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Review article

Influence of periodontal treatment on rheumatoid arthritis: a systematic review and meta-analysis[☆]

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ABSTRACT

Objective: To evaluate the influence of periodontal treatment on rheumatoid arthritis activity.

Methods: MEDLINE/PUBMED, The Cochrane Library, Clinical Trials, SciELO and LILACS were searched for studies published until December 2014. Included articles were: prospective studies; including patients older than 18 years, diagnosed with periodontitis and rheumatoid arthritis submitted to non-surgical periodontal treatment; with a control group receiving no periodontal treatment; with outcomes including at least one marker of rheumatoid arthritis activity. Methodological quality of the studies was assessed using PEDro scale. Quantitative data were pooled in statistical meta-analysis using Review Manager 5.

Results: Four articles were included. Non-surgical periodontal treatment was associated with a significant reduction of DAS28 (OR: -1.18; 95% CI: -1.43, -0.93; $p < 0.00001$). Erythrocyte sedimentation rate, C-reactive protein, patient's assessment of rheumatoid activity using visual analogical scale, tender and swollen joint counts showed a trend toward reduction (not statistically significant).

[☆] Study conducted at Universidade Federal de Minas Gerais, Faculdade de Odontologia e Faculdade de Medicina, Departamento do Aparelho Locomotor, Belo Horizonte, MG, Brazil.

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Conclusions: The reduction of DAS 28 in patients with rheumatoid arthritis after periodontal treatment suggests that the improvement of periodontal condition is beneficial to these patients. Further randomized controlled clinical trials are necessary to confirm this finding.

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Influência do tratamento periodontal na artrite reumatoide: revisão sistemática e metanálise

R E S U M O

Palavras-chave:

Interações doença
periodontal-sistêmica
Periodontite
Artrite reumatoide
Metanálise

Objetivo: Avaliar a influência do tratamento periodontal sobre a atividade da doença na artrite reumatoide.

Métodos: Pesquisaram-se as bases de dados MEDLINE/PubMed, The Cochrane Library, Clinical Trials, SciELO e LILACS em busca de estudos publicados até dezembro de 2014. Incluíram-se estudos prospectivos que avaliaram pacientes com mais de 18 anos diagnosticados com periodontite e artrite reumatoide submetidos a tratamento periodontal não cirúrgico; os estudos deveriam ter também um grupo controle não submetido a tratamento periodontal. Os resultados dos estudos deveriam contar com pelo menos um marcador da atividade da doença na artrite reumatoide. A qualidade metodológica dos estudos foi avaliada utilizando a escala PEDro. Reuniram-se os dados quantitativos em uma metanálise estatística usando o Review Manager 5.

Resultados: Incluíram-se quatro artigos. O tratamento periodontal não cirúrgico esteve associado a uma redução significativa no DAS-28 (OR: - 1,18; IC 95%: -1,43 a -0,93; $p < 0,00001$). A velocidade de hemossedimentação, a proteína C-reativa, a avaliação da atividade reumatoide pela escala visual analógica e as contagens de articulações sensíveis e inchadas apresentaram uma tendência de redução (redução não estatisticamente significativa).

Conclusões: A redução no DAS-28 em pacientes com artrite reumatoide após tratamento periodontal sugere que a melhora na condição periodontal é benéfica a estes pacientes. São necessários mais ensaios clínicos randomizados controlados para confirmar este achado.

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Introduction

Previous clinical and experimental studies have suggested an association between periodontal disease (PD) and rheumatoid arthritis (RA).¹⁻⁹ This association is based on common environmental, inflammatory and genetic pathways shared by RA and PD that include smoking, HLA-DR antigens, inflammatory pattern, tissue destruction pathways. Furthermore, the possible role of periodontopathic bacteria *Porphyromonas gingivalis*, that produces a peptidylarginine deiminase capable of citrullination of human proteins, was demonstrated in RA. A possible role for PD in hampering anti-tumor necrosis factor treatment response in RA has also been suggested.¹⁰⁻²¹

A series of intervention trials to assess the effect of PD treatment on RA have been performed. These trials examined different RA activity parameters, such as Disease Activity Score (DAS 28), erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), patient's assessment of rheumatoid activity using visual analogical scale (VAS), tender (TJC) and swollen (SJC) joint counts, cytokines (Interleukin (IL) 1- β , tumor necrosis factor (TNF)- α), antibodies (rheumatoid factor, anti-cyclic citrullinated protein antibodies, antibodies anti-*P. gingivalis*) and/or measures of quality of life. The results were quite controversial, with positive, negative or neutral findings

regarding the effect of PD treatment on RA outcomes.²²⁻³¹ Therefore, the impact of PD treatment on RA activity remains to be determined.

The present systematic review and meta-analysis aimed to investigate the effects of PD non-surgical treatment in inflammatory parameters and clinical measures of RA activity in adult patients. This review was conducted according to the QUOROM statement for improving the quality of reports of meta-analyses of randomized controlled trials.³²

Methods

Search strategy

The bibliographical databases MEDLINE/PUBMED, The Cochrane Library, Clinical Trials, SciELO and LILACS were searched for all published studies, from the beginning of the database, until December 2014, without language restrictions.

The search strategy for MEDLINE/PUBMED, The Cochrane Library and Clinical Trials databases was: ((Chronic Periodontitides) OR (Periodontitides, Chronic) OR (Periodontitis, Chronic) OR (Adult Periodontitis) OR (Adult Periodontitides) OR (Periodontitides, Adult) OR (Periodontitis, Adult)) AND ((Rheumatoid arthritis) OR (Arthritis, rheumatoid)).

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