

## Treatment of Parafunction of the Masticatory Muscles in Pain Syndromes of the Temporomandibular Joint Complicated by a Pathological Bite

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**Abstract:** Treatment of patients with the syndrome of pain dysfunction of the temporomandibular joint remains one of the most difficult and urgent problems of modern dentistry; treatment with an occlusive splint, restoration of normal occlusion does not always lead to normalization of the position of the articular disc. According to the authors, in addition to dental treatment, medication therapy, physiotherapy, and psychotherapy are also necessary.

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

**Relevance:** We know that diseases of the high - mandibular joint (TMJ) are diagnosed in 70-80% of the adult population and occupy a leading place among dental morbidity [8,18], and often (from 28 to 76%) with TMJ diseases go to a dentist [1, 10, 11]; their main complaint is pain in the area of the joint, ear, temple, headaches, limitation of the range of jaw mobility, clicking, crunching or "locking", a feeling of stiffness. [1]. As a result, the presence of these symptoms leads to the fact that patients become anxious, their mood is depressed, their appetite is reduced, sleep is disturbed, and disbelief in recovery develops [5].

the Academy is currently the most widely used. of Orofacial Pain; according to it, diseases are distinguished as a result of damage to the articular disc, and diseases associated with damage to the masticatory muscles [16,19]. However, according to the requirements of insurance medicine in the countries of the former Soviet Union, the diagnosis must be made based on the International Classification of Diseases ICD-10 [7,20]. According to the clinical protocol of medical care "Association of Maxillofacial Surgeons and Dental Surgeons" on April 21, 2014 in Moscow, it was written in detail about the methodology, definition, classification, principles of diagnosis, pain syndrome, about the "clicking" jaw and others (Kulakov et al ).

Currently, most authors are inclined to believe that the cause of the development of pain dysfunction (PD) of the TMJ is an imbalance in the relationship of one or more of the 4 stress zones: the state of the muscles, the state of occlusion, the emotional state and the state of the joint [12,15, 20]

Today, most literature prefers that the etiology and pathogenesis of TMJ diseases are important not only for occlusal disorders and pathological processes in the TMJ, masticatory muscles, but also for psychoemotional and endocrine disorders [14]. According to some researchers, they are inclined to believe that changes in the psychoemotional status play a leading role in the development of BD [4, 9, 17]. Depression, somatic disorders and personality disorders [13] are more common in the group of patients with TD TMJ than in comparative groups.

In addition, the treatment of patients with pain dysfunction syndrome (PDS) of the TMJ remains one of the most complex and urgent problems of modern dentistry; treatment with an occlusal splint, restoration of normal occlusion does not always lead to normalization of the position of the articular disc. According to the authors, in addition to dental treatment, drug therapy [15,19], physiotherapy, and psychotherapy are also necessary [6]. However, until now, the possibilities of psychotherapy in this pathology have not been studied clearly enough.

**Purpose of the study:** To improve the efficiency of diagnosis and treatment of a violation of the non-articular nature of the pathology of patients with diseases of the temporomandibular joint disease.

**Materials and methods of research:** A survey of 167 patients with SBD TMJ who were registered at the dispensary or who applied for treatment to a specialist dentist, otorhinolaryngologist and neuropathologist in the departments of "Orthopedic dentistry and orthodontics", "Otorhinolaryngology" and "Center Dentistry" BSMI, Bukhara regional children's and adult multidisciplinary hospitals.

Patients with SBD TMJ were diagnosed, according to the revealed decrease in the height of the lower third of the face (LTL) in 90 patients (group 1) and 77 patients (group 2) suffering from parafunction chewing mice + TMJ pathology without changes in NTL, in the age groups of 40-45 years (28 patients), 46-50 years (46 patients), 51-55 years (82 patients), and 56-60 years (17 patients); mean age was  $49.4 \pm 2.43$  years; by gender of the surveyed were - women - 115 people (68.86%), men - 52 (33.13%). The 1st group of patients complained of lower jaw displacement (n/h), aesthetic disorders of the lower face, difficulty opening the mouth, frequent headaches, sensations of ear congestion, emotional lability, anxiety, bad mood, sleep disturbance. In addition, both groups were most often diagnosed with TMJ diseases against the background of masticatory muscle parafunction - 58 and 41%, respectively. In addition, those surveyed by education amounted to; Group 1 - secondary education 25 people (27%), secondary special education 30 people (33%) and higher education 35 people (38%); in the 2nd group, these figures were 20 (26%), 25 (32%) and 32 (41.5%), respectively. All patients were evaluated dental, somatic, neurological, psychological and sociological status in dynamics; before treatment and after treatment.

In the 1st group of patients, for the purpose of treatment, cappies that separated the dentition were used, after transdermal electroneurostimulation muscles (TENS-therapy) for relaxation of masticatory muscles, for self-supporting. The students were prescribed individual chin myogymnastic exercises and using a new device - "Lira-100" to stimulate the masticatory muscles and group cognitive-behavioral psychotherapy (GCBT) was carried out; 8% anxious group, -22 (24%) hypochondriacal group and -2 (0.2%) hysterical, obsessive-phobic -1 (0.1%). Patients for the 2nd group - treatment methods were used, as well as the 1st group, only without applications - "Lira-100" and without GCBT for 2 years.

In order to study the psychological, neurological and functional nature of the studied people and to determine the activity and nature of pain sensations, a special questionnaire was conducted using visual analogue scale (VAS) for pain [6] and the MPQ pain questionnaire (McGill Pain Questionnaire) before and after the treatment of patients.

To assess the degree of SBD in the TMJ area, the study was carried out according to compliance with the rules of the clinical protocol approved on April 21, 2014 in Maskva and recommended by the authors.

Dental treatment began with a complete oral cavity sanitation (PR). According to the indications, all patients underwent orthopedic treatment: - normalization of the occlusal relationship of the teeth; selective grinding of teeth was performed; restoration of the height of the NOL. For the purpose of diagnosis and the stage of treatment, patients were made a removable mouthguard that separates the dentition at the lower end. To make a kappa, imprints were taken with silicone material from the v/h and n/h, a facial arch was installed on the patient's face in order to spatially determine the position of the v/h. To determine the interalveolar height, a silicone register was used, obtained by a functional diagnostics doctor after a comprehensive examination of the TMJ using the Lira-100 apparatus. The duration of treatment was about 6 to 12 months.

GCTT was carried out by a psychotherapist in groups of 10-12 patients 2 times a week, 12 sessions in total. The duration of the group session lasted 1.5-2 hours. The first meetings were held twice a week, subsequent meetings were weekly. When using the GPBT, the essence of this method was explained to the patients, and they are familiar with the "ABC" scheme, where A is the activating event, B is the perception of the event, C is the emotional reaction and behavior.

The assessment of the clinical and psychopathological state of patients was carried out on the basis of a clinical scale (CS), which includes the following tests: Abbreviated Multivariate Personality Questionnaire (SMQ), Beck Depression Scale, Spielberger Anxiety Scale, Hostility Scale (SHS), Toronto Alexithymia Scale (TSA). The quality of life (QoL) of patients was assessed using the Nottingham Health Profile (NHP) [22]. A muscle relaxant was used to relax the masticatory muscles. "Muskomed" cream twice a day.

To evaluate the effectiveness of treatment, it was carried out on the basis of calculating the proportion of so-called responders, i.e. patients whose condition markedly improved, and non-responders - those whose condition improved slightly or remained unchanged.

For clinical photography, a camera with a Pentax K5 macro lens was used, computed tomography of the dentition was performed using a Sirona computed tomograph Gallileos, to assess the cephalometric parameters, thermoradiography was performed using the R -installation of the Sirona company, to assess the muscle tone and myogymnastic treatment of the masticatory muscles, a new apparatus-diagnostic complex "Lira-100" (Russia) and an electromyograph (EMG) were used, to record the surface vibration and noise in the area of the joints, electrosonography of the TMJ was performed. The study was conducted over several cycles of opening and closing the mouth.

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

**Results and their discussion:** According to the results obtained in humans, it was determined by an objective examination in case of BSD of the TMJ, which arose against the background of a decrease in the height of the NTL, high psychoneurological stress and deterioration in QoL. Patients who participated in the study, speaking about the reasons for the development of TD TMJ, called the performed prosthetics, malocclusion, sudden loss of a large number of chewing teeth, trauma to the maxillofacial area. Some patients even named such reasons as frequently occurring inflammatory diseases of the periodontium and oral mucosa, difficult extraction of chewing teeth. Other patients emphasized that the symptoms of the disease appeared after dental treatment, both orthopedic and therapeutic. Some patients, on the contrary, indicated that the symptoms of the disease began to manifest themselves as a result of untimely, for one reason or another, applying for dental care. It should be noted that none of the patients independently singled out psychological stress as a cause or initiating factor that contributed to the occurrence of TMJ BD.

**Table number 1. Causes with which patients associated the occurrence of SBD TMJ**

Causes	Number of patients ( abs .)	%
Prosthetics	60	35.92%
Bite anomalies	21	1.25%
Loss of chewing teeth	65	38.92%
Trauma of the maxillofacial region	5	0.03%
Traumatic extraction of chewing teeth	12	0.07%
Inflammatory periodontal disease and oral mucosa	1	0.01%
Dental therapeutic treatment	3	0.02%
TOTAL:	167	100%

As can be seen from the table above, patients most often associated the occurrence of the disorder with the loss of chewing teeth and prosthetics.

When collecting an anamnesis, a stress factor was identified in the vast majority of patients. Dissatisfaction with social and living conditions, as well as the appearance of the dentition, NOL leads to the fact that patients become irritable, anxious, unsure of themselves, in the success of further dental

treatment. All this prevents the dentist from carrying out diagnostic and therapeutic measures. It is necessary to take into account the fact that the treatment process lasts for months and this process with patients with a more labile psyche is more difficult to adapt to temporary orthopedic structures, removable prosthetics.

The results of information about the presence of psychotraumatic situations that preceded or accompanied the development of SBD TMJ: psychotraumatic situation in the family in 35 patients; change in social status in 12; change in life stereotype in 7; chronic psychological trauma in 21; conflict relations in the family in 10; conflict situation at work for 23; lack of funds in 40; problems with children were noted in 19 patients. According to the results obtained, such stress factors as financial difficulties, the threat of family breakup, dissatisfaction with the workplace or the inability to find a decent job were noted. A, with an analysis of the clinical picture and pathological processes in patients (with unsuccessful prosthetics -36% and loss of the lower chewing teeth -39%) SBD TMJ - 75%, accompanied by a decrease in the height of the LTL; Patients complained of pain, crunching, clicking in the TMJ, which appear at the beginning of opening the mouth, during lateral movements of the h / h, with a half-open mouth, at the moment of closing the mouth, at the moment of complete closure of the dentition; for displacement of the jaws or partial blocking during movements in the joint, unsatisfactory appearance of the LTL or dentition, fatigue in the TMJ after chewing: pain in the TMJ area -78%; crunch in the TMJ area - 82%; clicking in the TMJ - 65%; unsatisfactory aesthetic appearance of the NTL, dentition - 70%; fatigue in the TMJ after chewing - 46%; difficulties in chewing food - 48%; blocking movements in the TMJ - 35%; tinnitus - 56%; congestion in the ears - 12%; dizziness - 9%:

A crunch on palpation of the joint through the external auditory canal and when listening to the area of the joints with a stethoscope, noise symptoms that appear at the time of opening the mouth arise as a result of the mobility of the meniscus of the joint, its bending and rapid alignment during movement; at the beginning of closing the mouth - due to the loss of a strong connection between the meniscus and the condyle, the lack of combination of their movements. Including by detailing the symptoms revealed; acute pain - 5%; short-term - 24%, local -80%; constant, dull - 27; spilled - 7%; with irradiation - 14%; and aching - 62% of cases.

Analysis of the R -x studies of the state of the TMJ revealed that in patients with TD of the TMJ, which develops against the background of a decrease in the height of the NOL, the contours of the articular surfaces on the R -x are even and smooth, and the condyles are rounded. During the study, no pathology with etiological factors as organic disorders in the TMJ was revealed, moreover, comparing the data of the R -x studies with clinical manifestations, based on the above results , we can conclude that the occurrence of clinical symptoms is more associated not with morphological changes in joints.

The obtained results of the study of the psychological status of patients with BSD TMJ revealed that patients with pathologies of the TMJ showed certain changes; anxiety - 20%, depressive - 70%, hypochondriacal - 10% syndromes of varying severity. With anxiety syndrome, internal tension, irritability and anxiety are noted; patients, asking the doctor questions about their state of health, clearly wanted to get a reassuring answer. They also had a sleep disorder: restless superficial sleep, inability to fall asleep for a long time. A. with a depressive syndrome was characterized by a depressed and melancholic mood; with hypochondriacal syndrome, it manifested itself as unjustified concern for one's health, overestimation of the severity of one's condition; with obsessive- phobic syndrome, it was characterized by the appearance of obsessive thoughts, ideas, memories, fear, and the desire for obsessive actions.

The intensity of pain in patients with BSD TMJ was correlated with such psychological characteristics as anxiety, increased sensitivity to stress, pessimism, increased attention to one's feelings; this, in our opinion, leads to an increase in sensitivity in relation to the existing discomfort in the PR and affects the intensity of the pain syndrome. Moreover, it was found that in patients with "depressive", "hypochondriac" types of SMOT, the intensity of pain is significantly (  $p < 0.01$ ) higher than in patients with an "anxious" profile.

Analysis of the results depending on the height of the SMOT profile made it possible to distinguish three subgroups: a) with mild psychological maladjustment (in the range of 50-60 T-points) - 63% of patients, b) with moderately severe (in the range of 61-65 T-points) - 25% of patients, c) with severe psychological maladaptation (above 65 T-scores) - 12% of patients. These indicators make it possible to distinguish the following types of profiles of SMOT patients: 1) "anxious" - 17.8%; 2) "disharmonious" - 19.6%; 3) "hyperthymic" - 15.5%; 4) "drowned" - 14.7% and 5) "depressed" - 5.4%.

The results of the analysis The study of QoL with SBD TMJ revealed a moderate decrease in its total indicator, which, according to the QoL methodology, amounted to  $2.9 + 0.35$  points. This decrease was mainly due (table No. 2) to the negative perception of the need for treatment by patients and the changed attitude of relatives.

**Table number 2. QoL indicators in patients with TMJ DS (M+ n in points).**

Scales of the QoL Methodology	All patients (n=167)
Decreased QoL due to: * the need for treatment	-1.12+0.05
* various restrictions	-1.06+0.03
* change of attitude	-1.75+0.12
- Close	-0.4+0.07
- Friends	
* limitation	-1.06+0.17
- activities at work	-1.04+0.16
- physical activity	-1.22+0.04
- daily activity	-0.19+0.06
- in leisure activities	-1.06+0.14
- communication with others	-0.31+0.24
- in nutrition	-0.22+0.31
- smoking	-1.09+0.06
- in intimate life	
* downgrade	-1.14+0.14
- social status	-1.16+0.14
- income	
Total QoL	-3.82+0.32

In the study in patients of the 1st group of patients with TD TMJ, the VAS of pain was in the range from 12 to 68 points, while in most patients the scores on the scale were between 30-40 points. Relationships between the intensity of pain sensations and the peculiarities of the mental status of patients with SBD TMJ have been established. It was found that the intensity of pain in patients with TMJ SDS, which develops against the background of a decrease in the height of the NTL, depends on the severity of mental changes: patients with severe psychological maladjustment were the most intense in BS. In addition, it has been established that the relationship between the severity of pain and the psychological characteristics of patients; pain perception turned out to be interconnected with an increased level of anxiety, tension, and sensitivity to psychological stress.

The factors influencing the decrease in QoL of patients with TMJ BD were identified: it turned out that it was mainly due to the negative perception by patients of the need to be treated, to wear removable orthopedic structures in the PR. The quality of life of patients in the 1st group was also affected by the intensity of pain and certain psychological characteristics of patients: dissatisfaction, tension, anxiety, rigidity, a sense of injustice and hostility from others, low psychological stress resistance, and getting stuck on negative emotions. It can be assumed that a wide range of disorders leads to the development of SBP TMJ, especially with a decrease in NTL, among which one can distinguish disorders from the

side of the TMJ, the muscular apparatus and psychological characteristics. The inclusion of a psychosomatic approach in the development of a therapeutic strategy in patients with TMJ SDS, which develops against the background of a decrease in the height of the LLL, improves the effectiveness of treatment, as well as reduces its duration, which affects the patient's compliance and contributes to the quality of medical care.

When analyzing the database of the TMJ accompanied by a decrease in the height of the NTL, patients noted pain in the TMJ area - 80%; crunch in the TMJ area - 75%; clicking in the TMJ - 60%; unsatisfactory aesthetic appearance of NTL - 68%; fatigue in the TMJ after chewing -42%; difficulty in chewing food -42%; blocking movements in the TMJ - 28%; tinnitus -48%; congestion in the ears - 9%; dizziness -13%.

When carrying out the detailing of complaints of pain, it was revealed that they differ in nature and intensity; acute pain - 8%; short-term -5%; local - 82%; constant, dull - 22%; spilled - 9%; with irradiation - 11%; and aching - 59%. Most often, the irradiation of pain spreads to the ear, temple, behind the ear region, and the neck region. Constant, aching, dull pains are observed with a decreasing bite, acute, short-term - with irrational prosthetics, with a sliding bite; sharp, spilled and radiating - with non-synchronous movements of the condyles, sharp lateral and distal shifts of the h / h with a decreasing bite. The mechanism of these complaints is obvious: when the posterior part of the TMJ, rich in blood and lymphatic vessels, is compressed, congestion occurs, which leads to an increase in intratympanic pressure from compression of the Eustachian tube and from impaired lymphatic outflow from the middle ear.

Analysis of the R -x studies of the state of the TMJ revealed that in patients with BSD of the TMJ, which develops against the background of a decrease in the height of the NOL, the contours of the articular surfaces on the R -x are even and smooth, and the condyles are rounded. In some patients, the condyle had a conical shape, there was a discrepancy between its size and the volume of the glenoid fossa. In other patients, the erasure of individual sections of the condyle occurred. In some patients, the condyles were located either distally, or their position in the articular fossae was asymmetrical. On TRH, with the mouth as open as possible, in most patients, the condyle was located at the top of the articular tubercle. This means that the results of R -and clinical manifestations data show that the occurrence of clinical symptoms is largely associated not with morphological changes in the joints.

As a result of orthopedic treatment, the subgroup of responders included patients who by the indicated period had a significant improvement in their condition during treatment (pain intensity decreased by 30% or more according to VAS). The 2nd group of patients in whom the VAS values decreased less or remained unchanged. Immediately after the end of dental treatment for the 1st group of patients and, therefore, at the initial stage of increasing the height of the NOL, the ratio of responders and non-responders was 15 and 75 (respectively, 17% and 83%).

6 months after the orthopedic treatment, the following results were obtained: the subgroup of responders consisted of 60 patients (66.6%), non-responders - 30 patients (33.4%).

12 months after the orthopedic treatment, the following results were obtained: the subgroup of responders consisted of 85 patients (94%), non-responders - 5 patients (6.0%).

The clinical and psychopathological assessment is confirmed by the results of a comparative analysis of baseline indicators for the KSh of Spielberger anxiety and Beck depression, the baseline indicators in the subgroup of respondents were significantly ( $p < 0.05$ ) lower in the field of reactive anxiety of Spielberger and depression on the Beck scale in comparison with similar indicators in the group nonresponders. A, the results for the 2nd group, the initial indicators of severity and psycho-emotional characteristics were compared, and after the end of dental treatment, no positive change is noted on the movements of the n / h ratio in / h; and inconspicuous indications of psycho-emotional effectiveness are noted.

Thus, according to the above data, the presence of more pronounced anxiety and depressive phenomena in the current psycho-emotional state of patients clearly negatively affects the effectiveness

of orthopedic treatment. The data obtained indicate that the effectiveness of orthopedic treatment in TMJ patients is lower in patients with increased anxiety, a tendency to fix attention on their feelings, a pessimistic assessment of their health status and the situation in general.

Evaluation of the effectiveness of the results of 1-group HCBT in TMJ BSD was carried out on the basis of a comparison of the proportion of patients who showed a significant improvement in their condition during treatment ( responders ) in 2 groups of patients without a decrease in NTL.

The criterion for improving the condition was a decrease in the intensity of pain. Responders included patients whose pain intensity decreased by 30% or more during VAS during therapy, and non - responders , in whom VAS decreased less or remained unchanged; In accordance with this criterion, it was found that immediately after the course of therapy in group 1, the proportion of responders in group 2 was 12%, in the group, the proportion of responders was 15% of the total number of patients in this group. Taking into account the data obtained (almost the same), as well as the fact that the increase in NTL and the subsequent restructuring of the musculo-articular apparatus of the TMJ does not occur immediately after the end of the 1st stage of orthopedic treatment, we can assume that the results obtained are not sufficiently informative.

However, already 12 months after the treatment: the proportion of responders in group 2 was 75%, in group 1 - 94% of the total number of patients in this group. The data obtained allow us to state that the inclusion of HCBT in the complex treatment of patients with TMJ BSD, which occurred against the background of a decrease in NTL, significantly increases the effectiveness of the treatment of patients, and it can also be said that it reduces the time for adaptation to temporary orthopedic structures that increase the height of the occlusion. Thus, the treatment according to the method as the 1st group leads to a decrease in the intensity of pain, significantly more pronounced compared to only the 2nd group. There was no increase in the intensity of pain on the background of HKPPT in any patient.

A further study, conducted using the nonparametric Wilcoxon test , revealed the use of treatment. Group 1 patients are accompanied by a decrease in the score on the Beck Depression Scale and a decrease in reactive and personal anxiety according to the Spielberger Anxiety Scale , significantly (  $p < 0.05$  ) more pronounced than in the 2nd group (table No. 3).

**Table number 3. Psychological criteria for QoL during orthopedic treatment and GCHP of the examined.**

Tests	Groups	
	1st group	2nd group
Beck depression scale	- 4.9±0.12(*)	4.6±0.09
Personal anxiety	- 7.3±0.08	2.1±0.16
Reactive alert	- 6.6±0.21(**)	4.9±0.15

Analysis of changes in QOL parameters after a course of treatment according to the method Group 1 showed a significantly (  $p < 0.01$  ) greater decrease in the total NHP than in group 2 (from 64.7±4.3 to 56.6±4, 6 points respectively). Reducing the intensity of BS during treatment 1st group correlated with improved QOL, as well as a decrease in the severity of depressive disorders. At the same time, the severity of hypochondriacal and depressive disorders in the 2nd group.

According to the obtained data, the selected subgroups before the start of therapy did not differ in the severity of BS, but significantly differed in psychological characteristics. Patients who experienced a slight decrease in BP during treatment had significantly higher Beck Depression Scale and personal anxiety scores before the start of treatment compared with patients with a subsequent significant decrease in the intensity of pain; Group 1 - Beck Depression Scale - 15.4±0.68 (\*\*); personal anxiety - 45.15±3.47; group 2 (\*\*) - 20.3±1.98; - 58.8±4.33, respectively. This means that the advantage of the combined method of treatment that was used in patients of the 1st group is especially noticeable in cases where the structure of psycho-emotional disorders in patients is characterized by significantly pronounced anxiety, hypochondria and depressive experiences.

The results of the treatment of the disease of the parafunction of the masticatory muscles of the evaluation of the effectiveness of the treatment carried out compared all the measured parameters in the 1st group (main) and 2nd group (comparative) after treatment.

**Table number 4. Qualitative indicators in groups of patients after treatment**

Indicators after treatment		Patient groups		Level Significance
		1st group n=90	2-group n=77	
Increased tone ZhM on the right	No	88 (97.7%)	70 (90.9%)	p=0.23
	Eat	2 (2.3%)	7 (9.0%)	
Increased tone VM on the right	No	88 (97.7%)	72 (93.57%)	p=0.49
	Eat	1 (0.1%)	3 (3.89%)	
Pain in the ZhM on the right	No	90 (100%)	75 (97.4%)	p=0.16
	Eat	0 (0%)	0 (0%)	
Pain in the left breast	No	90 (100%)	77 (100%)	NA
	Eat	0 (0%)	0 (0%)	
Pain in VM on the right	No	90 (100%)	77 (100%)	NA
	Eat	0 (0%)	0 (0%)	
Pain in VM on the left	Eat	0 (0%)	0 (0%)	NA
	No	90 (100%)	77 (100%)	
Increased tone ZhM on the left	No	90 (100%)	77 (100%)	NA
	Eat	0 (0%)	0 (0%)	
Increased tone VM on the left	No	90 (100%)	77 (100%)	NA
	Eat	0 (0%)	0 (0%)	
ZhM fatigue On right	No	90 (100%)	77 (100%)	NA
	Eat	0 (0%)	0 (0%)	
Fatigue ZhM on the left	No	90 (100%)	77 (100%)	NA
	Eat	0 (0%)	0 (0%)	
VM fatigue on the right	No	90 (100%)	77 (100%)	NA
	Eat	0 (0%)	0 (0%)	
VM fatigue on the left	No	90 (100%)	77 (100%)	NA
	Eat	0 (0%)	0 (0%)	
Reduced tone ZhM on the right	No	90 (100%)	77 (100%)	NA
	Eat	0 (0%)	0 (0%)	
Reduced tone ZhM on the left	No	90 (100%)	77 (100%)	NA
	Eat	0 (0%)	0 (0%)	
Reduced tone VM on the left	No	90 (100%)	77 (100%)	NA
	Eat	0 (0%)	0 (0%)	
Reduced tone VM on the right	No	90 (100%)	77 (100%)	NA
	Eat	0 (0%)	0 (0%)	

**Notes: ZhM - chewing muscles; TM - temporal muscles NA - not applicable**

The statistical analysis performed showed that the groups did not differ significantly after the treatment, but in both groups, for all studied indicators, a positive highly significant trend was observed, more pronounced in group 1 (Table No. 5).



**Table number 5. Quantitative indicators in groups of patients after treatment**

Indicators after treatment (points)	Patient groups		Level significance
	1st group n=90 Me (Q 1 ;Q 3 )	2nd group n=77 Me (Q 1 ;Q 3 )	
Assessment of pain in chewing muscles	1 (1;1)	1(1;1)	p=1
Difficulty score food intake	1 (1;1)	1(1;1)	p=1
Increased tone chewing muscles (hours per day)	0 (0.0)	0 (0.0)	p=0.5
Opening amplitude Mouth	1 (1.1)	1 (1.1)	p=0.85
Number of points	11 (11.11)	11 (11.13)	p=0.4

**Note: 11 points - there are no symptoms of VM parafunction ; 12-40 points - mild severity of parafunction of the FM.**

The results for other indicators, namely: the presence of pain in the masticatory muscles, decreased tone of the masticatory muscles, increased tone of the masticatory and temporal muscles on the left, fatigue of the masticatory muscles, difficulty in eating, anxiety about the outcome of diseases after treatment, did not differ in the groups of patients, since after the treatment, there were no complaints on these indicators.

To assess the dynamics of the indicator, the Wilcoxon test was used, which showed the presence of a significant change in the indicator in both the 2nd and 1st groups there is a positive trend in the normalization of the amplitude of opening the mouth after treatment, but in the 1st group in 19.9% of patients according to the formula for calculating the effectiveness of treatment, the amplitude recovered better. The overall effectiveness of treatment in groups of patients was determined as the arithmetic mean of individual indicators of treatment effectiveness and amounted to  $11.56 \pm 2.2\%$ .

**Conclusions** - A wide range of disorders leads to the development of BD TMJ, among which are disorders of the TMJ, muscular system and psychological characteristics; patients with severe psychological maladjustment were distinguished by the greatest intensity of the pain syndrome :

- The inclusion of a psychosomatic approach in the development of a therapeutic strategy in patients with TMJ developing against the background of a decrease in the height of the NTL contributes to an increase in the effectiveness of treatment, as well as a reduction in its duration, which affects the patient's compliance and contributes to the quality of medical care :
- The use of HCBT in the complex treatment of BD TMJ, which occurs against the background of a decrease in the height of the NTL, leads to a decrease in the intensity of the pain syndrome at an earlier stage of treatment compared with orthopedic treatment ( $p < 0.01$ ) ; to improve the psychological status of patients ( $p < 0.01$ ); to reduce the time of adaptation to the increase in the height of the NTL and the preservation of the results of therapy after the end of the course.
- Analysis of the predictors of the effectiveness of GCBT improves the results of complex therapy ( $p < 0.01$ ) in cases where the structure of psychoemotional disorders in patients is characterized by significantly pronounced anxiety - 20%, depressive - 70%, hypochondriacal - 10% syndromes of various
- Based on the systematization of myogymnastic exercises and the use of the Lira-100 device, the use of muscle relaxant " Muskomed " to restore the position of the TMJ structures; chewing mouse parafunction , to inactivate trigger points; to normalize the movements of the n / h when opening the mouth; to restore the rhythmic coordinated contraction of the masticatory muscles; to

strengthen certain muscle groups; to relax certain muscle groups; to increase the mobility of the lower jaw; to restore the functioning of the muscles of the neck.

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