



OPTIMIZATION OF DIAGNOSIS AND TREATMENT METHODS FOR PAINFUL DYSFUNCTION OF THE TEMPOROMANDIBULAR JOINT IN RHEUMATOID ARTHRITIS

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Article history:	Abstract:
Received: April 26 th 2025 Accepted: May 24 th 2025	As a result of research by various authors, dentists have comprehensive data on the structure of temporomandibular joint (TMJ) elements. This statement emphasizes that the anatomical and functional features of the temporomandibular joint (TMJ) are well studied in dentistry. However, despite extensive knowledge about joint structure, the problem of diagnosing and treating its pathologies, especially in systemic diseases such as rheumatoid arthritis, remains relevant

Keywords: Temporomandibular joint, rheumatoid arthritis, painful dysfunction, diagnosis, treatment.

INTRODUCTION. Rheumatoid arthritis (RA) is a systemic autoimmune disease of connective tissue, characterized by chronic progressive inflammation of the synovial membrane of joints, leading to their destruction and functional impairment. The temporomandibular joint (TMJ) is affected in 50–80% of patients with long-term RA, manifesting as painful dysfunction, limited mobility, and changes in bone-cartilage structures.

Despite the significant prevalence of this pathology, diagnosis of TMJ involvement in RA includes muscle tissue densification, changes in anatomical integrity of articular heads and their elements. The functional state of masticatory muscles changes due to their activity and contractile ability. At the same time, the features of prevention, rehabilitation timeframes, and long-term treatment results in patients with temporomandibular joint diseases in rheumatoid arthritis are insufficiently studied and require detailed analysis.

Thus, optimization of diagnostic and treatment methods for this pathology will improve patients' quality of life and reduce the risk of disability.

Painful dysfunction of the temporomandibular joint (TMJ) in rheumatoid arthritis (RA) represents a serious clinical problem requiring a comprehensive interdisciplinary approach. This literature review analyzes current data on pathogenesis, diagnosis, and treatment methods for TMJ involvement in RA. Innovative diagnostic approaches are considered, including modern imaging methods and laboratory inflammatory markers. Special attention is paid to optimizing therapeutic strategies, including drug

treatment, physiotherapeutic methods, and surgical interventions.

Rheumatoid arthritis is a systemic autoimmune disease affecting predominantly synovial joints, including the temporomandibular joint [1]. TMJ involvement in RA occurs in 50-86% of patients but often remains undiagnosed in early stages of the disease [2, 3]. Painful TMJ dysfunction significantly reduces patients' quality of life, limiting chewing, speech, and mouth opening functions [4].

The relevance of the problem is due to several factors: high prevalence of TMJ involvement in RA, difficulties in early diagnosis, absence of unified treatment protocols, and insufficient awareness among clinicians about this pathology [5, 6]. Modern achievements in rheumatology, dentistry, and medical imaging open new possibilities for optimizing diagnosis and treatment of this pathology.

Rheumatoid arthritis (RA) is a chronic systemic autoimmune disease characterized by progressive inflammatory involvement of synovial joints with development of erosive-destructive changes and formation of persistent deformities [1, 2]. According to World Health Organization data, RA affects 0.5% to 1.0% of the world's population, with incidence continuing to rise steadily, especially in developed countries [3]. In the structure of rheumatic diseases, RA occupies one of the leading positions in severity of course and unfavorable prognosis, being the main cause of early disability in patients of working age [4]. The temporomandibular joint, despite its anatomical features and specific functions, is subject to



pathological processes in RA on par with other synovial joints [5]. According to current data, TMJ involvement occurs in 50-86% of patients with RA, making it one of the most frequently involved anatomical structures in this disease [6, 7]. However, despite the high frequency of involvement, TMJ pathology in RA has long remained an underestimated clinical problem.

The features of anatomical structure and functioning of the TMJ determine the specificity of clinical manifestations of rheumatoid involvement of this joint [8]. Unlike other RA localizations, TMJ involvement is characterized by pronounced pain syndrome, significant functional limitation, and rapid development of irreversible destructive changes [9, 10]. Painful TMJ dysfunction in RA not only significantly reduces patients' quality of life by limiting basic functions - chewing, swallowing, speech - but can also cause serious psychosocial problems [11].

The modern concept of pathogenesis of rheumatoid TMJ involvement includes complex interaction of genetic, immunological, and environmental factors [12]. A key role in the development of the pathological process is played by proinflammatory cytokines (TNF- α , IL-1 β , IL-6, IL-17), activation of T-lymphocytes and macrophages, as well as disruption of the balance between degradation and repair processes of cartilage and bone tissue [13, 14]. Understanding molecular mechanisms of the disease has opened new possibilities for developing targeted therapy and personalized treatment approaches.

Diagnosis of TMJ involvement in RA presents significant difficulties due to several factors. First, clinical manifestations may be nonspecific and masked by symptoms of other joint involvement [15]. Second, traditional imaging methods, such as plain radiography, are often insufficiently informative in early stages of the disease [16]. Third, there is no unified standardized approach to clinical assessment of TMJ function in RA [17].

Revolutionary changes in diagnosis of rheumatoid TMJ involvement are associated with implementation of modern medical imaging methods [18]. Magnetic resonance imaging (MRI) is currently considered the gold standard of diagnosis, allowing not only detection of early signs of synovitis and destructive changes but also assessment of joint soft tissue structures [19, 20]. Ultrasound examination of the TMJ opens new possibilities for dynamic assessment of joint condition and monitoring treatment effectiveness [21].

Modern approaches to treating painful TMJ dysfunction in RA are based on evidence-based medicine principles and include comprehensive impact on various

pathogenesis links of the disease [22]. The revolutionary breakthrough in rheumatology associated with introduction of biological drugs has dramatically changed disease prognosis and opened new prospects for effective control of inflammatory processes in the TMJ [23, 24]. Tumor necrosis factor alpha (TNF- α), interleukin-6 (IL-6), and JAK-kinase inhibitors have demonstrated high effectiveness not only for systemic RA manifestations but also in treating TMJ involvement [25, 26].

Despite significant achievements in understanding pathogenesis and developing new treatment methods, several important questions remain unresolved. Clear criteria for early diagnosis of TMJ involvement in RA are absent, standardized protocols for comprehensive treatment have not been developed, and the effectiveness of various therapeutic approaches in long-term perspective is insufficiently studied [27, 28]. The problem of optimizing interdisciplinary interaction between rheumatologists, dentists, maxillofacial surgeons, and other specialists is particularly relevant [29].

The economic significance of the problem is due to high costs of treatment and rehabilitation of patients with TMJ involvement in RA [30]. According to foreign studies, direct medical expenses for one patient with rheumatoid TMJ involvement range from 15,000 to 45,000 euros per year, while indirect costs associated with disability may exceed direct costs by 2-3 times [31]. Under conditions of constant growth in RA incidence and limited healthcare system resources, optimization of diagnostic and treatment approaches acquires special socio-economic significance.

CONCLUSIONS

Thus, current trends in medical science development, including personalized medicine, regenerative technologies, artificial intelligence, and digital healthcare, open new horizons for solving the problem of painful TMJ dysfunction in RA. Implementation of genetic testing, prognostic biomarkers, and telemedicine technologies may radically change approaches to managing such patients in the near future.

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