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OPTIMIZING THE TREATMENT OF TEMPOROMANDIBULAR JOINT ARTHRITIS

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Abstract. Based on a comparative analysis of the results of modern computer technologies, the diagnostic efficiency of complex tomographic (CT and MRI) and traditional X-ray examinations for injuries and internal disorders of the TMJ was shown.

Keywords: Treatment, medicine, TMJ, CT, MRI, X-ray diagnostics.

INTRODUCTION

One of the significant problems in modern dentistry is the timely diagnosis of pathology of the temporomandibular joint (TMJ), which ranks third in frequency after caries and periodontal diseases.

Radiation diagnostics is the leading method for detecting pathological changes in TMJ in various types of lesions. However, it should be noted that traditional X-ray examination methods under natural contrast conditions turned out to be of little information due to the fact that pathological changes in its soft tissue elements occupy the largest part among TMJ lesions. According to various authors, their frequency reaches 70-95 of the number of patients examined.

MATERIALS AND METHODS

The dynamic development of science and medicine in the last decades of the 20th century led to the emergence of computed and magnetic resonance imaging (KT and MRI). These high-tech research methods have radically changed the possibilities of radiation diagnostics in obtaining clinically significant diagnostic information that goes beyond the resolution of conventional radiology techniques.

The possibilities of KT and MPT in detecting pathological changes in the TMJ in its various lesions are covered in sufficient detail by domestic and foreign authors (Badanin V.V., Vyazmin V.Ya., Dergilev A.P., Jager L., Milano V. et.al., Bertram S. et.al., Gsellmann B., Bayar N. et.al., Sommer O. J. et.al.).

RESULTS AND DISCUSSION

A wide choice of traditional and new methods of radiodiagnosis often makes it difficult for a practitioner when referring patients for a radiological examination, leading to unnecessary duplication of studies, the performance of diagnostic procedures that do not provide clinically significant information, an increase in

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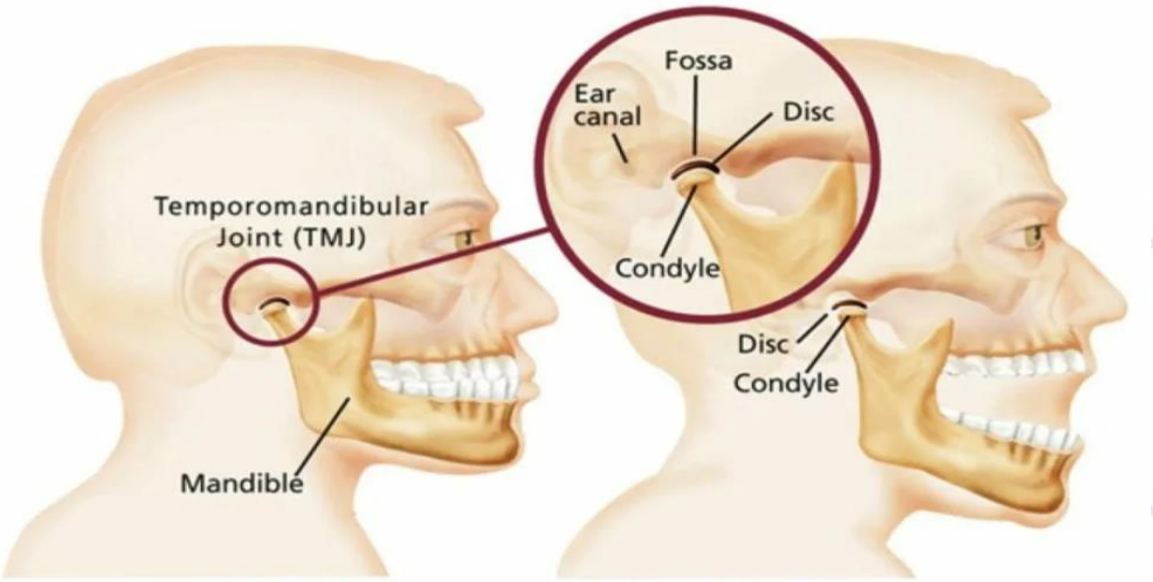
radiation exposure to the patient, lengthening terms and increase in the cost of examination and treatment.

Table

Effective equivalent dose calculated for methods of X-ray examination of the facial part of the skull
(according to N. A. Rubakhina and A. P. Arzhantsev)

X-ray examination technique	Effective equivalent dose, μSv
Orthopantomography	26
Panoramic radiography of the jaws with direct magnification of the image (projection) straight	76
lateral	39
Intraoral periapical radiography of the entire occlusion (10 shots)112	
Plain radiography of the skull	35
Linear tomography of the skull	800
Computed tomography of the skull	400

Until recently, it was believed that X-ray examination should be carried out according to the principle “from simple to complex”. Today, it is considered more appropriate to use the most informative technique, the positive or negative result of which can directly affect the clinical management of the patient, which often makes it possible to abandon the traditional radiological examination.



The algorithms of radiological examination of TMJ described in domestic and foreign literature for various lesions quite fully reflect all known methods

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(Arzhantsev AJL, 2011; Dergilev A.P., 2011; Vasiliev A.Yu. et al., 2014; Rabukhina H.A., 2014; Robinson S et.al., 2011; Gsellmann V., 2011) [1-5]. However, the studies do not reflect the expediency of using traditional TMJ X-ray examination in conditions of natural contrast with the possibility of performing CT, as well as invasive arthrotomography and computed arthrotomography with the possibility of performing MRI.

Thus, the high frequency of TMJ lesions, the difficulty of detecting structural changes in the joint, the presence in the clinical arsenal of several types of radiation diagnostics with unequal information content determine the relevance of the work that determines the most rational choice of methods for studying TMJ in case of its damage and diseases.

Research objectives.

1. To compare the diagnostic efficiency of orthopantomography, CT and MRI in the examination of patients with traumatic injuries, arthritis and internal TMJ disorders.

2. To develop an algorithm for using modern diagnostic technologies for TMJ lesions.

To achieve this goal, we analyzed 47 clinical cases, of which 16 were fractures of the condylar process of the mandible, 16 were TMJ dysfunction syndromes, and 15 were post-traumatic arthritis TMJ with fractures of the mandible.

To assess the state of the bone elements of the joint and their ratio, all patients underwent orthopantomography, CT scan of the temporomandibular joints was performed for fractures of the lower jaw in the area of the body and the alveolar process of the lower jaw, MRI was performed in cases of dysfunctional TMJ disorders [4].

After the analysis of X-ray studies, it was established that orthopantomography was sufficiently informative in diagnosing fractures of the condylar process of the mandible and intraarticular fractures. However, in cases where it is necessary to determine post-traumatic arthritis TMJ in extra-articular fractures, CT more accurately shows the presence and size of joint space narrowing. For a complete diagnosis of intra-articular changes in Costen's syndrome, it is rational to use MRI, without resorting to the above-mentioned other methods.

The developed algorithm for radiological examination of patients with TMJ injuries and diseases makes it possible to optimize radiological diagnostics taking into account the nature of the joint lesion, which provides the necessary and sufficient information about pathological changes with their minimal manifestations, reduces the time of examination, and avoids unnecessary duplication of diagnostic tests. procedures to reduce radiation exposure to the patient.

Features of CT semiotics in patients with traumatic TMJ injuries consist in the nature of the dislocation of bone fragments, in the degree of severity of internal disorders of the joint elements. Signs of hemarthrosis, damage to the soft tissue

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elements of the joint, the nature of synovitis in combination with a violation of the integrity of the articular disc are determined by MRI. Use of a complex of modern visualizing computer technologies

- CT and MRI - increases the diagnostic efficiency of radiation diagnostics for injuries and diseases of the temporomandibular joint [5].

CONCLUSION

1. The use of orthopantomography (including in the TMJ-only shooting mode) in case of mechanical injuries of the TMJ makes it possible to establish the dependence of the nature of the dislocation of fragments on the localization of the fracture, and in case of internal disorders

- assess the severity of damage to bone structures due to the degree of dislocation of the lower jaw.

2. The role of magnetic resonance imaging in bone fractures involved in the formation of TMJ and internal disorders is to determine the nature of the dislocation of the articular disc and its relationship with the head of the lower jaw, rupture of the disc and intraarticular ligaments, as well as the detection of hemarthrosis and synovitis.

3. Comparative characteristics of the diagnostic significance of imaging computer technologies in TMJ pathology revealed low diagnostic efficiency of CT in internal disorders (sensitivity - 67.9%, specificity - 66.6% and overall accuracy - 73.6%) due to the difficulty of detecting pathological changes in the soft tissue structures of the joint. A relatively low specificity of MRI in traumatic injuries (88.8%) was also revealed due to the localization of pathological changes mainly in the bone elements of the joint. The combined use of CT and MRI in patients with TMJ pathology made it possible to increase the sensitivity and specificity of the study with injuries up to 100% and 91.6%, with internal disorders - up to 96.8% and 97.5%.

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