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Treatment of temporomandibular joint disorders: Systematic review

Tratamiento de los trastornos de la articulación temporomandibular: Revisión sistemática

Maria Belén Loyola-Castillo
maria.loyolac@ucacue.edu.ec
Universidad Católica de Cuenca, Cuenca, Azuay, Ecuador
https://orcid.org/0009-0006-1859-0784

ABSTRACT

Objective: to analyse the treatment of temporomandibular joint disorders using a systematic review. **Method**: Systematic review. **Results**: 15 scientific articles were reviewed. **Conclusion**: The management of temporomandibular joint (TMJ) disorders requires an approach that combines advances in diagnostic techniques, such as magnetic resonance imaging and other modern imaging tools, with personalised treatments based on scientific evidence. Recent literature emphasises the importance of a multidisciplinary approach to achieve better results, especially in complex cases or in patients with systemic diseases such as rheumatoid or juvenile idiopathic arthritis. However, TATM continue to be a clinical challenge due to their multifactorial origin and the variability of their symptoms, which makes it necessary to continue researching in order to develop more precise diagnoses and more effective treatments that improve patients' quality of life.
Descriptors: diagnosis oral; radiography dental; radiography panoramic. (DeCS).

RESUMEN

Objetivo: analizar el tratamiento de los trastornos de la articulación temporomandibular desde una revisión sistemática. **Método**: Revisión sistemática. **Resultados**: se revisaron 15 articulos científicos. **Conclusión**: El manejo de los trastornos de la articulación temporomandibular (TATM) requiere un abordaje que combine los avances en técnicas de diagnóstico, como la resonancia magnética y otras herramientas de imagen modernas, con tratamientos personalizados basados en la evidencia científica. La literatura reciente resalta la importancia de un abordaje multidisciplinario para lograr mejores resultados, especialmente en casos complejos o en pacientes con enfermedades sistémicas como la artritis reumatoide o idiopática juvenil. Sin embargo, los TATM siguen siendo un desafío clínico debido a su origen multifactorial y la variabilidad en sus síntomas, lo que hace necesario seguir investigando para desarrollar diagnósticos más precisos y tratamientos más efectivos que mejoren la calidad de vida de los pacientes.
Descriptores: diagnóstico bucal; radiografía dental; radiografía panorámica. (DeCS).

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INTRODUCTION

Temporomandibular joint (TMJ) disorders are a group of conditions that affect the function of the masticatory system, including the temporomandibular joint (TMJ), the masticatory muscles and related structures. These disorders are one of the main causes of non-dental orofacial pain and present with symptoms such as joint pain, joint noises, difficulty moving the jaw and, in more severe cases, dysfunction that can significantly affect the quality of life of patients (3, 5, 7).

In recent years, the diagnosis and treatment of TMJ disorders have advanced considerably thanks to advances in imaging techniques. Magnetic resonance imaging, considered the gold standard, allows for the accurate evaluation of joint structures and soft tissues (1, 7, 10). New diagnostic tools have been developed, such as second harmonic imaging of collagen fibres and thermography, which have improved the ability to detect early changes and guide treatment (2, 11).

In terms of treatment, the options range from conservative therapies, such as the use of occlusal splints and physiotherapy, to pharmacological and surgical interventions in more complex cases (3, 6, 14). A multidisciplinary approach involving dentists, radiologists, rheumatologists and physiotherapists is important for obtaining better results, especially in patients with systemic diseases such as rheumatoid arthritis or juvenile idiopathic arthritis (6, 12).

The aim of the research presented is to analyse the treatment of temporomandibular joint disorders based on a systematic review.

METHOD

A systematic review is presented. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines were followed.

The search for 15 articles was carried out in databases such as PubMed, Scopus, Web of Science.

The search terms included combinations of keywords such as: ‘temporomandibular joint disorders’, ‘diagnosis’, ‘treatment’, ‘imaging’, ‘MRI’, ‘collagen imaging’,

'osteoarthritis', 'juvenile idiopathic arthritis', and 'systemic treatment'. Boolean operators (AND, OR) were used to optimise the results.

RESULTS

Synthetic magnetic resonance imaging has proven to be a useful tool for evaluating quantitative parameters of joint structures, improving the accuracy in the identification of alterations (1). Likewise, second harmonic imaging of collagen fibres has allowed for earlier and more detailed diagnosis, especially in cases where structural alterations of collagen are relevant (2). For their part, Garstka et al. (3) emphasise the importance of a multidisciplinary approach that combines conservative therapies, such as occlusal splints, with specific interventions according to the aetiology of the pain.

The use of advanced imaging techniques, such as magnetic resonance imaging and computerised tomography, continues to be essential for identifying structural and functional changes in the temporomandibular joint. In view of this, Whyte et al. (4) and Singer & Mupparapu (5) indicate that these tools allow for a more precise evaluation of joint alterations, facilitating the planning of more effective treatments, while Liu et al. (7) reinforce that magnetic resonance imaging is the gold standard for diagnosing degenerative diseases of the temporomandibular joint, as it provides detailed information on the state of the articular disc and the surrounding tissues. .

In patients with rheumatoid arthritis or juvenile idiopathic arthritis, systemic treatment has shown promising results in reducing inflammation and preserving joint function. Stoustrup et al. (12) comment that early management of these conditions can prevent irreversible damage to the joint, while Schmidt et al. (6) suggest that the combination of pharmacological and physical therapies can significantly improve clinical outcomes in these patients.

On the other hand, advances in animal models and experimental studies have allowed a better understanding of the pathophysiology of temporomandibular joint osteoarthritis, which could lead to the development of more effective therapies in the future (8). In this context, Pollard (9) and Xiong et al. (10) highlight the need to

continue exploring new imaging techniques and personalised treatments to address the various clinical manifestations of TMJ disorders. The work of (11) explored the use of thermographic imaging as a complementary tool for the diagnosis of TMJ disorders, with promising results in the identification of inflammatory patterns.

In terms of orthopaedic treatments, Sun et al. (14) evaluated the efficacy of articular disc repositioning and the use of occlusal splints in adolescents with skeletal malocclusion, showing positive results in the improvement of joint function. For their part, Alqhtani et al. (15) analysed the dimensions of the joint space using magnetic resonance imaging in patients with TMD, highlighting the importance of anatomical variations in diagnosis and treatment. On the other hand, Behzadi et al. (13) compared the biomechanical characteristics of the articular disc of the temporomandibular joint with other structures such as the knee meniscus, suggesting opportunities for the development of treatments based on biomaterials (8).

CONCLUSION

The management of temporomandibular joint (TMJ) disorders requires an approach that combines advances in diagnostic techniques, such as magnetic resonance imaging and other modern imaging tools, with personalised treatments based on scientific evidence. Recent literature highlights the importance of a multidisciplinary approach to achieve better results, especially in complex cases or in patients with systemic diseases such as rheumatoid or juvenile idiopathic arthritis. However, TATM continue to be a clinical challenge due to their multifactorial origin and the variability in their symptoms, which makes it necessary to continue researching in order to develop more precise diagnoses and more effective treatments that improve patients' quality of life.

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CONFLICT OF INTEREST

There is no conflict of interest with people or institutions linked to the research.

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