

**FUNDAMENTAL METHODS FOR THE DIAGNOSIS OF NON-ARTICULAR  
DISORDERS OF THE TEMPOROMANDIBULAR JOINT**

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**Summary.** The article presents the results of studying the features of the biomechanics of the lower jaw in patients suffering from pain syndrome of the temporomandibular joints. Improving the efficiency of diagnosis and differentiation emphasizes the violation of the uneven nature of the pathology in patients with SBD TMJ.

**Keywords:** biomechanics of the lower jaw, temporomandibular joint, dysfunction, pain dysfunction.

**Relevance.** Diseases of the temporomandibular joints (TMJ) are one of the most urgent problems of modern dentistry. On the one hand, this is due to the spread of TMJ pathology. [6,11,19], on the other hand, with the complexity of diagnosis [4,16,18]. The most numerous group of patients with TMJ are patients with diseases of the internal organs, which are defined as a violation of the anatomical and functional relationships between the components of the joint and account for more than 80% of patients with this pathology in specialized hospitals [10,15]. In addition to the listed factors in the etiology and pathogenesis of pain dysfunction syndromes (PDS), pathological processes and occlusive diseases in the masticatory muscles and psychoemotional disorders are also important [1,9,11]. The provoking factors of the pathological process in the joints can be different: the extraction and prosthetics of teeth, unusual movements of the p/b or too wide opening of the mouth during meals and during dental treatment. At the same time, some internal ligaments that fix the articular disc are stretched; at the same time, patients experience pain in the joints, ears, temples, headaches, limited jaw mobility, pressing, wheezing or "locking", a feeling of strong pressure [2,14,17]. Quite often, the psychological factors of the body, reduction of the lower third of the face due to pathological grinding of teeth, pathological types of occlusion, etc., play an important role in the development of SBD CPSD [12, 13].

To diagnose diseases of soft tissue elements, modern medicine uses magnetic resonance imaging (MRI), but this method does not always reflect the state and condition of the articular disc [15]. Visualization of the articular disc of the TMJ is possible with the help of ultrasound (ultrasound), but during this work, the norms of the condition and movement of the disc, as well as the criteria for assessing the condition of the disc from a digital point of view, have not been developed, there is no method for evaluating the effectiveness of ultrasound treatment. Publications on the combined use of MRI, ultrasound, P-graphs and functional diagnostic tests in domestic and foreign literature are rare. Visualization of the articular disc of the TMJ is possible using ultrasound (UTT), but in this work, the standards for the condition and movement of the disc, as well as the criteria for assessing the condition of the disc from a digital point of view, have not been developed, there is no method for assessing the effectiveness of ultrasound

treatment. Publications on the combined use of MRI, ultrasound (UTT), P-graphics and functional diagnostic tests in domestic and foreign literature are rare.

Thus, in the presence of internal and external diseases of one or another pathology of the TMJ, it is very difficult to diagnose patients with undiagnosed back pain, secondary osteoarthritis, and dysfunction of extra-articular neuromuscular syndromes, so the development of new diagnostic methods is very important. early diagnosis and differential pathology of articular and extra-articular pathology in CPID.

**The purpose of the study:** to differentiate the diagnosis of extra-articular diseases in the pathology of patients with SBD TMJ and improve the efficiency of diagnosis.

**Materials and methods:** To solve the tasks set, 167 patients with SBD CPNS were examined, who were registered at the dispensary or treated by a dentist, CBT and a neuropathologist in the departments of orthopedic dentistry and orthodontics, otorhinolaryngology and neurology, in pediatric and adult multidisciplinary hospitals in the city of BSMI. The diagnosis of patients was established after detecting a decrease in the height of the lower third of the face, a total of 90 patients were examined: 40-45 years old (16 patients), 46-50 years old (25 patients). 51-55 years old (42 patients) and 56-60 years old (7 patients); mean age  $48.8 \pm 4.43$  years; Depending on gender, the examined group consisted of 55 (61%) women and 35 (38%) men.

Complaints consisted of a change in the location of the p/b, an aesthetically unsatisfactory condition of the lower part of the face, difficulty opening the mouth, frequent headaches, ringing in the ears, decreased performance, anxiety, bad mood, and insomnia. In addition, we divided the subjects according to their scientific potential; 25 people with secondary education (27%), 30 people with secondary education (33%) and 35 people with higher education (38%).

When examining patients, the somatic and psychological state was assessed, and the duration of the pathological process averaged 2 years, examination of the PMO and other gap and PTR, etc. were determined. Plaster models were obtained to determine the state of bite in children participating in the study; The state of occlusion was assessed by the cast using conventional methods. The subjects were grouped according to the type of occlusion and bite anomalies according to Persina LS and ICD-10 classification.

RT was performed using teeth, dental appliances and an orthopantomograph to detect pathological processes in the hard tissues of teeth, periodontium, periodontium, as well as to plan orthopedic treatment and choose an orthopedic structure. In order to analyze the size of the articular elements and their proportions, tomography was performed to determine the localization and spread of the pathological process in the TMJ and tissues around the joints in the position of open and central occlusion by the mouth, if possible. 1) pain index (INB) of the general (point) level; 2) indicators of each scale, on which the indicator (DOI), affective (DOIa) and evaluative (DOIb) components are evaluated for each scale that assesses sensitivity; 3) an indicator of the number of descriptors divided into sensitive (ADS), affective (ADSa) and evaluation (ADSb) scales. The values of the general pain index can be from 0 to 78 points (on the DOIa scale - from 0 to 58, DOIa - from 0 to 15, DOIb - from 0 to 5 points), according to ADSs - from 0 to 13. k, ADS - from 0 to 6, ADPb - from 0 to 1. At the same time, high scores indicate the intensity of pain perception.

To study the peripheral innervation of the masticatory muscles, an electromyographic study was performed, with the help of which the EMG of the general involvement of the

masticatory muscles on both sides was recorded. As a functional test with physical activity, a stress model was modeled by determining the duration of the latent period of the chin reflex. The studies were carried out on a Medicor M-400 electromyograph and general EMG Yu.S. He was evaluated according to the criteria developed by Yusevich. (1958)

Clinical and psychopathological evaluation of patients was performed on the basis of the clinical scale (CM) [7]. The following tests were also included in the study: the abbreviated multivariate personality questionnaire (QKFSS), the Beck Depression Scale, the Spielberger Anxiety Scale, the Hostility Scale (HSS), the Toronto Alexithymia Scale (TAS). Patients' quality of life (QoL) was assessed using the Nottingham Health Profile (NSSP).

Statistical analysis and data processing was carried out using the SPSS 10.0 statistical software package on IBM PC.

**Results of the study and their discussion.** According to the results of neuropsychiatric studies, the Beck depression scale in groups of 40-45 years was  $4.6 \pm 0.09$ ; personal discomfort -  $2.1 \pm 0.16$ ; reactive anxiety -  $4.9 \pm 0.15$ ; 46-50 flight groups -  $4.2 + 0.07$ ;  $2.0 + 0.1$ ;  $4.2 + 0.2$ ; -50-55 flight groups  $3.8 + 0.12$ ;  $1.8 + 0.3$ ;  $3.5 + 0.42$ ; -  $4.2 + 0.07$ ;  $2.0 + 0.1$ ;  $4.2 + 0.2$ ; - 56-60 flight groups;  $3.2 + 0.02$ ;  $1.3 + 0.1$ ;  $3.1 + 0.2$ . organized.

Analysis of changes in HS indicators showed a significant decrease in the total NSSP index from 42.2.9 to 33.6 points compared with the older group (  $p < 0.01$ ). Strengthening or intensification of the pain syndrome in patients with VGPSB is directly related to the increase in the age of the group. Also, during an objective examination with SBD, CPFS was determined, which arose against the background of a decrease in the height of the lower third of the face, high neuropsychic stress and a deterioration in the quality of life; The most modern and popular biopsychosocial model proposed by Dvorkin et al. (1992), and this concept takes into account whether patients experience a biological problem, a psychological problem, and social factors.

participants in the study spoke about the causes of SBD in CPFF, and also called prosthetics, malocclusion, loss of a large number of chewing teeth and damage to the MFR.

Some patients even pointed to such causes as inflammatory diseases of the periodontium and oral mucosa (OSI), difficult extraction of chewing teeth (Table 1). Other patients noted that the symptoms of this disease were manifested both orthopedically and therapeutically after dental treatment. Most patients, on the contrary, noted that the symptoms of the disease began to appear suddenly, for one reason or another, as a result of treatment.

It should be noted that none of the patients independently identified psychological stress as a cause or provoking factor in the occurrence of SBD in EFP. The presence of chronic stress was determined during the collection of an anamnesis of life or anamnesis.

**Table №1**

**Causes associated with the occurrence of pain syndrome CKD in patients**

Causes	Number of patients (abs.)	%
Prosthetics	33	36 %
Bite anomalies	7	0.7%
Loss of posterior teeth	Thirty	33%
Face and jaw injuries	3	3%

Traumatic tooth extraction	6	7%
Periodontal inflammation and OBSHQ	7	7.3%
Dental -therapeutic treatment	4	4%
GENERAL:	90	100%

As can be seen from the table, patients often associate the occurrence of the disease with the loss of chewing teeth and dentures.

Dental examination of patients revealed: abnormal erosion of hard tissues of the tooth (80%), caries (90%), complex caries (56%), inflammatory periodontal disease (70.6%), periodontal disease (13%) . . ), Osh diseases (12%), inconsistency of orthopedic structures (62%), bad breath (46%), which indicates a certain role of local factors, as well as the fact that patients do not always seek dental care. As mentioned above, when taking an anamnesis, a stress factor was identified in most patients. Dissatisfaction with social and living conditions, as well as the appearance of the teeth, the appearance of the lower part of the face cause nervousness, anxiety, self-doubt, confidence in the failure of the next dental treatment in patients. All this prevents the dentist from carrying out diagnostic and therapeutic measures.

It should be borne in mind that the process of treating reduced occlusion is not limited to several visits to the dentist. Treatment often lasts several months. It is more difficult for patients with a high mental predisposition to adapt to temporary orthopedic structures, removable dentures. In order to form ideas about the role of psychological factors in the development of SOD SSBD BPFs, the structure of psychotraumatic conditions preceding or accompanying the development of SOD SSBD was analyzed: information on the presence of psychotraumatic conditions preceding or accompanying the development of SOD TMJ: 18-year-old traumatic situation in the family; Change in social status at 7; Changing the stereotype of life in 3; chronic psychological trauma at the age of 10; 6 years of family conflicts; conflict situation at work 19; Lack of cash at age 18; 9 problems with children were noted.

The results obtained show that the majority of patients included in the study often complain about the presence of a chronic psychotraumatic state, and, despite their internal dissatisfaction, the patient is forced to admit this . Financial difficulties, the risk of family breakdown, job dissatisfaction, or the inability to find a decent job were often cited as such stressors. Thus, in most cases with SDS PNST, there is a clear combination of various factors that complement each other, both dentally and psychologically. When analyzing the clinical picture and pathological processes in patients with VChLB - 75%, with a decrease in the height of the lower third of the face, patients complain of pain, tightness, when pressing on VChLB. These are situations when opening the mouth, with lateral movements, with a half-open mouth, when closing the mouth, with the complete closure of the tooth part; displacement of the jaw or its partial blocking during movement, unsatisfactory appearance of the lower part of the face or teeth, fatigue in PPJ after chewing: pain in the PPJ -78%; Cracking in CHIPB - 82%; Clicking on CHPJB - 65%; unsatisfactory aesthetic appearance of the lower third of the face, toothache - 70%; fatigability in PPJB after chewing - 46%; difficulties with chewing food - 48%; Blocking actions in CHPJB - 35%; tinnitus - 56%; ears grow - 12%; dizziness - observed in 9%. Also, the hum was detected by palpation of the joints through the external auditory meatus and

auscultation of the articular region with a stethoscope. Tinnitus was detected by palpation through the skin in front of the ear tragus.

Symptoms of noise that appear when opening the mouth are due to the mobility of the meniscus of the joints, its curvature and rapid adaptation to movement; at the beginning of closing the mouth - the loss of a strong connection between the meniscus and the condyle, there is a discrepancy between their movements. The meniscus moves later than the condyle. Then it moves to its original position on the surface of the condyle and is captured by a sharp contraction of the lateral pterygoid muscle. The appearance of grinding and clicking when the teeth are fully closed is due to the movement of the condyles along the thickened membrane of the posterior meniscus.

According to the results of determining the details of the symptoms, it was revealed that they differ in nature and intensity: acute pain - 5%; short-term - 24%, local - 80%; permanent - 27; scattered - 7%; with radiation - 14%; painful - 62%.

Constant, excruciating, sudden pains are observed with a reduced occlusion, acute, short-term - with irrational prosthetics, mobile occlusion; sharp, diffuse and radiant - with non-synchronous movements of the condyles, sharp lateral and distal displacements of the lower jaw are observed with a reduced bite.

The mechanism of these complaints is undoubtedly clear: when squeezing the posterior part of the NPSPS, which is rich in blood and lymphatic vessels, stagnation occurs, which is due to compression of the Eustachian tube and a violation of the outflow of lymph from the inner ear.

The next clinically detectable symptom was the displacement of the articular bones and, as a result, the displacement of the p/b. Vertical displacement occurs with a general horizontally increased friction of the teeth, deep traumatic bite; vertical with distal displacement of the lower jaw - with a deep traumatic bite, with no distal support; the usual lateral position of the lower jaw occurs with uneven growth of the prosthesis, irrational prosthetics, mobile bite, unilateral deformity of the condyle. Analysis of R-studies of the state of CKD in patients with SBD with developing CKD in the background of a lower face height, the contours of the articular surfaces on Rx are even and even, the conditions are rounded.

Thus, no organic diseases were detected in the course of this study in the course of this study; moreover, comparing the data of the P-study with clinical manifestations, we can conclude that the appearance of clinical symptoms is not associated with morphological changes in the joints.

The results of a comprehensive study of the psychological state of patients suffering from SBD CPFS revealed certain changes in patients suffering from SBD CPFS. Diagnosed: anxious - 20%, depressive - 70%, hypochondriacal - 10% syndromes of varying severity: - With anxiety syndrome, internal tension, nervousness and anxiety were noted. Patients asking their doctor questions about their health wanted a reassuring answer. They also have sleep disturbances: restless superficial sleep, inability to fall asleep for a long time: Depressive syndrome is characterized by a depressive and melancholic mood, sad facial expressions, patients monotonously answered the doctor's questions and sometimes could not hold back tears: when talking about interesting topics: hypochondria syndrome, when show unreasonable concern for their health, overestimate the condition of some of them. Obsessive-phobic syndrome was characterized by the appearance of obsessive thoughts, ideas, memories, fear and the desire for obsessive actions.

It has been established that the intensity of the pain syndrome in patients with SOD TMJ correlates with such psychological characteristics as irritability, increased sensitivity to stress, increased hopelessness, and increased attention to sensations. Apparently, this combination of psychological characteristics leads to an increase in sensitivity to discomfort in the oral cavity and affects the intensity of PS.

It was found that the intensity of the pain syndrome in patients with "depressive", "hypochondriac" types of CCFS was significantly higher than in patients with "anxious" profile ( $p < 0.01$ ).

Analysis of the distribution of all patients included in the study, according to the height of the CCFSH profile, made it possible to distinguish three subgroups: a) with a mild mental disorder (in the range of 50-60 T-points) - 63% of patients b) moderately unhealthy with lomlin (in the range of 61-6 T-scores) - 25% of patients, c) with severe mental illness (above 65 T-scores) - 12% of patients. Further analysis made it possible to identify the following types of the most common types of CFSS profiles: 1) "concern" - 17.8% of patients; 2) "inconsistency" - 19.6%; 3) "hyperemia" -15.5%; 4) "fallen" - 14.7% and 5) "depressed" - 5.4% of patients. The study of the HS with SBD FFS revealed an average decrease in its overall indicator, which, according to the HS method, was  $2.9 + 0.35$  points. This decrease is mainly due (Table 2) to the attitude of patients towards treatment and the change in the attitude of rSBDtvenniks.

**Table 2.**

**The parameters of HS of patients were studied (in M + n points)**

GS method scale	All patients (n = 90)
The HS is decreasing for the following reasons:	-1.12+0.05
* the need for treatment	
* various restrictions	-1.06+0.03
* attitude change	
- Yakin	-1.75+0.12
- Friends	-0.4+0.07
*limit-	
- activities in the workplace	-1.06+0.17
-physical activity-	-1.04+0.16
- daily chores	-1.22+0.04
- Spend some free time	-0.19+0.06
- in relationships with others	-1.06+0.14
- in food	-0.31+0.24
- when smoking -	-0.22+0.31
- in family life	-1.09+0.06
* in decline	
- social status	-1.14+0.14
- income	-1.16+0.14
Total HS score	-3.82+0.32

In the study of pain in patients with SOD, CPID, the parameters of the HAO pain ranged from 12 to 68, and in most patients were in the range of 30-40 points. A relationship has been established between the intensity of pain and the characteristics of the mental state of patients with SOD CPNS. It has been established that the intensity of pain syndrome in patients with SDS CPNS, which develops against the background of a decrease in the height of the lower third of the face, depends on the severity of mental changes: the high intensity of PS differs in patients with severe psychological deficit. In the study of pain in patients with SBD, CPID, the parameters of the VAO pain ranged from 12 to 68, in most patients they were in the range of 30-40 points. A relationship has been established between the intensity of pain and the characteristics of the mental state of patients with SOD CPNS. It has been established that the intensity of pain in patients with SDS CKD, which develops against the background of a decrease in the height of the lower third of the face, depends on the severity of mental changes: the high intensity of PS differs in patients with severe psychological deficit.

A correlation was established between the psychological characteristics of patients and the severity of the pain syndrome. Pain perception is correlated with increased sensitivity to anxiety, stress, and psychological stressors.

The factors influencing the decrease in HC in patients with SDS AHNS were identified: mainly the treatment of patients, the negative perception of the need to wear removable orthopedic structures in obstetrics. The intensity of pain and some psychological characteristics of patients also influenced the GS: dissatisfaction, tension, anxiety, a sense of injustice and hostility from others, low psychological stress resistance and indulgence in negative emotions. The intensity of pain and some psychological characteristics of patients also influenced the GS: dissatisfaction, tension, anxiety, a sense of injustice and hostility from others, low psychological stress resistance and indulgence in negative emotions.

Thus, a wide range of disorders leads to the development of SDS in CPID, among which are violations of emergency conditions, disorders of the muscular apparatus and psychological characteristics.

**Conclusions.** 1. A wide range of diseases leads to the development of SBD in PFS, among which are violations of emergency conditions, the muscular apparatus and psychological characteristics; The greatest severity of SOD was observed in patients with severe psychological deficiency.

2. The inclusion of a psychosomatic approach in the development of therapeutic tactics for patients with CSID SDS, which develops against the background of a decrease in the height of the lower third of the face, helps to increase the effectiveness of treatment and reduce it, as well as reduce its time, which affects the patient's compliance and improves the quality of medical care.

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