy or diagnosis.

**Keywords:** trigeminal neuralgia, clinical neurology, neuroticism, aggressiveness, emotional lability, dysregulation pathology.

**Relevance.** One of the new approaches to solving this problem is the use, along with the expansion of the verbal description of pain sensations, of a non-verbal symbol - color. A number of studies have revealed the features and patterns of the influence of color on the psychophysiological functions and emotional state of a person, including in the field of intrareceptive pain sensations. Therefore, the use of the verbal-color method to assess the pain syndrome in patients with trigeminal neuralgia can contribute both to the objectification of the obtained diagnostic data and to further adaptation and standardization of this method of studying pain.

Trigeminal neuralgia is one of the most severe diseases of the peripheral nervous system in terms of psycho-emotional stress impact on patients. Its consequences may depend not only on the strength and nature of pain, but also on the characteristics of the perception of pain. It is known that the perception of pain significantly depends on psychological factors. A number of studies have demonstrated the relationship between pain perception and depression and anxiety. In this regard, psychophysiological indicators of patients with trigeminal neuralgia, based on their temperamental characteristics, are of particular interest.

Immunological mechanisms may play an important role in the pathogenesis of pathological pain. Thus, the presence of a significant correlation between the pain threshold and the immune response has been shown. Neuroimmune mechanisms play a significant role in the formation of generators of pathologically enhanced excitation and the formation of a pathological algic system. Molecular receptors, common for nervous and immunocompetent cells, through which the combined regulation of pain control systems and immune responses is carried out, have been identified. The existing prerequisites give reason to believe that disorders of neuroendocrine-immune relationships are typical mechanisms of the pathogenesis of any pain syndromes.

The data accumulated to date on the mechanisms of development of trigeminal neuralgia and its effects on the body make it possible to reasonably consider this disease from the standpoint of dysregulation pathology. This circumstance requires the development of new approaches to assessing the condition of patients and the effectiveness of existing methods of pharmacotherapy, which determined the goal and objectives of this work.

For the first time, a study was made of the accentuated properties of the temperament of patients with trigeminal neuralgia. It is shown that for patients with severe pain syndrome, the predominance of accentuations of scales of emotional instability and social passivity is characteristic. Gender features of temperament accentuations in patients with trigeminal neuralgia have been established: men are more sensitive, vulnerable, impressionable, emotionally unstable, show timidity in social contacts, they have more pronounced anxiety and a sense of experiencing somatovegetative dysfunction. After treatment, in patients with trigeminal neuralgia, there is a decrease in neuroticism,



aggressiveness, emotional lability, which indicates an increase in emotionally stable temperament traits compared to emotionally unstable ones. However, individual manifestations of emotional instability at the end of treatment are not leveled.

The systematic approach used in the work to study the effects of complex pharmacotherapy in patients with trigeminal neuralgia made it possible to obtain data that help to elucidate the mechanisms of pain syndrome development from the standpoint of dysregulatory pathology and improve treatment.

**Purpose of the study.** Study of the emotional state of patients with trigeminal neuralgia, early diagnosis and development of treatment methods.

**Materials and research methods.** Clinical characteristics of patients. The study was performed with the participation of 42 patients of both sexes aged 33 to 73 years who were hospitalized at the Department of Maxillofacial Surgery of the Kursk Regional Clinical Hospital with a diagnosis of neuralgia of the II-III branches of the trigeminal nerve. All studies were performed before and after treatment.

**Research results.** In our work, for the treatment of trigeminal neuralgia, we used the drug Finlepsin in tablets of 200 mg (Pliva, Croatia), which is the drug of choice for this pathology. The regimen for the use of the drug was established individually, taking into account the indications and the condition of the patients. Primary patients were prescribed the drug as a test agent for differential diagnosis with another pathology of the maxillofacial area: if, after taking 600-800 mg of finlepsin, the analgesic effect did not develop, then the diagnosis of typical trigeminal neuralgia was not confirmed and such patients were excluded from the study.

In the case of confirmation of the diagnosis in primary patients, finlepsin was used at an initial dose of 200-400 mg per day, which was subsequently gradually increased until the pain completely disappeared in order to determine the effective dose. On average, the effective dose was 400-800 mg per day and was administered in two divided doses. Treatment at this dosage was carried out for 10 days, and then the patients were prescribed a maintenance dose of 400 mg per day, which was also divided into two doses. The course of treatment lasted up to 28 days. The given scheme of therapy allows minimizing the risk of developing adverse reactions. When prescribing Finlepsin, the time of the most intense pain was determined in the patient and the daily dose was distributed accordingly. Since most patients have intense attacks in the morning, a large dose was prescribed in the morning and / or immediately before bedtime. For repeated (recurrent) patients who had previously received Finlepsin, the drug was immediately prescribed in a therapeutic dose of 400-600 mg / day, which was divided into 2-3 doses. After the disappearance of pain, the dose was gradually reduced to maintenance.

Along with the use of finlepsin, complex therapy for trigeminal neuralgia included a number of other pharmacological drugs and physiotherapy. Throughout the hospital stay, patients received the antidepressant fluoxetine once at a dose of 20 mg in the morning or twice at 20 mg in the morning and afternoon. In addition, in the first 5 days after admission to inpatient treatment, prednisolone (60 mg) was administered intravenously to all patients in accordance with the accepted standard, symptomatic pathogenetic treatment was also performed: eufillin (5 ml of a 2.4% solution), spasmalgin (5 ml) and lasix (20 mg) in 200 ml of saline. In the next 5 days, patients received trental (5 ml) in a similar volume of saline. From the 11th to the 15th day of stay in the hospital, patients were prescribed an intravenous drip of actovegin (5 mg).

On the contrary, the scale indicators, which initially had the highest values, were subjected to correction to a much lesser extent. At the same time, the adaptability of patients to provoking environmental factors actually remained at the level observed upon admission to the hospital. The degree of decrease in the values of the other scales was 2-3 times less than the indicators of nociception, however, in all cases it also had a significant character. Thus, sensory perception of pain decreased by 12% ( $p < 0.001$ ), neuroticism - by 15% ( $p < 0.001$ ), emotional attitude to pain - by 18% ( $p < 0.001$ ). As a result of the treatment, the mean value of all studied scales decreased by only 24% ( $p < 0.001$ ).

The noted nature of the change in the indicators of individual assessment scales of the pain syndrome was also reflected in the structure of its components. Due to a decrease in the frequency of manifestation, duration and intensity of pain in the total manifestation of the pain syndrome, the share of the nociceptive level of perception decreased (by 12.5%,  $p < 0.001$ ). At the same time, the weakening of sensory sensation, pain experience and pain behavior also had a significant, but significantly less pronounced character. The index of adaptability of patients, determined using the modality scale, did not change at the end of the treatment, which is probably due to the peculiarities of the manifestation and pathogenesis of chronic pain syndrome in trigeminal neuralgia. At the end of treatment, the total severity of the levels was 60% of the maximum possible values and, therefore, decreased by 18% compared with its value when patients were admitted to the hospital.



Comparison of the indicators of rating scales in patients with their maximum possible values showed that the level of the modality scale, which characterizes the degree of disorders in the patient's adaptability to provoking environmental factors, reached maximum values in all patients and did not change after the end of treatment. The emotional attitude of patients to pain before treatment also had high values, which averaged 93% of the maximum possible values. However, this indicator at the end of treatment, in contrast to the modality scale, significantly decreased (by 18%).

Sensory perception of pain and the level of neuroticism in patients with trigeminal neuralgia were also quite pronounced and amounted to 72% and 75%, respectively, of the maximum value according to these scales before treatment. At the end of treatment, their significant decrease was noted. The scale indicators characterizing the level of nociception initially amounted to 62-68% of the maximum possible values, however, their decrease after the end of treatment was the largest.

The degree of increase in the pain test rating scales in comparison with their maximum possible indicators in the subgroups of men and women also did not differ significantly and fully corresponded to the nature of their changes in the general group. At the same time, it should be noted that the indicators of emotional attitude to pain in men almost reached the maximum values and amounted to 97.3%, while in women their severity was 10% less (87%).

Currently, there are no works in the literature in which a comprehensive study of the relationship between the characteristics of the pain syndrome and psychophysiological indicators was carried out. In this regard, it was of particular interest to study the properties of temperament in patients, which is currently assessed as a formal dynamic characteristic of mental processes and features of emotional response.

It was found that in the general group of patients with trigeminal neuralgia after treatment, the indicators of sensitivity (by 9%,  $p < 0.05$ ) and aggressiveness (by 14%,  $p < 0.01$ ) increase. At the same time, the indicators of neuroticism significantly decrease after treatment (by 11%,  $p < 0.05$ ), which indicates the effectiveness of the therapy. In women after treatment (Table 6), indicators of timidity (by 21%,  $p < 0.01$ ) and sensitivity (by 15%,  $p < 0.01$ ) were significantly increased, which indicates the preservation of emotionally unstable temperament traits noted before treatment. In men after treatment (Table 6), there was a statistically significant increase in the scales of hyperthymia (by 32%,  $p < 0.01$ ), social activity (by 24%,  $p < 0.05$ ) and a decrease in rigidity values (by 14%,  $p < 0.05$ ), which indicates the manifestation of socially active accentuated properties of temperament. There is also an increase in aggressiveness (by 15%,  $p < 0.05$ ), but a decrease in neuroticism (by 17%,  $p < 0.01$ ), which reflects the preservation of emotionally unstable accentuated traits of temperament properties after treatment.

Thus, certain gender features of temperamental characteristics are observed before and after treatment. When comparing the indicators of the TACT scales in men and women in both situations, it was found that in men, compared with women, the sensitivity index was significantly increased (by 16%,  $p < 0.05$ ). The values of the other scales did not differ significantly.

After the treatment, the level of social activity significantly increased in men compared to women (by 36%,  $p < 0.01$ ) against the background of a decrease in rigidity (by 24%,  $p < 0.05$ ). These facts may testify that in this case, socially active accentuations of temperament properties begin to appear in men. Thus, in the examined group of patients with trigeminal neuralgia before the start of treatment, men compared with women are distinguished by a higher level of sensitivity against the background of the absence of significant differences in other TACT scales. After the therapy, the features of psychophysiological changes manifested themselves in higher social activity in men.

In this regard, along with pure accentuated types of temperament, patients with a high frequency met mixed types, including these accentuations. After the treatment, the main temperamental characteristics of the patients were preserved, but the degree of their severity changed. At the same time, against the background of a weakening of a number of indicators of the emotional instability factor, which should be regarded as confirmation of the effectiveness of therapy, the preservation of certain enhanced properties of this temperament factor was observed. In addition, the data obtained allow us to conclude that a chronic disease with a pronounced pain syndrome increased the severity of accentuations of the emotional instability factor.

**Conclusion.** In patients with trigeminal neuralgia, upon admission to the hospital, the pain syndrome is characterized by the predominance of components associated with pain behavior, adaptability and emotional attitude to pain over nociception indicators. The structure of the pain syndrome before and after treatment has no gender differences.

The traditional complex treatment of trigeminal neuralgia has the most pronounced effect on the nociceptive components of paroxysmal facial pain. At the same time, the remaining non-nociceptive components of the pain syndrome after the therapy decreased less pronouncedly (sensory sensation, pain experience, pain behavior) or did not change (adaptability).

Features of the nature of the pain syndrome in patients with trigeminal neuralgia necessitate the optimization of pharmacotherapy in order to reduce the level of neuroticism of patients and the emotional attitude to pain.



The use of a multidimensional verbal-color pain test in patients with trigeminal neuralgia is an informative method for assessing pain, which allows optimizing the treatment of pain syndrome, taking into account the individual characteristics of its structure.

Patients with trigeminal neuralgia upon admission to the hospital are characterized by the predominance of the properties of emotional instability and social passivity in the structure of temperament. After complex treatment, there is a decrease in neuroticism and emotional lability, but manifestations of emotional instability persist.

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