



DIAGNOSIS AND TREATMENT OF PAIN IN THE SYNDROME OF FUNCTIONAL DISORDERS OF THE TEMPOROMANDIBULAR JOINT

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Abstract: At the same time, the observed prevalence of joint dysfunction syndromes in patients with pathology, which ranged from 78.3% to 95.3%, indicates the prevalence of pathology. This is due to the fact that the initial stages of pathology are asymptomatic, the lack of sufficient information about organic changes in the temporomandibular joint, both during clinical and X-ray examination, as well as the lack of a unified etiopathogenetic point of view among specialists.

Keywords: This highlights the need to improve the treatment and prevention of this problem.

Introduction

At the same time, the observed prevalence of joint dysfunction syndromes in patients with pathology, which ranged from 78.3% to 95.3%, indicates the prevalence of pathology. This is due to the fact that the initial stages of pathology are asymptomatic, the lack of sufficient information about organic changes in the temporomandibular joint, both during clinical and X-ray examination, as well as the lack of a unified etiopathogenetic point of view among specialists. This highlights the need to improve the treatment and prevention of this problem. Of particular importance in modern dentistry is the development of methods that determine the features of the clinical and functional currents of pain syndromes of the temporomandibular joint, with a defect of the dentition; assessment of the role of orthopedic and physiotherapy measures in complex treatment; development of a plan for a phased approach focused on the somatic condition of the patient; to propose etiopathogenetically based methods for the treatment and prevention of syndromes of dysfunction of the joints of the temporomandibular joint; methods for evaluating the effectiveness of treatment.

These tasks are one of the actual scientific directions of the introduction of the practice of improving the treatment of pain syndromes of the temporomandibular joint associated with a defect of the dentition. A number of domestic and foreign scientific studies on the diagnosis, treatment and prevention of pain syndromes of the temporomandibular joint, among the population shows that dentists are most often treated by patients with painful joint syndromes or pain syndromes of joint dysfunction (Lebedenko I.Yu., 2008; Kamenova L.A., 2015) and disorders in the dental system (ZCHS) as the main factors of the pathological process in the body (Konnov V.V. et al., 2007), violation of the neuromuscular component of the ESR (Ronkin KZ, 2012; Rybalov O.V., et al., 2016; Shakhmetova O.A., Sinitsina T.M., 2017), articulation-occlusive syndromes without changing the structural state of bone elements (Chibisova M.A., 2012); others – hypertonic syndromes of masticatory muscles (Bugrovetskaya O.G., Yulev E.N. et al., 2018), the combined effect of various external and internal factors (Baslan S., Zengingul A., 2006; Bulycheva E.A., 2007; Ivashenko P.I. et al., 2009), it was also noted that a violation of the psycho-emotional state is an important etiological factor in the development of dysfunction of the temporomandibular joint, (Trezubov V.N., 2006; Kotsyubinskaya Yu. V., et al., 2014; Sarkisyan A.E., 2014; Karelina A.N., et al., 2016).

The results of the study showed that the syndromes of dysfunction of the joints of the temporomandibular joint are primarily associated with a violation of the tone of contraction of the pterygoid masticatory muscle (Semenyuk V.M., Smirnov K.V., 2003; Sidorenko A.N., 2012), and also patients often complained of "noise" in the movements of the lower jaw, pain in the masticatory muscles during prolonged chewing or talking, chewing disorders, ringing and tinnitus (Rabukhina N.A., 2008; Korzh G.M., 2009; Kameneva L.A., 2015). Patients' complaints are associated not only with morphofunctional changes of the temporomandibular joint, but also with the involvement of all organs and tissues of the chewing apparatus in the pathological process, and in some cases with psychoemotional changes in a person (Sotnikova M.V., 2009; Beschastny D.S., 2010). Patients with pain syndrome of the temporomandibular joint associated with a dentition defect have a high risk and severity of the development of joint dysfunction syndromes, since these factors affect the development and clinical course (Gaffarov S.A., 2008; Khabilov N.L., 2017; Aliyev N.H., 2021). In addition, scientists have conducted a number of scientific studies on early diagnosis, assessment of risk factors and improving the effectiveness of treatment of pain syndromes of the temporomandibular joint, among various segments of the population (Rizaev Zh.A., 2005; Safarov M.T. 2009; Murtazaev S.S., 2017). However, the practice of improving the treatment of pain syndromes of the temporomandibular joint associated with a dentition defect in different age groups has not been carried out in practice. As a result of syndromes of dysfunction of the joints of the temporomandibular joint, it leads to the formation of a complex unresolved problem, at the same time being one of the urgent problems facing dentists.

The purpose of the study The aim was to increase the effectiveness of diagnosis and treatment of patients with pathology of the temporomandibular joint, associated with defects of dentition pathologies.

In patients, occlusiography of the upper and lower jaw rows was performed using a wax plate bite. Using this method, early contacts were detected, the movement of the lower jaw in the vertical direction was estimated.

The study of the bioelectric activity of the masticatory muscles was carried out using Synapsis four-channel flexible electromyography (EMG) for dental research by Neurotex.

Magnetic resonance computed tomography (MRI) is a multi-sectional tomography by GE Light Speed, the time of one scan with an open and closed mouth is 5-7 seconds. Scanning cross-sectional thicknesses: 120 kV; 140 mA; cross-sectional thickness 1.25 mm, reconstruction range 0.8 mm; also, on the sagittal and frontal planes, multi-dimensional reconstructions were performed, as well as reconstruction of the three-dimensional (3D) image of the mouth in the closed and open state.

The received information was processed on a personal computer "STATISTICA V.6.0", the arithmetic mean (M), the average standard error (m), the relative value (frequency, %), the probability of error (P) was calculated using statistical functions. To assess the reliability of the differences between the average values of the studied indicators, the reliability coefficient "t" (Student's indicator) was used. The results of the groups and research methods were compared, that is, the relationship between the properties of the Spearman correlation coefficient (R) was studied by analysis.

84 (70%) of 120 (100%) examined patients had various forms of syndromes of dysfunction of the temporomandibular joint; 39 (32.5%) had OAS; 28 (23.33%) patients had NMS; 17 (14.16%) had VSD and 36 (30%) patients were involved in a study as a control group. Syndromes of dysfunction of the joints of the temporomandibular joint by gender were diagnosed in 38.1% of men and 61.9% of women. This indicator is also presented in a number of publications, that is, it confirms the opinion that the pathology under study is very common among women.

Among the patients who participated in the study, there was a direct correlation between the syndromes of dysfunction of the joints of the temporomandibular joint and the age group; the prevalence of the disease was observed 20-29 years - 14.28%; 30-39 years - 26.19%; 40-49 years - 28.57% and 30.95% of cases - 50-59 years.

Also, when analyzing the medical records of 84 patients of the main group, we identified the following nosological forms of joint dysfunction syndromes; OAS – 46.42% (OG-1); NMS - 33.33% (OG-2); dislocation of the articular disc (VSD) – 20.23% (OG-3). We present the following table of clinical signs based on the results obtained during the examination of patients in OG-1, 2 and 3. Having studied in detail the data revealed by us, we identified clinical signs occurring in 100% of cases in OG-1 – 95%, OG-2 and 3 in nosological forms of syndromes of dysfunction of the temporomandibular joint.

A similar frequency is observed in patients with NMS. Patients with VSD in almost 100% have a click with moderate opening of the mouth, short-term pain in the temporomandibular joint, chewing and maximum opening of the mouth, feeling of a foreign body in the joint, rapid muscle fatigue during chewing, "stagnation" of the joint, "blocking", inability to properly connect teeth, bad habits, unilateral chewing, pain during palpation of the lateral pterygoid muscles, limited opening of the mouth, deflection from the injured side, early contacts, decrease in the amplitude of mouth opening, narrowing of the joint lumen, the location of the articular heads on the slope of the articular hillock.

The crunch at the time of the average opening of the mouth was in 38 (97.43%) controls, of which 28 (73.68%) patients were noted on one side, and 10 (26.31%) - on both sides. Cracking was heard in 6 (15.38%) patients with jaw compression. The sensation of the presence of a foreign body in the joint was detected in 14 (35.89%) of the examined; pain and congestion in the ears in 18 (46.15%) patients; complaints of burning of the tongue were noted in 6 (15.38%) patients; fatigue of the chewing muscles during meals was detected in 14 (35.89%) patients; in 14 (35.89%) of the examined patients had blockage during the movement of the lower jaw; hypertonicity of the masticatory muscles and jaw compression during the day were detected in 5 (12.83%) patients, bruxism – in 6 (15.38%) patients.

In patients with OG-3 in 17 cases (100%) acute pain was observed during chewing or talking; 10 patients (58.82) on one side; on both sides - 7 (41.17%); local pain – 12 people (70.58%); in 6 patients (35.29%) acute pain moved in the area of the ear, temple, collarbone; clicks were noted in 15 (88.23%) patients, in 7 patients during mouth opening and in 8 patients during conversation.

The following results were observed in a special study of the opening and timing of mouth opening in the syndrome of dysfunction of the temporomandibular joint. When studying the nature of vertical movements when opening and closing the mouth with OAS, NMS and VSD in OG-1, with the maximum opening of the mouth, a decrease in the amplitude of movement of 1.0 ± 0.2 cm (24.8 ± 4.1 cm) was noted. In OG-1 - amplitude - 2.9 ± 0.6 cm, time - 6 ± 0.4 seconds; OG-2 - amplitude - 3.0 ± 0.2 cm, time - 6 ± 0.3 seconds; OG-3-the amplitude is 3.1 ± 0.7 cm, the time is 5 ± 0.5 seconds, in the control group these indicators correspond to 4.4 ± 0.4 cm and 4 ± 0.2 seconds (Fig. 2). When comparing the correlation coefficient, the control group found a complete correlation between the amplitude of vertical movements of the mandible and the temporomandibular joint, OAS, NMS and VSD.

When opening and closing the mouth, there was a deviation of the jaw from the mid-sagittal line by 2 ± 0.5 cm, which was reflected in the elongation and change of direction. The lowering time of the lower jaw was 4 ± 0.3 seconds, which corresponds to the norm [1.3.5.7.9.11.13.15.17.18].

In all patients with OG-1, 2, 3 in the "closed mouth" state, the results of magnetic resonance computed tomography in a curved projection on the damaged side revealed an increase in the joint

lumen in the D4 department, in the D2 and D5 departments narrowing of the joint lumen, while on the healthy side in the D2 and D5 departments there was an expansion. In an open-mouth study in 20 (51.28%) patients in OG-1, 12 (42.85%) in OG-2 and 9 (52.94%) in OG-3, respectively, in three parts 18 (46,15%), 13 (46,42%) and 8 (47.05%) in patients, the head of the joints is located on the posterior slope of the articular bulge.

In all patients with temporomandibular joint, OG-1, 2 and 3, as well as in KG with occlusiography, early contacts were more often noted in 14, 16 - 45, 47 and in 26, 27 – 37, 38 teeth.

From the anamnesis, the following causes of the disease have been established – restoration of chewing teeth with fillings without occlusion control, prolonged unilateral chewing and bad habits. Later, there were such violations of the functions of the dental - maxillary apparatus, such as restrictions on opening the mouth, blocking jaw movements and violation of chewing function. In the diagnostic table, which is the result of a study of syndromes of dysfunction of the joints of the temporomandibular joint, patients who had OAS, NMS and VSD were comprehensively evaluated and frequent complaints were noted - joint pain, clicking, tinnitus and muscle fatigue when chewing.

To assess the effectiveness of treatment results, patient groups are conditionally divided into two subgroups. Of these, in 1 subgroup there were only 40 (47.61%) patients: with OAS - 20 (23.80%) people, with NMS - 10 (11.90%) people, with VSD - 10 (11.90%) patients; in 2 subgroup where combined therapeutic measures were carried out, a total of 44 (52.38%) patients: with OAS - 19 (22.61%), with NMS - 18 (21.42%), with VSD - 7 (8.33) patients.

6 months after treatment, the 1st subgroup with intact teeth in the dentition underwent a control examination. Repeated occlusiography revealed OAS in 12 (60.0%) patients, NMS in 11 (55.0%) patients, VSD in 5 (50.0%) patients, mouth opening - $3,6 \pm 0,8$; $3,8 \pm 0,4$; $3,4 \pm 0,3$; $4,1 \pm 0,3$; $4,2 \pm 0,3$; $3,6 \pm 0,8$; $3,8 \pm 0,4$; $3,4 \pm 0,3$; $4,1 \pm 0,3$; $4,2 \pm 0,3$; $4,0 \pm 0,2$ Accordingly, no deviation from the mid-sagittal line was observed. Based on the results of studying the nature of vertical movements when opening and closing the mouth in patients with OAS, NMS and VSD. The results of EMG studies showed an increase in the bioelectric activity of the masticatory muscles at rest (BEAP) in OG-1, OG-2 and OG-3 and a decrease - at maximum compression and during chewing.

Clinical observation of 39 patients with OAS, 28 patients with NMS, 17 patients with VSD showed that within one year, all patients with the results of control records of vertical jaw movements, according to the results of electromyography and computed tomography, 37, 25 and 14 patients, respectively, had no complaints, but 2, 3 and 3 patients, respectively, the disease persisted or pain reappeared in the temporomandibular joint after treatment.

As a result of the study of medical records and databases of examinations developed taking into account traditional and rare symptoms, it was possible to determine the complete clinical picture of nosological forms of pain-type syndromes of dysfunction of the joints of the temporomandibular joint. Taking them into account, an individual table was developed for the comparative diagnosis of OAS, NMS and VSD. The coverage of the pathology clinic was carried out on the basis of the developed individual table, and the scientific results showed that the use of similar therapeutic measures, especially complex methods of treatment, is effective.

Special research methods, such as EMG, occlusiography, MRI and clinical studies, have shown a connection between the amplitude of vertical movements of the mandible, changes in BEA at rest in the masticatory muscles and the occurrence of OAS, NMS and VSD in syndromes of dysfunction of the temporomandibular joint. Thus, the therapeutic and preventive measures carried out have shown that comprehensive approaches to the diagnosis and treatment of temporomandibular joint pathologies that develop as a result of dentition defects are needed. The complex treatment

performed showed positive changes and high efficiency in the temporomandibular joint [2.4.6.8.10.12.14.16.18].

Conclusions

1. Comprehensive assessment of each clinical, symptomatic, psychological and social factor in the comparative diagnosis of disorders of the temporomandibular joint - symptomatic signs of pathologies of OAS, NMS and VSD – the formation of pain in the joints, restriction of mouth opening, observation of noise in the joints, pain in the head, neck, ear and surface defects teeth from 97% to 100% of cases of similarity were justified.

2. The diagnosis of activity, in addition to tests for clinical activity, the collection and relationship of anamnestic examination and social data were based on the main factor of correct diagnosis, prediction of complications of pathology.

3. In our study, according to the results of a special study of the pathologies of the temporomandibular joint ($r \sim 0.96$) between the changes in the amplitude of vertical movements of the lower jaw, the decrease in the average amplitude to 1.0 ± 0.2 cm ($24.8 \pm 4.1\%$); narrowing of the articular gap of the right joint $D1 = 1.8$ mm, $D2 = 1.3$ mm, $D3 = 1.7$ mm; narrowing of the articular gap of the left joint $D1 = 1.2$ mm, $D2 = 1.2$ mm, $D3 = 1.3$ mm; with OAS – BEA at rest of the masticatory muscles = 41.2 ± 4.9 , temporal muscles 43.8 ± 4.2 ; BEA (compression) of the masticatory muscles 490.2 ± 43.2 , temporal muscles 432.6 ± 50.3 ; BEA (chewing) of the masticatory muscles = 377.2 ± 69.4 , temporal muscles 334.3 ± 81.4 ; time during chewing of the masticatory muscles = 7.98 ± 0.2 , temporal muscles 7.98 ± 0.4 ; at rest of the masticatory muscles = 6.44 ± 0.5 , temporal muscles 6.56 ± 0.6 .

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