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Research Article

## Features of Psychoemotional and Vegetative Status of Patients with Temporomandibular Joint Disorders - 8

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## ABSTRACT

In recent years many authors have noted the dominant influence of psychosocial factors in temporomandibular joint dysfunction development. The aim of the study is to assess the severity of pain, to reveal and study the features of emotional state and vegetative status of patients with TMJ disorders. 70 patients with TMJ dysfunction and 20 people without signs of the temporomandibular joint pathology were involved in the study. The examination included assessment of pain, emotional state and autonomic status. We used Visual-analogue scale, McGill pain questionnaire, Beck depression scale, Leonhard-Shmishek test and mathematic analysis of heart rhythm. In the study we revealed characteristic features of the emotional state in patients with temporomandibular joint dysfunction such as expressed of accentuations on the scale of cyclothymic and dysthymia (according to Leonhard-Shmishek test), mild degree depression due to Beck scale, and disturbances of vegetative balance in the form of moderate activation of sympathetic vegetative nervous system. The presence of characteristic features of the emotional state in patients with temporomandibular joint dysfunction confirms the role of stress factors in the development and worsening of TMJ disorders and dictates the need to include in the algorithm of complex diagnostics consultation of neuropsychiatrist, and also allows the dentist to carry out correctly dental treatment in the scheme of complex therapy.

**Keywords:** Temporomandibular Joint Dysfunction; Diagnosis of Pain Dysfunction Syndrome of Temporomandibular Joint Dysfunction; Complex Psychological Testing; Pain; Vegetative Status; Emotional State.

## INTRODUCTION

Nowdays, one of the urgent problems of dentistry is dysfunction of the temporomandibular joint, because of widespread of this pathology among the population, absence of common views on the etiology and pathogenesis of the disease, as well as algorithms for complex diagnosis and therapy of patients with the pain dysfunction of the temporomandibular joint.

In recent years, many authors have noted the dominant influence of psychosocial factors on the development of the painful dysfunction syndrome of the temporomandibular joint. Evidence of this fact is the prevalence of mental disorders, accompanied by a high level of personal and reactive anxiety, asthenia, depression and emotional lability [1,3,4,5, 6]. So, according to E.A. Bulycheva [2012], a psychological examination of patients with various forms of dysfunction of the temporomandibular joint showed the presence of neurosis in 39.6% of the subjects, neurotic development in 20.3%, in 35.2% - adaptive reactions. According to Yu. V. Kotsyubinskaya[2], T.A. Lopushanskaya [2012], in a number of cases, functional disorders of the chewing apparatus are psychosomatic manifestations.

## AIM & STUDY

The aim of the study was to evaluate the severity of pain, to study the psychoemotional state and the vegetative status of patients with the temporomandibular joint pain syndrome.

## MATERIALS AND METHODS

In order to solve these problems on the basis of the department of propaedeutic dentistry of the SSMU, we examined 70 patients (43 women, 27 men) with a diagnosis of the temporomandibular joint pain syndrome. The age of the patients varied from 18 to 45 years (the average age – 32,9). Inclusion criteria in the study group were: patients with a pain dysfunction syndrome of TMJ, with a complete dentition and a neutral bite. The exclusion criteria were: presence of defects and deformations of the dentition, dentofacial abnormalities, the presence of systemic, autoimmune, oncological diseases and congenital abnormalities and patient refusal to participate in study. 20 persons without signs of temporomandibular joint pathology and its history were included in control group.

The examination included assessment of the severity of pain syndrome, psychoemotional state and vegetative status.

Subjective nature of pain allows you to assess the severity of the pain syndrome from an anamnesis of the patient or by his behavior.

In order to determine the severity of pain in patients with the temporomandibular joint pain syndrome, we used a 10-point visual analogue scale [3] and a McGill's Pain Questionnaire based on the subjective perception of the patient's sensations. We calculated the average figures by analyzing the data of VAS. We analyzed two measures for calculating the result of the McGill's pain questionnaire. The number of underlined words there is the index of the number of allocated descriptors, expressed in points. The sum of the sequence numbers of the selected words is called the ranked pain index. This evaluation scale is a verbal rank scale, reflecting the intensity of pain.

All patients received complex psychological testing for assessing the psychoemotional state, as well as clarifying the role of stress factors in the development of the painful dysfunction syndrome of the temporomandibular joint. These studies can identify patients who need a thorough clinical examination and, in particular, with the involvement of a psychologist to clarify the diagnosis and appointment of therapy. We used the questionnaire of K.Leonhard-G. Shmishek to identify characteristic personality accentuations and a depression scale (Beck's questionnaire) for identifying and assessing the severity of depression symptoms. According to the indicators of K. Leonhard and G. Shmishek, two types of analysis were carried out. At the first stage, the proportion of accentuated persons who had a score of 18 or more points on one or more scales, in patients with the temporomandibular joint pain syndrome and control group was counted. In the second stage, we calculated the average scores collected by patients with the temporomandibular joint pain syndrome and the control group on each of the ten scales of the questionnaire. Statistical processing of the results was performed by comparing mean values of two samples using Welch's test for independent samples

In order to determine the severity of pain in patients with the TMJ pain syndrome, all patients lead mathematical analysis of the heart rhythm by the method of variational pulsometry with the "KOROS-300" with analysis of the main indices - mode, mode amplitude, variation range, stress index, activity index of the sympathetic and parasympathetic parts of the autonomic nervous system.

The obtained results were statistically processed. Statistical significance of differences between qualitative variables was assessed using Fisher's exact test or to calculate 95% confidence intervals for the odds ratios and the use of asymptotic criteria (Chi-square or Pearson's, Chi-square test of validity). For comparison of mean values in two groups were used heteroscedastic version of the Student's criterion (the criterion of Satterthwaite).

This study has been approved by the Ethics Committee at Smolensk state medical university, protocol № 12 from 26.04.2014.

## RESULTS OF THE STUDY

Regular pain syndrome of varying severity was observed in all patients with the temporomandibular joint pain syndrome and was the primary complaint of patients. An analysis of the data from McGill's Pain Questionnaire showed that verbally the patients characterized pain as aching, pressing, pulling, spreading on the McGill's painful questionnaire. On the affective scale of this questionnaire, patients noted that pain is tires, irritates, weakens, causes feeling of anxiety. The rank index of pain according to the McGill's Pain Questionnaire was  $41,33 \pm 1,38$  points out of the maximum possible 80 points. The severity of pain on a 10-point visual analogue scale in patients with the temporomandibular joint pain syndrome was at an average of  $5,17 \pm 0,16$  points on the primary examination. In this way on the basis of a subjective assessment of pain in the examined patients, the presence of a pain syndrome of moderate severity was noted.

The number of accented personalities according to the test of K. Leonhard and G. Shmishek in the group of patients with the temporomandibular joint pain syndrome was significantly higher than in the control group (differences were statistically significant ( $p=0,046$ , Welch's test)) and is 81.4%. In the group of patients with the painful dysfunction syndrome of the temporomandibular joint, personality accentuations were observed on 5-6 scales, expressed accentuations on 2-3 scales. Expressed accentuations among the persons of the comparison group were registered no more than one in patient. This indicates the need for correction of the psychoemotional state of patients with the painful dysfunction syndrome of the temporomandibular joint.

In patients with the painful dysfunction syndrome of the temporomandibular joint, the accentuations of 18 or more points were noted on the cyclothymic and scale in 87.1% of cases, on the scale of dysthymia in 42.9% of cases, while in the control group pronounced accentuations for given scales were not revealed. Identified the personal characteristics of the character of patients with pain TMJ disorders indicate the tendency of our patients to depression under the influence of external factors.

Analysis of the results of Beck's test showed that in the group of patients with pain disorder of TMJ signs of depression were noted in 64.3% of cases, the average score  $14,21 \pm 0,361$  points, which corresponds to a slight degree of depression (9-15 points). At the same time, 47 patients had scores that corresponded to mild severity of depressive syndromes, and in 23 cases - moderate. In the comparison group no signs of depression were found, the average score was  $2,25 \pm 0,16$  on Beck scale (the difference is statistically significant ( $p < 0.001$  (Welch's test))).

All patients with depression signs were consulted by a psychiatrist for diagnosis, determination of the type of depression and the appointment of psychopharmaco correction with the patient's consent to the consultation and this type of therapy.

For an objective assessment of pain and severity of psychoemotional stress, we applied a mathematical analysis of the heart rhythm using the method of variational pulsometry on the "KOROS-300" apparatus. The data obtained during the primary examination of patients of the main group and persons of the control group are presented in (Table 1).

In the control group, the majority of the average indicators of the mathematical analysis of the rhythm of the heart were within the limits of the norm, which corresponds to normotonia. There was some shift in the direction of the predominance of the tone of the parasympathetic part of the autonomic nervous system. At the same time, in patients with the syndrome of painful dysfunction of the temporomandibular joint, there was a deviation of the indices towards a moderate predominance of the sympathetic tone of the autonomic nervous system. This was evidenced by the deviation from the variants of the norm such indicators as the mode, the amplitude of the mode, the variation range. The stress index, calculated by Bayevsky's method, averaged 304.4 units. The index of activity of the sympathetic department of the vegetative nervous system prevailed over the index of activity of the parasympathetic department of the autonomic nervous system. The presence of sympathicotonia in the patients of the main group was due to the existing pain syndrome and psycho-emotional stress associated with the presence of the disease and the actual pain syndrome, the presence of signs of depression, the change in the microsocioal environment and the habitual way of life, the anxious expectation of the results of examination and treatment. Based on the analysis of the average scores of the visual analogue scale of pain assessment and the McGill's Pain Questionnaire, the subjective perception of pain by patients was assessed as moderate pain. According to the mathematical analysis of the rhythm of the heart, a moderate predominance of the sympathetic tone of the autonomic nervous system was established, which corresponds to a weak expression of the pain reaction and psychoemotional stress. This discrepancy in the subjective assessment of pain and objective data may be due to the presence in the patients of the main group of signs and symptoms of a depressive state.

## DISCUSSION

As a result of the study, patients with the temporomandibular joint pain syndrome showed characteristic features of the psychoemotional state in the form of pronounced accentuations, mild depression, and vegetative disbalance in the form of moderate activation of the sympathetic autonomic nervous system, which confirms the role of stress factors in the development and weighting of the clinical picture of the painful dysfunction syndrome temporomandibular joint. The presence in patients with the painful dysfunction syndrome of the temporomandibular joint of the revealed characteristic features of the psychoemotional state dictates the need of including in the complex diagnosis algorithm the consultation of the psychoneurologist, and also allows the dentist to correctly perform dental treatment in the complex therapy regimen.

**Table 1:** Parameters of the mathematical analysis of the heart rhythm by the method of variational pulsometry in the patients of the main and control groups.

Indicators	Main group	Control group	Norm
Mo, sec	$0,778 \pm 0,006^*$	$0,842 \pm 0,014$	$0,800 \pm 0,04$
A Mo, %	$52,8 \pm 1,48^*$	$30,3 \pm 1,96$	30 - 50
VR, sec	$0,110 \pm 0,003^*$	$0,22 \pm 0,007$	0,15 - 0,30
IN, conventional units	$304,4 \pm 9,17^*$	$81,5 \pm 6,49$	50 - 150
SIM	$14,1 \pm 0,43^*$	$7,7 \pm 0,84$	
PAR	$4,8 \pm 0,24^*$	$9,1 \pm 1,24$	
Heart rate (beats per minute)	$77,2 \pm 0,64^*$	$71,7 \pm 1,18$	60 - 80

Note : \* - differences statistically significant from control group (analysis of variance [ANOVA], post hoc Dunnett test T4).

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