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DIFFERENTIATED APPROACH TO DIAGNOSTICS AND TREATMENT OF PATIENTS WITH TMJ JOINT AND MUSCLE DYSFUNCTION SYNDROME

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Abstract. One of the significant problems in modern dentistry is the timely diagnosis of the TMJ pathology, which, according to the frequency of occurrence, ranks the third place after caries and periodontal diseases. According to modern literature, about 35 % of the world's population have a temporo-mandibular joint pathology [1]. A large number of researches in the domestic and foreign literature are devoted to the study of etiological factors, pathogenesis, diagnosis and treatment of this disease. However, a single concept does not yet exist. In relation to the multifactorial etiology, the variety of the clinical manifestation of TMJ joint-muscle dysfunction syndrome and prolonged absence of pain symptom, there are difficulties with the timely diagnosis, especially in the early stages. The disease remains untreated for a long time very often, which leads to the development of morphological changes and structural rearrangement of the joint, which is accompanied by severe clinical symptoms. Diagnostics, treatment and rehabilitation of these patients, understanding of the pathological processes leading to it, remains an important problem in dentistry. The actuality growth is a significant increase of the population, having defects of dentition, bite pathology, some consequences of therapeutic, surgical, prosthodontics and orthodontic treatment [2].

Keywords: TMJ joint-muscle dysfunction syndrome (TMJ JMDS), Farrell TMJ articular splint individual occlusal splint.

Objectives. Improvement of a differentiated approach to the diagnostics and treatment of patients with TMJ joint-muscle dysfunction syndrome, considering the degree of dysfunctional manifestations.

Materials and methods. Two hundred ninety-eight patients (eighty-six men and two hundred and twelve women) with TMJ JMDS (age from 18 to 50) were clinically observed up to 7 years. The tactics of comprehensive approach to the patient were used with an emphasis on History of the Patient's Life (HPL) and History of Present Illness (HPI), occupation, total status, specialized medical consultation of an allied trade, as well as neuropathologists. The degree of violations of the TMJ was determined by conventional methods. Particular attention was paid to the condition of the musculoskeletal system. Radiography of the TMJ was performed in the lateral projection, in a closed and open bite for comparative evaluation of the position of the condyle, of the disorders of its shape, if necessary, used 3D diagnostics of both TMJs. The emphasis of our research was the determination of severity by using the Helkimo clinical index. Index application has made it possible to conduct an objective assessment of clinical signs of TMJ dysfunction depending on the degree of expression (Table 1). Distribution of patient diagnosed with TMJ JMDS according to gender and age is tabulated in Table 2.

Result. The age of the subjects is very diversity: in the absence of dental and specific pathologies of TMJ JMDS, was more common in teenagers and young adults (209 persons, 70.1 %). Analysis of the results of the patient's examination find out that in the manifestation of muscular-articular dysfunction of TMJ distinguished muscular dysfunction, which corresponds to an easy degree of manifestation, muscular-articular dysfunction – moderate degree of manifestation and articular dysfunction – severe degree of manifestation (Table 3). All three types of dysfunctions were accompanied by a different degree of decrease in the functional activity of the masticatory muscles, relationships changes of the articular surfaces, reduction of compensatory capabilities of the muscular-articular apparatus. Interconnection and interdependence of clinical manifestation aggravates the degree of dysfunction, the so-called "vicious circle" closes.

The relationship between the TMJ JMDS and the vertebral column condition is an essential element of this "vicious circle" [5]. Subjective study of a patient's, objective examination and the

analysis of the roentgenograms of the cervical department showed, that all our patients suffered from osteochondrosis of the cervical spine or had a scoliotic posture, scoliosis. At the same time, young women aged 16 to 35 years are prevailed (157 persons - 52.7 %). They had a degree of dysfunction as moderate or severe. X-ray pattern in the majority of patients (85 %) was determined by a combination of varying degree of narrowing of the joint space. Palpation of the attachment area of the masticatory muscles was sensitive enough or even painful in all patients with development of, so-called, dysfunctional contracture. In some patients, the symptoms appeared spontaneously and also disappeared unexpectedly, with a prominent nature arising again.

Table 1. Helkimo index

Symptom	Point
Mandibular Mobility	
not limited (mouth opening 50 mm, lateral and forward movements 7 mm)	0
slightly limited (mouth opening 30-39 mm, lateral and forward movements 4-6mm)	1
severely limited (mouth opening 30 mm, lateral and forward movements 0-3 mm)	5
Articular Function	
opening and closing of the mouth on the middle line (it is permissible at the end of the opening of the mouth to have a lateral displacement of 2 mm) without articular noise, determined by palpation	0
articular noise, determined by palpation, and/or lateral displacement of the mandible at the end of the opening of the mouth	1
dislocation of the condilar or short-term blocking of its movements	5
Muscle pain	
chewing muscles are painless in palpation	0
1 to 3 muscles are painful in palpation	1
4 and more muscles are painful in palpation	5
Articular Pain	
articular painless in palpation	0
articular painful in palpation externally or posteriorly (from one or both sides)	1
articular painful externally or posteriorly (palpation through the anterior wall of the external auditory canal)	5
Pain in the Mandible Movement	
absent	0
pain with 1 movement (during opening of the mouth, side shifting of the mandible or moving forward)	1
pain with 2 or more movements	5
Point: 0 points – no dysfunction 1-4 points – easy dysfunction 5-9 points – average severity 10-25 points – severe dysfunction	

Table 2. TMJ JMDS Patient Distribution according to gender and age

Age	Gender		Total	%
	man	women		
16-22	26	62	88	29,5
23-30	21	46	67	22,5
31-35	12	42	54	18
36-40	15	28	43	14,5
41-45	9	25	34	11,5
46-50	3	9	12	4
Total	86	212	298	100

Table 3. Patient Distribution according to severity of manifestations TMJ JMDS by using the clinical index (HELKIMO, 1975)

Dysfunction's Degree	Man		Woman		Total	
	Absolute number	%	Absolute number	%	Absolute number	%
An easy degree of dysfunction (1-4 points)	15	17,5	28	13,2	43	14,4
The average degree of dysfunction (5-9 points)	26	30,2	89	42	115	38,6
Severe degree of dysfunction (10-25 points)	45	52,3	95	44,8	140	47
Total	86	100	212	100	298	100

Considering the multiple manifestations of TMJ JMDS, the question of a differentiated approach to the treatment of such patients arises. We used two medical-diagnostic devices: Farrell TMJ articular splint and individual occlusal splint. The Farrell standard splint is the initial soft splint for immediate treatment of TMJ JMDS. We used it in patients with easy degree of muscle dysfunction during all of the course of treatment and in combination with an individual occlusal splint in moderate or severe degree of TMJ JMDS manifestation. Usually, treatment of TMJ JMDS includes the amelioration of pain and inflammation, has a temporary effect. Whereas its true cause (the imbalance of the masticatory muscles work) remains. In the complex of treatment, we included a mode of behavior of patients and functional therapy in TMJ JMDS special developed by V.A. Minyaeva and T.A. Sergeeva [4]. An important place in our complex treatment was myogymnastics and massage of the masticatory muscles and muscles of the neck. In the circumstances - muscle massage of collar zone and back, kinesiotherapy. Each patient was train to performing of the exercises, which were selected individually and performed by patients several times a day (after sleep, before meals, before speaking load) for 3 - 5 minutes during 1 - 3 months, depending on the degree of the groups of masticatory muscles damage. Considering the fact that the greatest load on the elements of the TMJ is carried out at the time of sleep, in order to reduce the traumatic effect, to the patients were recommended the use of Farrell TMJ articular splint or individual occlusal splint for night using depending on the type of TMJ JMDS.

Conclusions. After evaluating the results of the complex treatment of patients with varying degrees of severity of the TMJ JMDS, we concluded that in case of easy degree of manifestation (or muscle dysfunction) requires relaxation of the masticatory muscles and resetting of myostatic reflexes by means of the Farrell TMJ articular splint during all of the course of treatment; in average degree (or muscular-articular dysfunction) and in severe degree of manifestation (or articular dysfunction) removal of the pain symptom and load in masticatory muscles, blocking uncontrolled load on all joint elements, resetting of myostatic reflexes are indicate by means of the Farrell TMJ articular splint (the soft splint of immediate treatment) and individual occlusal splint. Myogymnastics set exercises and massage of the masticatory muscles and muscles of the neck (in the circumstances - muscle massage of collar zone and back) created the rest and stretched joint tissues and contributed to their normalization, creating conditions for the formation of a new inter-related reflexes of the chewing musculature.

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