

CLINICAL AND FUNCTIONAL METHODS OF ASSESSMENT AND DIAGNOSIS OF THE PATHOLOGICAL CONDITION OF THE TEMPOROMANDIBULAR JOINT

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✓ **Resume**

The article is devoted to the study of improving methods of clinical and functional assessment and diagnosis of the pathological condition of the temporomandibular joint (TMJ). TMJ pathology occupies a special place among dental diseases due to its significant prevalence, extremely diverse and complex clinical picture. Diagnosis of TMJ diseases remains one of the most complex issues in dentistry. based on this, the authors analyze a number of scientific literature data and conclude that the diagnosis and differentiation of TMJ disorders is a very complex process and requires a combined examination of these patients.

Key words: Dentistry, anatomical and topographical features of the temporomandibular joint, diagnostics, functional research methods.

КЛИНИКО-ФУНКЦИОНАЛЬНЫЕ МЕТОДЫ ОЦЕНОК И ДИАГНОСТИКИ ПАТОЛОГИЧЕСКОГО СОСТОЯНИЕ ВИСОЧНО - НИЖНЕЧЕЛЮСТНОГО СУСТАВА

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✓ **Резюме**

Статья посвящена изучению совершенствование методов клинико-функциональных оценок и диагностики патологического состояние височно-нижнечелюстного сустава (ВНЧС). Патология ВНЧС занимает особое место среди стоматологических заболеваний ввиду значительной распространенности, чрезвычайно разнообразной и сложной клинической картины. Диагностика заболеваний ВНЧС остается одним из сложных вопросов стоматологии, исходя этого авторы анализируют ряд научный литературный сведения и сделает вывод что, диагностика и дифференциации нарушение в области ВНЧС очень сложной процесс и требуется комбинированный методов обследование этих больных.

Ключевые слова: Стоматология, анатомо-топографические особенности височно-нижнечелюстной сустав, диагностика, функциональный методов исследования.

CHAKKA-PASTKI JAG' BO'G'IMNING PATOLOGIK HOLATINI KLINIK - FUNKTSIONAL BAHOLASH VA DIAGNOSTIKA USULLARI

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✓ **Rezume**

Maqolada chakka-pastki jag' bo'g'imining (ChPJB) patologik holatini klinik-funksional baholash va diagnostika usullarini takomillashtirishga bag'ishlangan. ChPJB patologiyasi tish kasalliklari orasida sezilarli darajada tarqalishi, juda xilma-xil va murakkab klinik ko'rinishi tufayli alohida o'rin egallaydi. ChPJB kasalliklarini tashxislash stomatologiyaning murakkab masalalaridan biri bo'lib qolmoqda, shundan kelib chiqqan holda mualliflar bir qator ilmiy adabiyot ma'lumotlarni tahlil qilib, ChPJB sohasidagi buzilishlarni tashxislash va farqlash juda murakkab jarayon ekanligi va ushbu bemorlarni tekshirishning aralash usullari talab qilinadi.

Kalit so'zlar: Stomatologiya, ChPJBning anatomik va topografik xususiyatlari, diagnostika, funksional tadqiqot usullari.

Relevance

Diseases of the temporomandibular joint (TMJ) are very common, the problem of their final diagnostics today is an even greater problem for many specialists; as dentists, neuropathologists, endocrinologists, otorhinolaryngologists and infectious disease specialists, because the clinical course of the pathogenetic symptoms and pain syndromes of TMJ dysfunction is complex and diverse. According to clinical studies, TMJ pathology occurs in 70-80% of the healthy population and ranks third after caries and periodontal disease [2]. Throughout life, each person has experienced certain symptoms of dysfunction, manifested by pain in the chewing muscles or clicking in the TMJ.

Many patients with temporomandibular joint dysfunction do not seek medical help at all, or turn to therapists, rheumatologist, neuropathologists and other specialists, or are discovered by chance when contacting a dental clinic for the treatment and prosthetics of teeth. The doctor's tactics should be aimed at early detection of TMJ pathology. Early diagnosis, in case of a dysfunctional state of the TMJ, is a very relevant direction today, because many dentists do not know how to approach the initial examination of patients who have addressed them for disorders in the TMJ, high, ear, head, neck, clavicle and dentition areas.

The complexity of the anatomical structure, the large number and originality of the course, the variety of clinical symptoms of pathological processes complicate the diagnosis of TMJ diseases. Diagnosis of TMJ diseases remains one of the most difficult issues in dentistry and requires the use of modern research methods.

Therefore, the approach of examination with preliminary diagnoses of TMJ DS is required to conduct a survey, external examination, examination of the PR organs, palpation and auscultation of the masticatory muscles and TMJ, study of diagnostic models, sighting and panoramic radiography (R) of teeth and jaws, electroodontodiagnostics (EDI), axiography, tomography, electromyography, electromyotonometry of the masticatory muscles. According to the patient's history - primary complaints and complaints about a cosmetic defect, hyperesthesia of enamel and dentin, a feeling of soreness and roughness of the surface, the presence of pathological abrasion in other family members, concomitant pathology such as congenital dysplasias, endocrinopathies, kidney diseases, pathology of the gastrointestinal tract and others ... When determining pathological

symptoms; cause of abrasion or other symptoms, history of the disease, duration of occurrence, nature of progression and their connection with prosthetics of teeth and jaws, connection with the working and living conditions of the patient. On examination, the face configuration, temporomandibular joint (lower 1 / h), the state of the hard tissues of the teeth, OOP and periodontium, soreness, asymmetry of sensations, swelling, hypertonicity, violation of the symmetry of movements, snapping, soreness and others [12].

As we know, the examination of patients with TMJ diseases should be carried out according to a certain scheme; including the collection and study of complaints, collection and analysis of anamnesis, face examination, palpation and auscultation of the joint, determination of muscle tone, pain points in the muscles and on the face, study of the joint during movement of the lower jaw (n / h), measurement of the distance between the cutting edges of the central incisors with the maximum open mouth, palpation of the lymph nodes and salivary glands, the use of functional diagnostic tests, X-ray and laboratory studies. If necessary, patients should be referred to a therapist, neuropathologist, psychiatrist, rheumatologist, otorhinolaryngologist, specialist in infectious diseases.

When collecting anamnesis, it is necessary to find out when and how the first symptoms of TMJ disease began to manifest themselves. To identify these factors, it is preferable to ask the patient leading questions, mentioning the main and common causes that contribute to the occurrence of various types of pathologies in the TMJ: wide mouth opening, trauma to the maxillary area, dental prosthetics, eating solid food, difficult extraction of chewing teeth, past infectious diseases (epidemics. mumps, purulent otitis media, whooping cough, scarlet fever, flu, tonsillitis, rheumatic and rheumatoid arthritis, gout, tuberculosis, etc.).

When detailing the symptoms, first of all, you should find out what first arose: pain or clicking (S) in the joint; For example, with habitual dislocations (PR) and subluxations of n / h (PMNC), U most often first appears, and then pain joins, and in arthritis and arthrosis, pain first appears, and then U joins in the joint. Point, or strictly local pain, is typical for PT, PVNP, dysfunctional syndromes (DS) and osteoarthritis.

As we know, diffuse pain is more common in acute and subacute arthritis, specific and

nonspecific infectious arthritis, myositis in the joint and other inflammatory processes around the joint. Irradiating pain is observed when squeezing the auditory nerve, branches of the ear-temporal nerve, with trigeminal neuralgia, pulpitis, compression of the muscle-facial cortical zones. Clarifies the nature of the onset of pain - sudden, arising gradually from a feeling of awkwardness in the joint, spilled, with subsequent localization at a certain point and vice versa [1].

Clicking symptoms (U) character U - crunching, popping sound. With a slight opening of the mouth and lateral movements of the n / h Sh, it is observed in neuromuscular syndromes (NMS) and occlusive-articulatory syndromes (OSA), dislocation of the meniscus, arthritis and arthrosis; with wide opening of the mouth and at the moment of the beginning of closing of the mouth - with PV and PVNC. When the jaws are compressed, the crunch is observed in patients with a decreasing bite.

It is important to find out whether the patient has a blockage (BL) or, as patients say, "jamming" in the joint. BL can be partial (CHL) or complete (PBL). NPL occurs with excessive mobility of the intra-articular meniscus, PBL occurs with PV as a result of a sharp reflex contraction of the masticatory levator muscles. Joint pain also occurs when the meniscus is completely torn off. The above clinical and functional symptoms in the neck and head area complicates the differentiation of etiological and pathological processes. We know that the functional movement of the n / h by the masticatory muscles is denoted by the term "Articulation", the term "Occlusion" means that the position of the dentition at the stage of their closure. For diagnosis, it is very significant to take these factors into account; central, anterior and two lateral - right and left occlusions and bites; physiological (orthognathia, progeny, biprognia and direct) and pathological (prognathia, progeny, open, deep and cross).

We know that in case of central occlusion (CO), the central position of the TMJ heads in the glenoid fossa should be normal, that is:

1) each upper or lower tooth closes with two antagonists - the upper one with the lower teeth - with the same name and standing behind, the lower one with correct teeth - with the same name and in front.

2) the middle lines between the upper and lower central teeth are a continuation of one another and lie in the same sagittal plane.

3) the upper anterior teeth overlap the lower

ones by about 1/3 of the length of the tooth crown.

4) the upper first molar, merging with the two lower molars, covers approximately two-thirds of the lower first molar and one third of the lower second. The mesio-buccal cusp of the upper first molar falls into the transverse groove between the buccal cusps of the lower first molar. At the same time, the position of the articular heads is cranioventral, there is no displacement to the side, the physiological position of the head - disk and the physiological load on all joint structures are the same, the anterior, superior and posterior joint spaces are approximately the same among themselves, as well as on the right and left (Fig. 1).

During clinical examination, the functional state of the temporomandibular joint in practice, it is imperative to analyze the occlusal relationship, determine the central premature contacts, the absence of contacts between individual teeth in the usual occlusion, check the canine guidance and the stability of the occlusion. In this case, it is imperative to take into account the distinctive features of the TMJ:

1. The articulating surfaces are covered not with hyaline, but with thin fragile connective tissue cartilage, which determines its frequent vulnerability, a tendency to rapid melting during inflammation and its replacement with scar or bone tissue.

2. The joint capsule has a heterogeneous structure; in front it is thin, free and easily stretched, and in the back it is considerably thickened.

3. Outside, the joint is reinforced with a strong ligament, the fibers of which, starting widely from the base of the zygomatic process of the temporal bone, go down and back, converge on the outer and back sides of the neck of the condylar process n / h.

4. In the joint cavity there is an articular disc, which has a biconcave shape: in the center it is thin (1-2 mm), and at the edges - thick (3-4 mm). It consists of fibrous cartilage, the edges are fused with the capsule and therefore divides it into two floors: upper and lower. The functional significance of the disc lies in the fact that it compensates for the lack of complete congruence of the articulating surfaces and simultaneously provides a wide range of motion n/h.

Today, the following functional tests are widely used in the process of studying the clinical manifestations of various forms of joint pathology [13], that is: - Test No. 1; in case of excessive excursion of the articular heads, the

patient is asked to make a limited opening of the mouth, fixing the jaw by the chin with one hand, and palpating the area of one of the temporomandibular joint with the other. The disappearance of symptoms (pain, U) indicates that when limiting the movement of the n / h in these patients, the condyles with the meniscus move synchronously, without injured articular surfaces: - Test No. 2; resting the index finger of the right hand on the upper arm on the left, and with the thumb of the same hand on the distal chin on the right, slightly shift the jaw to the left and ask the patient to make vertical movements of the lower arm. The disappearance of symptoms (pain, U, crunch) indicates that the condyles at the same time took an optimal comfortable position: - Test No. 3; with distal shifts of the n / h, the patient is asked to push the n / h forward - to the orthogenetic or straight bite and then make vertical movements of the n / h. At the same time, the doctor holds the patient's s / h in a given position with his hand. The disappearance of symptoms indicates that the condyles have taken on a more comfortable position in the glenoid fossa: - Test No. 4; displacing n/h distally, set it in the center position. Occlusion, fixing the chin. At the same time, the patient is asked to open and close his mouth several times, observing the disappearance of pathological symptoms during the movement of the jaw. The disappearance of the pathological reflex indicates the elimination of the nonphysiological movement of the condyle: - Sample No. 5; with the usual lateral displacements of n / h, the Ilyina-Markosyan test is used. During this test, in a state of relative physiological rest, the position of the n / h is observed. If the latter is established along the midline of the face, one should think about the disturbance of the kinetic activity of the neuromuscular complex: - Test No. 6; for declining and deep traumatic bites, placing 2 mm strips of cardboard between the teeth. in rows in the area of the premolars, the patient is asked to make vertical movements. The thickness of the pad gradually increases until the pathological symptoms in the joint are eliminated. Elimination of symptoms indicates the optimal comfortable position of the condyles in the glenoid fossa with closed dentition and the degree of increased occlusion during orthopedic interventions [1].

In addition to the aforementioned functional test, today the electromyography (EMG) method is used - automated systems for measuring and processing biomedical information using modern software tools, this significantly expands the diagnostic capabilities of modern medicine. With

the help of electromyography of the masticatory muscles, functional tests are used: closure of the dentition in the CO, arbitrary and preset chewing, record electromyograms at physiological rest n / h, study the time of reflex inhibition of the activity of the masticatory muscles during compression of the jaws in the CO when tapping the chin with a neurological hammer [1, 18, 19, 20].

In recent years, a number of authors have proposed another functional method for studying the movement of the TMJ - graphic; that is - recording of dynamic jaw movements - functiography. To register the movements of the n / h, they use an intraoral device [14, 16]. Using this method, it is possible to study the function of the TMJ, diagnose the pathology of the joint and masticatory muscles. The shape of the Gothic angle makes it possible to assess the function of the joint, masticatory muscles and determine whether the movements of the n / h to the right and to the left are symmetrical, whether there is a restriction of movements in one or both sides.

Axiography methods - out-of-mouth registration of movements n / h, allows you to record the trajectory of movement of the transverse hinge axis of the temporomandibular joint during movements n / h. With the help of an axiograph device - mechanical or electronic research is carried out, it is possible to obtain axiograms in three mutually perpendicular planes [17, 18]. The method allows you to fix the initial state of the facial system; make a diagnosis before starting treatment; dynamically observe during and after treatment; determine the central ratio of the jaws.

Changes in the hemodynamics of the parotid-articular region play an important role in the pathogenesis of functional disorders of the TMJ. In dentistry, rheography, laser Doppler fluorometry, and biomicroscopy are used to study the microcirculation of various tissues (3, 4, 20). The dynamics of rheography indicators is studied before, on time and at various times after the load [3,4]. Rheovasograms on the usual and opposite side of chewing are assessed qualitatively and quantitatively. According to the author, in the quantitative analysis of rheograms, the main amplitude of the rheogram, the amplitude of the slow filling of the lowest point of incisure and the dirotic wave are measured [20].

With the help of phonoarthrography, it is possible to determine the articular noise, which is observed in intra-articular disorders: joint hypermobility, dislocation of the articular heads and discs, arthrosis [5, 6].

With the help of gnathodynamometry, the registration of compression efforts of the antagonizing pairs of teeth of the anterior group is carried out until the appearance of pain in the TMJ area, allows in the overwhelming majority of cases to reveal the pain dysfunction of the TMJ and differentiate it from the manifestations of osteochondrosis of the cervical spine [2, 11].

In the R-com study, all patients without exception, regardless of unilateral or bilateral lesions of the TMJ, are performed with the R-th of both joints in the CO position and with the mouth as open as possible. This is dictated by the fact that patients often complain of one joint, and pathology is detected in another: Survey R-I gives only a rough idea of the TMJ due to projection distortions and layering of other bones of the facial and cerebral skull. The main role in the diagnosis of TMJ diseases belongs to the R-type research methods [1].

R methods of research provide the diagnosis of at least 95% of cases of TMJ diseases, especially taking into account the fact that the state of its bone fragments is simultaneously visualized. Unfortunately, the program available on most orthopantomographs, as well as orthopantomographs themselves, distort the joint space in the R-image, as they display the temporomandibular joint of an oblique projection [1, 9, 12, 13].

The survey R-th temporomandibular joint is a complex study due to the layering of other bones of the skull, but it makes it possible to recognize a number of TMJ diseases such as DS, arthrosis, fractures of the articular process, etc. in the lateral projection with the mouth closed and maximally open [13].

Tomography has significant advantages over the survey R-she, as it allows you to identify the finest changes in the joint without projection distortions, to analyze the measurements of the articular elements and their ratios during treatment. When evaluating R-mm, the anterior, central and posterior position of the head of the N / h can be detected [9,12].

Computed tomography of the TMJ is based on the absorption of part of the radiation by the tissues of the human body. The radiation dose for joint tomography usually does not exceed 0.02 Gy. However, even in spite of such a level of radiation, diagnostics is used only on strict indications to exclude the effect on the parotid salivary glands, which are sensitive to radiation [10, 15]. The method has a fairly high resolution, due to which it is possible to differentiate anatomical structures that differ from each other in density within 1-2%.

If we compare tomography with a conventional R-image, then in the latter case, this figure is from ten to twenty percent. The method allows you to obtain an image in three mutually perpendicular planes: sagittal, frontal and axial, in addition, measurements and volumetric reconstruction of articular elements can be performed.

Magnetic resonance imaging (MRI) is today the gold standard for imaging soft tissue structures. This method is easily tolerated by patients and provides high contrast of soft tissues, three-dimensional image and no side effects. MRI allows you to obtain a layered image in various projections, with a step size of 1.5–3 mm, and is used to visualize both bone and soft tissue structures of the TMJ and masticatory muscles.

This technique allows detecting changes in the position of the articular disc, effusion into the joint cavity, changes in articular cartilage, soft tissue tumors of the joint and peri-maxillary tissues, and even hypertrophy of the masticatory muscles [4,7,8,11].

We know that according to the classification of V. I. Burgonskaya (1968) arthritis is divided into three groups: arthritis - acute, chronic; arthrosis - sclerosing and deforming; arthritis arthrosis. In turn, they are divided into traumatic, rheumatoid and rheumatic. Also, TMJ diseases can be divided into articular, in which there is damage to the articular tissues, and non-articular, associated with the pathology of the masticatory muscles. For the purpose of diagnostics and differential diagnosis of TMJ pathology of a non-articular nature, a specialist requires a lot of experience, knowledge of the anatomical and topographic structure of the TMJ region and addition to this information content about modern special instrumental devices that are required for research in the field not only in dentistry, but in all medicine [9].

Conclusions

Thus, an analysis of the literature on methods of examination of patients with TMJ DS showed that the need to use complex examination methods as, objective, collection of anamnesis, clinical, functional and special instrumental research methods for the diagnosis and differential diagnosis of functional impairment and TMJ pathologies for planning treatment of pathological processes and restoration of the functional state in this area.

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