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05
Reumatología

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Dr. Francisco Torres Lear

La trayectoria del Dr. Torres Lear es la historia de un descubrimiento vocacional inesperado. Aunque se licenció en Medicina con la firme intención de ser cardiólogo, el destino intervino mientras preparaba el MIR: aprobó el acceso a Odontología y lo que comenzó como un paso intermedio se transformó en su verdadera pasión. En la estomatología descubrió un "trabajo artesano de la salud" que le cautivó por completo, haciéndole comprender que había nacido para esta profesión.

Su enfoque va más allá de lo clínico; su mayor satisfacción reside en mejorar la autoestima, el bienestar y la calidad de vida de sus pacientes. Defensor acérrimo de la prevención y la higiene diaria, el Dr. Torres lidera el Centro Dental Torres bajo una premisa clara: para conseguir la felicidad del paciente, primero hay que cuidar a las personas que trabajan en la clínica, dotándolas de los mejores medios en una organización sólida y humana.

Titulación
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Referencias científicas

Referencias científicas

Ahmadi P, Mahmoudi M, Kheder RK, Faraj TA, Mollazadeh S, Abdulabbas HS, Esmaeili SA. Impacts of Porphyromonas gingivalis periodontitis on rheumatoid arthritis autoimmunity. Int Immunopharmacol. 2023 May;118:109936. doi: 10.1016/j.intimp.2023.109936. Epub 2023 Mar 14. PMID: 37098654. https://pubmed.ncbi.nlm.nih.gov/37098654/

ABSTRACT

In RA patients' synovial sites, citrullinated RA-related antigens such as type II collagens, fibrin (ogen), vimentin, and α -enolase could be targeted by ACCPAs. Since ACCPA production can be initiated a long time before RA sign appearance, primary auto-immunization against these citrullinated proteins can be originated from extra-articular sites. It has been shown that there is a significant association between P. gingivalis periodontitis, anti- P. gingivalis antibodies, and RA. P. gingivalis gingipains (Rgp, Kgp) can degrade proteins such as fibrin and α -enolase into some peptides in the form of Arg in the C-terminal which is converted to citrulline by PPAD. Also, PPAD can citrullinate type II collagen and vimentins (SA antigen). P. gingivalis induces inflammation and chemoattraction of immune cells such as neutrophils and macrophages through the increase of C5a (gingipain C5 convertase-like activity) and SCFA secretion. Besides, this microorganism stimulates anoikis, a special type of apoptosis, and NETosis, an antimicrobial form of neutrophil death, leading to the release of PAD1-4, α -enolase, and vimentin from apoptotic cells into the periodontal site. In addition, gingipains can degrade macrophages CD14 and decrease their ability in apoptotic cell removal. Gingipains also can cleave IgGs in the Fc region and transform them into rheumatoid factor (RF) antigens. In the present study, the effects of P. gingivalis on rheumatoid arthritis autoimmune response have been reviewed, which could attract practical insight both in bench and clinic.

Alarcón-Sánchez MA, Becerra-Ruiz JS, Guerrero-Velázquez C, Mosaddad SA, Heboyan A. The role of the CX3CL1/CX3CR1 axis as potential inflammatory biomarkers in subjects with periodontitis and rheumatoid arthritis: A systematic review. Immun Inflamm Dis. 2024 Feb;12(2):e1181. doi: 10.1002/iid3.1181. PMID: 38415821; PMCID: PMC10845211. https://pubmed.ncbi.nlm.nih.gov/38415821/

ABSTRACT

Objective: This systematic review aimed to investigate the role of the C-X3-C motif ligand 1/chemokine receptor 1 C-X3-C motif (CX3CL1/CX3CR1) axis in the pathogenesis of periodontitis. Furthermore, as a secondary objective, we determine whether the CX3CL1/CX3CR1 axis could be considered complementary to clinical parameters to distinguish between periodontitis and rheumatoid arthritis (RA) and/or systemically healthy subjects.

Methods: The protocol used for this review was registered in OSF (10.17605/OSF.IO/KU8FJ). This study was designed following Preferred Reporting Items for Systematic Review and Meta-Analysis guidelines. Records were identified using different search engines (PubMed/MEDLINE, Scopus, Science Direct, and Web of Science) from August 10, 2006, to September 15, 2023. The observational studies on human subjects diagnosed with periodontitis and RA and/or systemically healthy were selected to analyze CX3CL1 and CX3CR1 biomarkers. The methodological validity of the selected articles was assessed using NIH.

Results: Six articles were included. Biological samples (gingival crevicular fluid [GCF], saliva, gingival tissue biopsies, serum) from 379 subjects (n = 275 exposure group and n = 104 control group) were analyzed. Higher CX3CL1 and CX3CR1 chemokine levels were found in subjects with periodontitis and RA compared with periodontal and systemically healthy subjects.

Conclusion: Very few studies highlight the role of the CX3CL1/CX3CR1 axis in the pathogenesis of periodontitis; however, increased levels of these chemokines are observed in different biological samples (GCF, gingival tissue, saliva, and serum) from subjects with periodontitis and RA compared with their healthy controls. Future studies should focus on long-term follow-up of subjects and monitoring changes in cytokine levels before and after periodontal therapy to deduce an appropriate interval in health and disease conditions.

Astuti L, Masulili SLC, Gunardi I, Sulijaya B, Soeroso Y. Periodontal Pathogens Correlate with Rheumatoid Arthritis Disease Parameters: A Systematic Review Based on Clinical Studies. Dent J (Basel). 2025 May 15;13(5):214. doi: 10.3390/dj13050214. PMID: 40422634; PMCID: PMC12110451. https://pubmed.ncbi.nlm.nih.gov/40422634/

ABSTRACT

Background: Numerous studies have found higher levels of autoantibodies including anti citrullinated protein antibodies (ACPAs), anti-cyclic citrullinated peptides (aCCP), or rheumatoid factor (RF) against periodontal microorganisms in rheumatoid arthritis (RA). Objective: To evaluate the correlation between periodontal bacteria and RA disease parameters. Methods: We utilized PubMed, Scopus, ScienceDirect, and manual search databases up until March 2024 using PRISMA 2020 guidelines. The data were obtained from microbiological assays by RT-PCR/qPCR, sequencing, and serological testing of disease parameters (ACPA, aCCP, and RF) utilizing ELISA method. Results: A total of 1514 documents were discovered based on the inclusion criteria. Porphyromonas gingivalis, Aggregatibacter actinomycetemcomitans, and Prevotella_9 were associated with elevated levels of ACPA/aCCP and RF in RA with periodontitis. A positive correlation was found between Peptococcus simiae, Aminipila butyrica, Leptotrichia spp., Leptotrichia wadei, and Neisseria bacilliformis with ACPA, and Treponema sp. canine oral taxon 087 with RF. Conclusions: This study found that several oral microorganisms correlate with elevated ACPA/aCCP and RF in RA with periodontitis. Future studies of the oral microbiome and the molecular mechanisms are anticipated to discover new therapies and diagnostic methods for periodontitis and RA.

Babadi F, Hasanzadeh A, Aghajari M, Karimy M, Araban M. Correlates of oral health-related quality of life in a sample of patients with rheumatoid arthritis. BMC Oral Health. 2025 Feb 5;25(1):191. doi: 10.1186/s12903-024-05403-2. PMID: 39910587; PMCID: PMC11800433. https://pubmed.ncbi.nlm.nih.gov/39910587/

ABSTRACT

Background: Rheumatoid arthritis (RA) is a prevalent chronic inflammatory joint disease that might exert significant effects on oral health-related quality of life (OHRQoL). This study aimed to investigate OHRQoL in patients with RA.

Methods: This descriptive-analytical study involved 228 RA patients visiting the Jundishapur Dentistry School, Ahvaz, and dental clinics in Ahvaz, south west of Iran, in 2023. Data collection instruments included a demographic and clinical characteristics form, the Oral Health Impact Profile-14 (OHIP-14), the Health Assessment Questionnaire-Disability Index (HAQ-DI), the General Health Questionnaire (GHQ), and clinical oral examinations. The collected data were analyzed using Spearman's correlation test and linear regression analysis in SPSS version 22.

Results: The mean age of the participants was 49.23 ± 10.83 years, and the majority were females. The DMFT index was 14.44 ± 6.63, the mean OHRQoL score was 24.72 ± 5.33, the mean general health score was 5.71 ± 2.21, and the mean disability severity score was 11.62 ± 62.11. Of all variables examined, gender, age, duration of RA, Khuzestan nativity status, smoking, anemia, hyperlipidemia, DMFT index, general health, disability, diabetes, acute kidney disease, and hypertension were significantly associated with OHRQoL($p > 0.05$).

Conclusion: The findings of this study indicate that OHRQoL is compromised in patients with RA. It is recommended that oral health receive greater attention from healthcare professionals managing RA patients and should be taken into account in daily practice of clinicians. Clinicians should develop multi-faceted care including oral health, dental health, general health and quality of life in addition to medical care for RA.

Bolstad AI, Fevang BS, Lie SA. Increased risk of periodontitis in patients with rheumatoid arthritis: A nationwide register study in Norway. J Clin Periodontol. 2023 Aug;50(8):1022-1032. doi: 10.1111/jcpe.13826. Epub 2023 May 18. PMID: 37202856. https://pubmed.ncbi.nlm.nih.gov/37202856/

ABSTRACT

Aim: To investigate the risk of periodontitis in rheumatoid arthritis (RA) patients in a nationwide register-based study.

Materials and methods: Patients and controls were defined using ICD-10 codes registered in the Norwegian Patient Registry (NPR), from 2011 to 2017. The 324,232 included subjects had at least one registered diagnostic code for RA (33,040 patients) or diagnostic codes for non-osteoporotic fractures or hip or knee replacement due to osteoarthritis (controls). The outcome was periodontitis, defined by codes for periodontal treatment from the Norwegian Control and Payment of Health Reimbursements Database (KUHR). Hazard ratios (HRs) were calculated for periodontitis in RA patients compared to controls. Generalized additive model in Cox regressions was estimated to visualize periodontitis occurrences as a function of number of RA visits.

Results: The risk of periodontitis increased with increasing number of RA visits. RA patients having 10 or more visits during the 7-year period had a 50% increased risk of periodontitis compared to controls (HR = 1.48, 95% confidence interval [CI]: 1.39-1.59); also, in patients with assumed new RA, an even higher risk estimate was seen (HR = 1.82, 95% CI: 1.53-2.17).

Conclusions: In this register-based study in which periodontal treatment was used as a surrogate marker for periodontitis, we found an increased risk of periodontitis in RA patients, particularly those with active disease and new RA.

Botero JE, Posada-López A, Mejía-Vallejo J, Pineda-Tamayo RA, Bedoya-Giraldo E. Effects of nonsurgical periodontal therapy in patients with rheumatoid arthritis: a prospective before and after study. Colomb Med (Cali). 2021 Sep 30;52(3):e2095051. doi: 10.25100/cm.v52i3.5051. PMID: 35431355; PMCID: PMC8973312. https://pubmed.ncbi.nlm.nih.gov/35431355/

ABSTRACT

Background: periodontal therapy has been suggested to have systemic effects. However, studies of periodontal therapy in rheumatoid arthritis patients have produced controversial results.

Aim: To compare the effects of nonsurgical periodontal therapy on biochemical markers of rheumatoid arthritis and periodontal parameters in patients with and without rheumatoid arthritis.

Methods: a prospective before-and-after study was conducted that included 21 participants without and 29 participants with rheumatoid arthritis. Periodontal parameters, Porphyromonas gingivalis detection, C-reactive protein, rheumatoid factor and anti-citrullinated protein antibodies were measured at baseline and three months after nonsurgical periodontal therapy and the changes were statistically assessed.

Results: In general, both groups presented statistically significant improvement in periodontal parameters ($p<0.05$). There was an increase in the counts of P. gingivalis in both groups at three months. In addition, there was a reduction in levels of anti-citrullinated protein antibodies and rheumatoid factor in participants with rheumatoid arthritis. In contrast, C-reactive protein levels increased in both groups but were higher in the rheumatoid arthritis group. Periodontal parameters in rheumatoid arthritis participants under disease-modifying antirheumatic drugs presented a slightly higher improvement ($p <0.05$).

Conclusions: Nonsurgical periodontal therapy has similar improvements in periodontal parameters in patients with and without rheumatoid arthritis. In addition, nonsurgical periodontal therapy may benefit serum levels of anti-citrullinated protein antibodies and rheumatoid factors in patients with rheumatoid arthritis. NCT04658615.

Brewer RC, Lanz TV, Hale CR, Sepich-Poore GD, Martino C, Swafford AD, Carroll TS, Kongpachith S, Blum LK, Elliott SE, Blachere NE, Parveen S, Fak J, Yao V, Troyanskaya O, Frank MO, Bloom MS, Jahanbani S, Gomez AM, Iyer R, Ramadoss NS, Sharpe O, Chandrasekaran S, Kelmenson LB, Wang Q, Wong H, Torres HL, Wiesen M, Graves DT, Deane KD, Holers VM, Knight R, Darnell RB, Robinson WH, Orange DE. Oral mucosal breaks trigger anti-citrullinated bacterial and human protein antibody responses in rheumatoid arthritis. Sci Transl Med. 2023 Feb 22;15(684):eabq8476. doi: 10.1126/scitranslmed.abq8476. Epub 2023 Feb 22. PMID: 36812347; PMCID: PMC10496947. https://pubmed.ncbi.nlm.nih.gov/36812347/

ABSTRACT

Periodontal disease is more common in individuals with rheumatoid arthritis (RA) who have detectable anti-citrullinated protein antibodies (ACPAs), implicating oral mucosal inflammation in RA pathogenesis. Here, we performed paired analysis of human and bacterial transcriptomics in longitudinal blood sam-

ples from RA patients. We found that patients with RA and periodontal disease experienced repeated oral bacteremias associated with transcriptional signatures of ISG15+HLADRhi and CD48highS100A2pos monocytes, recently identified in inflamed RA synovia and blood of those with RA flares. The oral bacteria observed transiently in blood were broadly citrullinated in the mouth, and their in situ citrullinated epitopes were targeted by extensively somatically hypermutated ACPAs encoded by RA blood plasmablasts. Together, these results suggest that (i) periodontal disease results in repeated breaches of the oral mucosa that release citrullinated oral bacteria into circulation, which (ii) activate inflammatory monocyte subsets that are observed in inflamed RA synovia and blood of RA patients with flares and (iii) activate ACPA B cells, thereby promoting affinity maturation and epitope spreading to citrullinated human antigens.

Carneiro MC, de Abreu LM, Paludetto LV, da Silva Santos PS, Rubira-Bullen IRF, Rubira CMF. Radiomorphometric indices for measuring mandibular bone quality in oncologic patients. Oral Radiol. 2025 Jul;41(3):340-348. doi: 10.1007/s11282-025-00803-8. Epub 2025 Jan 20. PMID: 39833640. https://pubmed.ncbi.nlm.nih.gov/39833640/

ABSTRACT

Objective: This retrospective study compared the thickness and degree of resorption of the mandibular cortex in patients with head and neck cancer (AG), patients with cancer at sites other than the head and neck (BG), and patients with no cancer (CG) to describe and compare the changes in the mandible after antineoplastic therapy and their possible clinical implications.

Materials and methods: A total of 287 panoramic radiographs were examined. The following radiomorphometric indices were analyzed: mental index (MI), panoramic mandibular index (PMI), and mandibular cortical index (MCI). Analysis of variance (ANOVA) and the Kruskalα Wallis test, with $p < 0.05$ considered significant, were performed.

Results: Males predominated in the AG (83%), while females predominated in the BG and CG (78.6 and 62%, respectively). In the AG, tongue carcinoma (22.1%) was prevalent, while in the BG, breast carcinoma was predominant (53.8%). All parameters measured in the AG and BG patients were significantly lower than those in the CG patients: MI ($p < 0.001$), right PMIc/a ($p < 0.001$), left PMIc/a ($p < 0.001$), right PMIc/b ($p = 0.004$), left PMIc/b ($p < 0.001$), and MCI ($p < 0.001$).

Conclusions: Radiomorphometric indices MI, PMI, and MCI were significantly lower in panoramic radiographs of patients with head and neck cancer and patients with cancer in other regions of the body than in those of nononcological patients.

Choi YY, Lee KH. Periodontitis as a Risk Factor for Rheumatoid Arthritis: a Matched-Cohort Study. Int Dent J. 2021 Dec;71(6):516-521. doi: 10.1016/j.identj.2021.01.006. Epub 2021 Mar 24. PMID: 33771373; PMCID: PMC9275188. https://pubmed.ncbi.nlm.nih.gov/33771373/

ABSTRACT

Objective: The intent was to analyse the association of periodontitis with the development of rheumatoid arthritis (RA) using a representative population-based cohort and longitudinal matched-cohort design.

Methods: Participants were 40 years of age or older and had not been diagnosed with RA between 2002 and 2006. Among the participants, those who were newly diagnosed with periodontitis between 2004 and 2006 (excluding cases that had already been diagnosed with periodontitis between 2002 and 2003) were allotted to the periodontitis group. Among the participants, those who had never been diagnosed with periodontitis between 2002 and 2006 formed the control group, matched by sex, age, and household income at a 1:1 ratio. From 2007 to 2018, the 2 groups (n = 691,506) were followed to monitor the development of RA. The t-test and α 2 test compared the general characteristics and health-related variables of both groups. The Kaplan-Meier method with a log-rank test was conducted to compare the incidence of RA in both groups. The hazard ratio (HR) and adjusted hazard ratio (aHR) were calculated using a Cox proportional hazard regression analysis to evaluate the risk of subsequent RA.

Results: Univariate analysis revealed that the periodontitis group was more likely to develop RA than the control group (hazard ratio 1.10), and multivariate analysis also revealed a higher incidence risk of RA (adjusted hazard ratio 1.09) in the periodontitis group.

Conclusions: Our findings demonstrate that periodontitis is associated with an increased risk of developing RA.

Damanaki A, Habel ML, Deschner J. Association of Osteoporosis with Tooth Loss and Dental Radiomorphometric Indices. Biomedicines. 2024 Dec 18;12(12):2886. doi: 10.3390/biomedicines12122886. PMID: 39767792; PMCID: PMC11672889. https://pubmed.ncbi.nlm.nih.gov/39767792/

ABSTRACT

Background/Objectives: Osteoporosis is a systemic disease associated with reduced bone mass, impaired bone microarchitecture, and thus an increased risk of bone fractures. Moreover, patients with osteoporosis are more likely to experience periodontal diseases and tooth loss. Some indices have been proposed to detect osteoporosis on dental panoramic radiographs. The aim of our retrospective study was to investigate the association between osteoporosis and the loss of alveolar bone and teeth and to evaluate the validity of several dental radiomorphometric indices for assessing osteoporosis. Methods: In patients with and without osteoporosis, tooth loss, alveolar bone loss, the panoramic mandibular index (PMI), mental index (MI), and mandibular cortical index (MCI) were determined. Results: Compared with the non-osteoporotic group, patients with osteoporosis showed more tooth loss and more severe alveolar bone loss. PMI and MI were lower in patients with osteoporosis than in the non-osteoporotic group. Analysis of MCI showed that category C3 (cortical layer forms strong endosteal cortical residues and is clearly porous) was significantly more common in patients with osteoporosis. Conclusions: Osteoporosis is associated with more tooth and alveolar bone loss. Furthermore, various dental radiomorphometric indices are altered in osteoporosis and could thus help to better assess osteoporosis of the jaw.

de Pablo P, Serban S, Lopez-Oliva I, Rooney J, Hill K, Raza K, Filer A, Chapple I, Dietrich T. Outcomes of periodontal therapy in rheumatoid arthritis: The OPERA feasibility randomized trial. J Clin Periodontol. 2023 Mar;50(3):295-306. doi: 10.1111/jcpe.13756. Epub 2022 Dec 16. PMID: 36415901; PMCID: PMC10946499.

ABSTRACT

Aim: Periodontitis is independently associated with rheumatoid arthritis (RA); however, there is limited data on whether periodontal treatment improves overall RA disease activity. We conducted a pilot feasibility randomized controlled clinical trial to test whether intensive periodontal therapy reduces RA disease activity in patients with active RA and periodontitis.

Materials and methods: The following inclusion criteria were applied: patients with RA and periodontitis, aged 18+, stable on treatment with disease-modifying anti-rheumatic drugs for ≥3 months, disease activity score (DAS28) ≥3.2, and DAS28 >5.1 only if patient unwilling to take biologics. Participants meeting the inclusion criteria were randomized to immediate intensive periodontal therapy or to delayed therapy (control group) administered by a dental hygienist in a secondary care setting. Data were collected at baseline and at 3 and 6 months of follow-up. Participants randomized to the control group (delayed therapy) received the standard of care for the duration of the trial, including oral hygiene instructions delivered by a dental hygienist, and the same periodontal therapy as the intervention group after study completion (i.e., 6 months after randomization). The periodontal inflammation surface area was calculated using clinical attachment loss (CAL), periodontal probing pocket depth, and bleeding on probing. Cumulative probing depth was also measured. We examined the effect of periodontal therapy on periodontal outcomes and on clinical markers of disease activity in RA, as measured by the DAS28-C-reactive protein score as well as musculo-skeletal ultrasound grey scale and power Doppler scores.

Results: A total of 649 patients with RA were invited to participate in the study. Of these, 296 (46%) consented to participate in the screening visit. A sample of 201 patients was assessed for eligibility, of whom 41 (20%) did not meet the RA inclusion criteria and 100 (50%) did not meet the periodontal disease criteria. Among the 60 (30%) eligible participants, 30 were randomized to immediate periodontal therapy and 30 were allocated to the control group. The loss to follow-up was 18% at the end of the trial. There were no major differences with regard to baseline characteristics between the groups. Periodontal therapy was associated with reduced periodontal inflamed surface area, cumulative probing depths, RA disease activity scores, and ultrasound scores over the course of the trial. There was no change in CAL.

Conclusions: Overall, the trial was feasible and acceptable to the study participants. Recruitment to and satisfactory retention in a randomized controlled trial on the effect of periodontal treatment on RA patients is possible, albeit challenging. In this feasibility study of patients with RA and periodontitis, periodontal treatment resulted in significant improvements in periodontal disease outcomes and overall RA disease activity, although complete resolution of periodontal inflammation was difficult to achieve in some cases.

de Smit MJ, Westra J, Posthumus MD, Springer G, van Winkelhoff AJ, Vissink A, Brouwer E, Bijl M. Effect of Anti-Rheumatic Treatment on the Periodontal Condition of Rheumatoid Arthritis Patients. Int J Environ Res Public Health. 2021 Mar 4;18(5):2529. doi: 10.3390/ijerph18052529. PMID: 33806304; PMCID: PMC7967392.

ABSTRACT

Periodontitis, a bacterial-induced infection of the supporting soft and hard tissues of the teeth (the periodontium), is common in patients with rheumatoid arthritis (RA). As RA and periodontitis underlie common inflammatory pathways, targeting the progression of RA might mediate both periodontitis and RA. On the other hand, patients with RA on immunosuppressive medication have an increased risk of infection. Therefore, the objective of this longitudinal observation study was to assess the effect of methotrexate (MTX) and anti-tumor necrosis factor-α (anti-TNF, etanercept) treatment on the periodontal condition of RA patients. Overall, 14 dentate treatment-naive RA patients starting with MTX and 12 dentate RA patients starting with anti-TNF therapy in addition to MTX were included. Follow-up was scheduled matching the routine protocol for the respective treatments. Prior to the anti-rheumatic treatment with MTX or the anti-TNF therapy in addition to MTX, and during follow-up, i.e., 2 months for MTX, and 3 and 6 months for the anti-TNF therapy in addition to MTX, the periodontal inflamed surface area (PISA) was measured. The efficacy of the anti-rheumatic treatment was assessed by determining the change in RA disease activity (DAS28-ESR). Furthermore, the erythrocyte sedimentation rates were determined and the levels of C-reactive protein, IgM-rheumatoid factor, anti-cyclic citrullinated protein antibodies, and antibodies to the periodontal pathogen Porphyromonas gingivalis, were measured. Subgingival sampling and microbiological characterization of the subgingival microflora was done at baseline. MTX or anti-TNF treatment did not result in an improvement of the periodontal condition, while both treatments significantly improved DAS28 scores (both $p < 0.01$), and reduced C-reactive protein levels and erythrocyte sedimentation rates (both $p < 0.05$). It is concluded that anti-rheumatic treatment (MTX and anti-TNF) has negligible influence on the periodontal condition of RA patients.

Duncea I, Bacali C, Buduru S, Scrobota I, Almășan O. The Association of Systemic and Mandibular Bone Mineral Density in Postmenopausal Females with Osteoporosis. Medicina (Kaunas). 2024 Aug 14;60(8):1313. doi: 10.3390/medicina60081313. PMID: 39202594; PMCID: PMC11356034.

ABSTRACT

Background/Objectives: Osteoporosis is a common general disease that mostly affects the skeletal system, including the jawbone. There is a link between systemic and mandibular osteoporosis. This study aimed at assessing the association between systemic (lumbar spine L1-L4, femoral neck, total hip) bone mineral density (BMD) and mandible BMD sites in Romanian postmenopausal females. Methods: A total of 97 menopausal patients were studied, 62 with osteoporosis and 35 females with no osteoporosis. For each patient, dual-energy X-ray absorptiometry (DXA) assessments of BMD in the mandible, proximal femur, total hip, and lumbar spine (L1-L4) were performed. Mandibular measurements were performed using the distal forearm software, followed by manual analysis after the bone contour was defined in each case. Results: Comparing the osteoporosis and control groups, there were significant differences in BMD at each examined location. The mandibular BMD (1.125 ± 0.181506 g/cm2) in the osteoporosis group was considerably smaller than in the control group (1.35497 ± 0.244397 g/cm2). Correlations between the BMD at different

sites were significant: lumbar spine and femoral neck (r = 0.738, p < 0.0001), lumbar spine and total hip (r = 0.735, p < 0.0001), lumbar spine and mandible (r = 0.506, p < 0.0001), femoral neck and total hip (r = 0.891, p < 0.0001), femoral neck and mandible (r = 0.482, p < 0.0001), and total hip and mandible (r = 0.466, p < 0.0001). Conclusions: There were correlations between mandible BMD and lumbar spine, femoral neck, and total hip BMD, suggesting that osteoporosis affects mandibular bone density. BMD assessments at common locations may help predict mandibular BMD and the probability of osteoporosis.

Eezammuddeen NN, Vaithilingam RD, Hassan NHM. Influence of periodontitis on levels of autoantibodies in rheumatoid arthritis patients: A systematic review. J Periodontal Res. 2023 Feb;58(1):29-42. doi: 10.1111/jre.13065. Epub 2022 Nov 1. PMID: 36317493.

ABSTRACT

Background and objective: Periodontitis (PD) is a dysbiotic disease of tooth-supporting structures that has been associated with various systemic diseases including rheumatoid arthritis (RA). To date, evidence demonstrated increased prevalence of RA among PD patients and postulated PD to have a role in the development of autoantibodies in RA patients. Therefore, a systematic review was conducted to assess the available evidence to ascertain the effect of PD on levels of autoantibodies in the serum, saliva and gingival crevicular fluid (GCF) of RA patients.

Material and methods: The systematic review was conducted in compliance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement guidelines. Relevant literature was searched from PubMed, Web of Science, Scopus and Ebscohost databases from inception until 31 August 2020. The risk of bias in each study was determined based on the Newcastle-Ottawa Scale tool. Results from random-effect meta-analyses were presented as summary estimates of odds ratios (ORs) for seropositivity and standardised mean difference (SMD) of autoantibody levels with 95% confidence intervals. Sensitivity tests and meta-regression were performed to assess the robustness of the results and potential cause of heterogeneity.

Results: The electronic and manual searches gathered 932 articles. Following screening and full-text assessment, a total of 29 studies were included in the analysis. Twenty-eight published observational studies were included in the quantitative analysis in the form of random-effect meta-analysis which revealed that PD was associated with anti-citrullinated proteins autoantibodies (ACPAs) and Rheumatoid Factor (RF) seropositive RA patients (OR for ACPA seropositivity: 1.82; 95% CI: 1.13-2.93) (OR for RF seropositivity: 1.53; 95% CI: 1.05-2.24). Also, RA patients with PD had increased serum levels of ACPA and RF. However, high heterogeneity among studies' results, partially ascribed to the unstandardised case definition of PD and laboratory testing of autoantibodies. Apart from ACPA and RF in serum, studies which reported on other RA-related autoantibodies, as well as autoantibody levels in saliva and GCF were scarce.

Conclusion: RA patients with PD tend to have greater ACPA and RF levels in their serum when compared with the RA patients without PD supporting the plausible role of PD in the development of systemic autoimmunity in RA patients.

Gabarrini G, Grasso S, van Winkelhoff AJ, van Dijl JM. Gingimaps: Protein Localization in the Oral Pathogen Porphyromonas gingivalis. Microbiol Mol Biol Rev. 2020 Jan 2;84(1):e00032-19. doi: 10.1128/MMBR.00032-19. PMID: 31896547; PMCID: PMC6941882.

ABSTRACT

Porphyromonas gingivalis is an oral pathogen involved in the widespread disease periodontitis. In recent years, however, this bacterium has been implicated in the etiology of another common disorder, the autoimmune disease rheumatoid arthritis. Periodontitis and rheumatoid arthritis were known to correlate for decades, but only recently a possible molecular connection underlying this association has been unveiled. P. gingivalis possesses an enzyme that citrullinates certain host proteins and, potentially, elicits autoimmune antibodies against such citrullinated proteins. These autoantibodies are highly specific for rheumatoid arthritis and have been purported both as a symptom and a potential cause of the disease. The citrullinating enzyme and other major virulence factors of P. gingivalis, including some that were implicated in the etiology of rheumatoid arthritis, are targeted to the host tissue as secreted or outer-membrane-bound proteins. These targeting events play pivotal roles in the interactions between the pathogen and its human host. Accordingly, the overall protein sorting and secretion events in P. gingivalis are of prime relevance for understanding its full disease-causing potential and for developing preventive and therapeutic approaches. The aim of this review is therefore to offer a comprehensive overview of the subcellular and extracellular localization of all proteins in three reference strains and four clinical isolates of P. gingivalis, as well as the mechanisms employed to reach these destinations.

González-Febles J, Sanz M. Periodontitis and rheumatoid arthritis: What have we learned about their connection and their treatment? Periodontol 2000. 2021 Oct;87(1):181-203. doi: 10.1111/prd.12385. PMID: 34463976.

ABSTRACT

Rheumatoid arthritis and periodontitis are chronic inflammatory diseases defined respectively by the destruction of the articular cartilage and tooth-supporting periodontal tissues. Although the epidemiologic evidence for an association between these two diseases is still scarce, there is emerging scientific information linking specific bacterial periodontal pathogens, such as Porphyromonas gingivalis and Aggregatibacter actinomycetemcomitans, in the citrullination process, leading to autoantibody formation and compromised immunotolerance of the susceptible patient to rheumatoid arthritis. In this review, we update the existing information on the evidence, not only regarding the epidemiologic association, but also the biologic mechanisms linking these two diseases. Finally, we review information emerging from intervention studies evaluating whether periodontal treatment could influence the initiation and progression of rheumatoid arthritis.

Heuchert J, Kozieł S, Spinek AE. Radiomorphometric indices of the mandible as indicators of decreased bone mineral density and osteoporosis - meta-analysis and systematic review. Osteoporos Int. 2024 Mar;35(3):401-412. doi: 10.1007/s00198-023-06949-7. Epub 2023 Oct 23. PMID: 37870561; PMCID: PMC10867062.

ABSTRACT

This review aims to evaluate the accuracy of various mandibular radiomorphometric indices in comparison with DEXA BMD measurements in the diagnosis of osteopenia and osteoporosis based on a meta-analysis of the sensitivity and specificity of the indices. PRISMA statement was followed. The materials for analysis were collected in August 2023 by searching three databases: PubMed Central, Web of Science, and Scopus. The selection of studies consisted of three selection stages, and 64 articles were finally obtained. Quality assessment was performed with the QUADAS-2 tool, and the general methodological quality of retrieved studies was low. Statistical analysis was performed based on 2 × 2 tables and estimated sensitivity and specificity were obtained using SROC curves. The most used indices were MCI, MCW and PMI. The best results in detecting reduced BMD obtained for MCW ≤ 3 mm, estimated sensitivity and specificity were 0.712 (95% CI, 0.477-0.870) and 0.804 (95% CI, 0.589-0.921), respectively. The most prone to the risk of bias is the MCI due to the examiner's subjectivism. Radiomorphometric indices of the mandible can be useful as a screening tool to identify patients with low BMD, but should not be used as a diagnostic method. Further research needs to focus on analysing the ability of the indices to detect osteoporosis and also in combination the indices with clinical parameters.

Huang Y, Zhang Z, Zheng Y, Zhao Z, Zhong Y, Zhang Q, Xia D, Ma N, Zhang L. Effects of non-surgical periodontal therapy on periodontal clinical data in periodontitis patients with rheumatoid arthritis: a meta-analysis. BMC Oral Health. 2021 Jul 10;21(1):340. doi: 10.1186/s12903-021-01695-w. PMID: 34246253; PMCID: PMC8272313.

ABSTRACT

Backgrounds: To date, there is still no consensus about the clinical efficacy of non-surgical periodontal therapy in rheumatoid arthritis (RA) patients with periodontitis. Therefore, the aim of this study was to summarize clinical data regarding the efficacy of scaling and root planing (SRP) in patients with RA and periodontitis compared to non-RA periodontitis patients.

Methods: We selected randomized controlled trials (RCTs) that compared periodontal clinical data in RA as compared to non-RA periodontitis patients by searching Embase, PubMed and Cochrane Central Register of Controlled Trials and by manually retrieving from the earliest records to March 8, 2021. The overall effect size of plaque index (PI), gingival index (GI), attachment loss (AL), probing depth (PD) and bleeding on probing (BOP) were calculated by either a fixed or random-effect model, and subgroup analyses were conducted according to the different time points of follow-up. Two investigators extracted the data and assess the accuracy of the obtained results with 95% of Confidence Intervals (CI). Cochrane Collaboration's tool was responsible for the evaluation of the literature quality and the inter-study heterogeneity was evaluated by Q test and I2 statistic. Sensitivity analyses were applied for results with heterogeneity. Publication bias was determined by Begg's test, Egger's test and the trim-and-fill method.

Results: Seven RCTs including 212 patients eventually met the inclusion criteria for the study. As the primary results, the change of PD was not statistically significant and in the secondary results changes of PI, GI, AL and BOP were also not statistically significant in RA patients with periodontitis compared to non-RA periodontitis patients. In subgroup analysis, a larger BOP reduction at 3 months, PI and AL reduction at 6 months were observed in patients with RA and periodontitis group. The results of sensitivity analyses had no significant effect. No evidence of potential publication bias was tested. There were some limitations due to the small number of eligible RCTs.

Conclusions: SRP is equally effective in RA as compared to non-RA periodontitis patients. It suggests RA does not affect the clinical efficacy of non-surgical periodontal therapy. These results could serve evidence-based practice.

Hussein M, Farag YMK, Sonis S. Differential associations of rheumatoid arthritis and periodontitis or tooth loss: A cross-sectional study. J Clin Periodontol. 2023 Mar;50(3):307-315. doi: 10.1111/jcpe.13757. Epub 2022 Dec 4. Erratum in: J Clin Periodontol. 2023 Nov;50(11):1568-1569. doi: 10.1111/jcpe.13844. PMID: 36444518.

ABSTRACT

Aim: To study the association between periodontitis, tooth loss, and rheumatoid arthritis (RA) by using a large national dataset.

Materials and methods: An observational cross-sectional study was performed using the National Health and Nutrition Examination Survey cycles (2009-2014). RA status was detected using a questionnaire. Periodontal status was assigned on the basis of the clinical attachment level and periodontal pocket depth. Dentition status was assessed by the number of permanent teeth observed. We examined the association between RA as exposure and moderate/severe periodontitis and non-functional dentition as outcomes. We progressively adjusted our models for different sets of potential confounders.

Results: Moderate/severe periodontitis was more prevalent in participants reporting RA (53% vs. 41.5%, p = .0003). Non-functional dentition was more prevalent in participants with RA (41% vs. 15.5%, p = .0001). The fully adjusted model showed that participants with RA had higher odds of having non-functional dentition (odds ratio 1.8, 95% confidence interval [CI] 1.3-2.3, p = .0001) but no association with moderate/severe periodontitis (prevalence ratio 1.01, 95% CI 0.9-1.1, p = .9).

Conclusion: RA was associated with a higher likelihood of having non-functional dentition but did not show any association with periodontitis after adjusting for the risk factors to control their confounding effect.

Inchingolo F, Inchingolo AM, Avantario P, Settanni V, Fatone MC, Piras F, Di Venere D, Inchingolo AD, Palermo A, Dipalma G. The Effects of Periodontal Treatment on Rheumatoid Arthritis and of Anti-Rheumatic Drugs on Periodontitis: A Systematic Review. Int J Mol Sci. 2023 Dec 7;24(24):17228. doi: 10.3390/ijms242417228. PMID: 38139057; PMCID: PMC10743440.

ABSTRACT

Rheumatoid arthritis (RA) and periodontitis are chronic inflammatory diseases that widely spread and share the same patterns of pro-inflammatory cytokines. This systematic review aims to evaluate the effects of non-surgical periodontal treatment (NSPT) on RA and, conversely, the impact of disease-modifying anti-rheumatic drugs (DMARDs) on periodontitis. PubMed, Embase, and Web of Science were searched using the MESH terms “periodontitis” and “rheumatoid arthritis” from January 2012 to September 2023. A total of 49 articles was included in the final analysis, 10 of which were randomized controlled trials. A total of 31 records concerns the effect of NSPT on parameters of RA disease activity, including a 28-joint disease activity score, anti-citrullinated protein antibodies, rheumatoid factor, C reactive protein, erythrocyte sedimentation rate, pro-inflammatory cytokines and acute phase proteins in serum, saliva, gingival crevicular fluid, and synovial fluid. A total of 18 articles investigated the effect of DMARDs on periodontal indexes and on specific cytokine levels. A quality assessment and risk-of-bias of the studies were also performed. Despite some conflicting results, there is evidence that RA patients and periodontitis patients benefit from NSPT and DMARDs, respectively. The limitations of the studies examined are the small samples and the short follow-up (usually 6 months). Further research is mandatory to evaluate if screening and treatment of periodontitis should be performed systematically in RA patients, and if the administration of DMARDs is useful in reducing the production of cytokines in the periodontium.

Kang HS, Kim JH, Kim JH, Bang WJ, Choi HG, Yoo DM, Lee NE, Han KM, Kim NY, Park HY, Min KW, Kwon MJ. The Association of Chronic Periodontitis as a Potential Risk Factor with Rheumatoid Arthritis: A Nested Case-Control Study Using a Korean National Health Screening Cohort. Biomedicines. 2024 Apr 23;12(5):936. doi: 10.3390/biomedicines12050936. PMID: 38790898; PMCID: PMC11118670.

ABSTRACT

Growing research has proposed that rheumatoid arthritis (RA) and chronic periodontitis (CP) share similar pathophysiological mechanisms involving inflammation and tissue destruction. However, the potential correlation of CP as a contributing factor for the occurrence of RA warrants validation in the Korean population, where both diseases are prevalent, especially considering the increasingly aging demographic in Korea. This study examined 5139 RA cases and 509,727 matched controls from a Korean national cohort dataset (2002-2019) by carefully employing propensity score matching to ensure comparability between groups. Baseline characteristics were compared using standardized differences, and logistic regression was employed to estimate the impact of CP history on RA likelihood while controlling for covariates. We fully examined medical records documenting CP occurrences within the two-year period leading up to the index date, conducting comprehensive subgroup analyses. While a 1-year history of CP did not show a significant association with likelihood of RA, a 2-year history of CP increased RA likelihood by 12%, particularly among older adults, females, rural residents, and those with certain comorbidities such as hypercholesterolemia. Interestingly, this association persisted even among individuals with non-smoking habits, normal weight, and infrequent alcohol consumption. These findings suggest that chronic CP exposure for at least 2 years may independently elevate RA risk in Korean adults. The association in certain subgroups appears to suggest a predisposition toward genetic susceptibilities over lifestyle and environmental factors. Predicting RA in CP patients may be challenging, emphasizing the importance of regular RA screening, especially in high-risk subgroups.

Kaveri A, Rajendran V, Jaishree TK, Malathi K, Kavitha M. Effect of Periodontal Therapy on Rheumatoid Disease Activity in Patients on Anti-Rheumatoid Drugs - A Prospective Study. Indian J Dent Res. 2024 Apr 1;35(2):154-159. doi: 10.4103/ijdr.ijdr_535_23. Epub 2024 Aug 22. PMID: 39171606.

ABSTRACT

Aim: The aim of this clinical trial rheumatoid arthritis-chronic periodontitis (RA-CP) is to assess the effect of non-surgical periodontal therapy in RA patients.

Materials and methods: Sixty RA patients taking disease-modifying anti-rheumatoid drugs (DMARD) with CP were selected from the Institute of Rheumatology, Madras Medical College, randomised into the intervention group (IG) and control group (CG). IG received non-surgical periodontal therapy after the screening visit, but CG did not receive treatment until the 3 months study period. Periodontal parameters were recorded at baseline and after 3 months for both groups. Rheumatoid Disease activity (RD activity) was assessed using disease activity score (DAS28), inclusive of tender joints count (TJC), swollen joints count (SJC), visual analog scale (VAS), and erythrocyte sedimentation rate (ESR) for both groups at baseline and after 3 months.

Results: At the end of 3 months, IG had significant reduction in RA parameters such as tender joints count (0.0005), swollen joints count (0.0005), ESR (0.003), VAS score (0.0005), and DAS28 values (0.0005) compared to CG. Periodontal parameters at the end of 3 months were also significantly reduced in IG than in CG.

Conclusion: Non-surgical periodontal therapy might have reduced the burden of systemic inflammatory markers, thus reducing severity of RA in IG. Reduction in tenderness and swelling of joints in the upper arm might have enabled the patients in IG to perform better oral hygiene maintenance procedures.

Kindstedt E, de Vries C, Wänman M, Potempa BA, Potempa J, Lindquist S, Esberg A, Lundberg K, Lundberg P. The PerioGene North study reveals that periodontal inflammation and advanced jawbone loss in periodontitis associate with serum gingipain antibodies but not with systemic autoimmunity. Front Immunol. 2025 Jan 14;15:1504975. doi: 10.3389/fimmu.2024.1504975. PMID: 39877342; PMCID: PMC11772355.

ABSTRACT

Introduction: Periodontitis is associated with rheumatoid arthritis (RA). One hypothesis posits that this connection arises from the formation of autoantibodies against citrullinated proteins (ACPA) in inflamed gums, possibly triggered by Porphyromonas gingivalis. We previously demonstrated an increased antibody response to P. gingivalis arginine gingipains (anti-Rgp IgG), not only in individuals with severe periodontitis

compared to controls, but in RA versus controls, with an association to ACPA. In the present study, we set out to further explore the relationship between anti-Rgp IgG, ACPA and periodontitis, including clinical periodontal parameters, in the large and well-characterized PerioGene North case-control study.

Methods: We measured serum levels of anti-Rgp and ACPA IgG by enzyme-linked immunosorbent assay (ELISA), in 478 patients with periodontitis and 509 periodontally healthy controls within PerioGene North. Subsequently, anti-Rgp IgG levels and ACPA status were analysed in relation to periodontitis and clinical periodontal parameters.

Results: Serum anti-Rgp IgG levels were elevated in cases versus controls ($p< 0.001$). However, receiver operating characteristic (ROC) curve analysis revealed that anti-Rgp IgG could not efficiently discriminate cases from controls (AUC= 0.63; 95% CI: 0.60 - 0.66). Among cases, increased anti-Rgp IgG levels associated with high periodontal inflammation and advanced alveolar bone loss ($p<0.001$ for both). An ACPA response was detected in 15 (3.1%) cases and 6 (1.2%) controls ($p=0.033$), but no association to periodontitis was evident after adjustment for age and smoking and anti-Rgp IgG levels did not differ between ACPA-positive and ACPA-negative individuals.

Conclusion: We show that anti-Rgp IgG identifies a subgroup of periodontitis patients with high degree of periodontal inflammation and advanced alveolar bone loss, but we do not find support for a link between periodontitis or anti-Rgp IgG and ACPA status in PerioGene North. Given the association between anti-Rgp and alveolar bone loss, the mechanistic role of gingipains in bone resorption should be experimentally explored.

Kobayashi T, Yoshie H. Host Responses in the Link Between Periodontitis and Rheumatoid Arthritis. Curr Oral Health Rep. 2015;2(1):1-8. doi: 10.1007/s40496-014-0039-2. PMID: 25657893; PMCID: PMC4312392.

ABSTRACT

Periodontitis and rheumatoid arthritis (RA) are common chronic inflammatory conditions and share many clinical and pathologic features. There is evidence to suggest that similar profiles of cytokine genotypes and their coding proteins are involved in the pathogenesis of periodontitis and RA. In particular, constitutive overproduction of pro-inflammatory cytokines, including tumor necrosis factor-alpha (TNF-α) and interleukin-6 (IL-6), has been implicated to play a pathologic role in the two inflammatory diseases. Results from studies with animal and human subjects have suggested an improvement of periodontal inflammatory condition after treatment with TNF-α inhibitors. Likewise, IL-6 receptor inhibition therapy has been suggested to have an effect on control of periodontal inflammation in patients with RA. In the present review, we provide an overview of studies showing the pathological role of cytokines in the linkage between periodontitis and RA, and further summarize the current studies assessing the effect of cytokine targeted therapy on periodontal condition.

Kobayashi T, Bartold PM. Periodontitis and periodontopathic bacteria as risk factors for rheumatoid arthritis: A review of the last 10 years. Jpn Dent Sci Rev. 2023 Dec;59:263-272. doi: 10.1016/j.jdsr.2023.08.002. Epub 2023 Aug 26. PMID: 37674898; PMCID: PMC10477376.

ABSTRACT

Rheumatoid arthritis (RA) is characterized by chronic inflammatory destruction of joint tissue and is caused by an abnormal autoimmune response triggered by interactions between genetics, environmental factors, and epigenetic and posttranslational modifications. RA has been suggested to be interrelated with periodontitis, a serious form or stage of chronic inflammatory periodontal disease associated with periodontopathic bacterial infections, genetic predisposition, environmental factors, and epigenetic influences. Over the last decade, a number of animal and clinical studies have been conducted to assess whether or not periodontitis and associated periodontopathic bacteria constitute risk factors for RA. The present review introduces recent accumulating evidence to support the associations of periodontitis and periodontopathic bacteria with the risk of RA or the outcome of RA pharmacological treatment with disease-modifying antirheumatic drugs. In addition, the results from intervention studies have suggested an improvement in RA clinical parameters after nonsurgical periodontal treatment. Furthermore, the potential causal mechanisms underlying the link between periodontitis and periodontopathic bacteria and RA are summarized.

Konig MF, Paracha AS, Moni M, Bingham CO 3rd, Andrade F. Defining the role of Porphyromonas gingivalis peptidylarginine deiminase (PPAD) in rheumatoid arthritis through the study of PPAD biology. Ann Rheum Dis. 2015 Nov;74(11):2054-61. doi: 10.1136/annrheumdis-2014-205385. Epub 2014 May 26. PMID: 24864075; PMCID: PMC4368502.

ABSTRACT

Background: Antibodies to citrullinated proteins are a hallmark of rheumatoid arthritis (RA). Porphyromonas gingivalis peptidylarginine deiminase (PPAD) has been implicated in the initiation of RA by generating citrullinated neoantigens and due to its ability to autocitrullinate.

Objectives: To define the citrullination status and biology of PPAD in P gingivalis and to characterise the anti-PPAD antibody response in RA and associated periodontal disease (PD).

Methods: PPAD in P gingivalis cells and culture supernatant were analysed by immunoblotting and mass spectrometry to detect citrullination. Recombinant PPAD (rPPAD), inactive mutant PPAD (rPPAD(C351S)), and N-terminal truncated PPAD (rPPAD(Ntx)) were cloned and expressed in Escherichia coli. Patients with RA and healthy controls were assayed for IgG antibodies to citrullinated rPPAD and unmodified rPPAD(C351S) by ELISA. Anti-PPAD antibodies were correlated with anti-cyclic citrullinated peptide (third-generation) antibody levels, RA disease activity and PD status.

Results: PPAD from P gingivalis is truncated at the N-terminal and C-terminal domains and not citrullinated. Only when artificially expressed in E coli, full-length rPPAD, but not truncated (fully active) rPPAD(Ntx), is autocitrullinated. Anti-PPAD antibodies show no heightened reactivity to citrullinated rPPAD, but are exclusively directed against the unmodified enzyme. Antibodies against PPAD do not correlate with

anti-cyclic citrullinated peptide levels and disease activity in RA. By contrast, anti-PPAD antibody levels are significantly decreased in RA patients with PD.

Conclusions: PPAD autocitrullination is not the underlying mechanism linking PD and RA. N-terminal processing protects PPAD from autocitrullination and enhances enzyme activity. Anti-PPAD antibodies may have a protective role for the development of PD in patients with RA.

Kreher D, Ernst BLV, Ziebolz D, Haak R, Ebert T, Schmalz G. Dental Caries in Adult Patients with Rheumatoid Arthritis-A Systematic Review. J Clin Med. 2023 Jun 19;12(12):4128. doi: 10.3390/jcm12124128. PMID: 37373822; PMCID: PMC10298950.

ABSTRACT

Patients suffering from rheumatoid arthritis (RA) are repeatedly affected by oral diseases or complaints, including xerostomia, periodontitis and dental caries. The aim of this systematic review was the evaluation of caries prevalence and/or incidence in patients with RA. Within this review, there is a systematic search of the literature based on PubMed, Web of Science and Scopus. Two independent researchers performed the search in February 2023. The search terms were “dental caries” AND “rheumatoid arthritis”. Additionally, a manual search completed the review process. Studies on adult patients (age ≥ 18 years) only suffering from RA were included. Studies had to explicitly report on the prevalence or incidence of dental caries. The respective studies were checked regarding suitability and, if they were eligible, analyzed qualitatively. A quality appraisal was performed for all of the analyzed studies. A total of 336 studies were detected, of which 16 studies met the in- and exclusion criteria. The sample sizes of the clinical investigations ranged between 13 and 1337 participants. Twelve studies evaluated a healthy control group. In 8/12 studies, a significant difference in the prevalence/incidence of caries was found between RA patients and controls. The majority of the studies applied the decayed (DT), missing and filled teeth index (DMFT) for the diagnosis of caries. On average (mean value), 0.8 to 5.79 carious teeth per patient were reported across the studies. There was no information on the stadium, activity or location of caries (e.g., root caries) in any study. Quality appraisal revealed a moderate quality for most studies. In conclusion, caries prevalence was heterogeneous across studies, while a higher caries prevalence was repeatedly reported in RA patients against controls. Further research regarding dental caries in RA appears recommendable; multidisciplinary, patient-centered dental care for patients with RA should be fostered to improve patients’ dental health status.

Krutyhołowa A, Strzelec K, Dziedzic A, Bereta GP, Łazarz-Bartyzel K, Potempa J, Gawron K. Host and bacterial factors linking periodontitis and rheumatoid arthritis. Front Immunol. 2022 Aug 25;13:980805. doi: 10.3389/fimmu.2022.980805. PMID: 36091038; PMCID: PMC9453162.

ABSTRACT

Observations from numerous clinical, epidemiological and serological studies link periodontitis with severity and progression of rheumatoid arthritis. The strong association is observed despite totally different aetiology of these two diseases, periodontitis being driven by dysbiotic microbial flora on the tooth surface below the gum line, while rheumatoid arthritis being the autoimmune disease powered by anti-citrullinated protein antibodies (ACPAs). Here we discuss genetic and environmental risk factors underlying development of both diseases with special emphasis on bacteria implicated in pathogenicity of periodontitis.

Individual periodontal pathogens and their virulence factors are argued as potentially contributing to putative causative link between periodontal infection and initiation of a chain of events leading to breakdown of immunotolerance and development of ACPAs. In this respect peptidylarginine deiminase, an enzyme unique among prokaryotes for Porphyromonas gingivalis, is elaborated as a potential mechanistic link between this major periodontal pathogen and initiation of rheumatoid arthritis development.

Lu J, Wang Y, Wu J, Duan Y, Zhang H, Du H. Linking microbial communities to rheumatoid arthritis: focus on gut, oral microbiome and their extracellular vesicles. Front Immunol. 2025 Apr 16;16:1503474. doi: 10.3389/fimmu.2025.1503474. PMID: 40308573; PMCID: PMC12040682.

ABSTRACT

Rheumatoid arthritis (RA) is a severe, chronic autoimmune disease affecting approximately 1% of the global population. Research has demonstrated that microorganisms play a crucial role in the onset and progression of RA. This indicates that the disruption of immune homeostasis may originate from mucosal sites, such as the gut and oral cavity. In the intestines of patients in the preclinical stage of RA, an increased abundance of Prevotella species with a strong association to the disease was observed. In the oral cavity, infections by Porphyromonas gingivalis and Aggregatibacter actinomycetemcomitans can mediate the production of anti-citrullinated protein antibodies (ACPAs), potentially contributing to RA pathogenesis. Nevertheless, no single bacterial species has been consistently identified as the primary driver of RA. This review will discuss the connection between gut and oral bacteria in the development of arthritis. Additionally, it explores the role of bacterial extracellular vesicles (bEVs) in inducing inflammation and their potential pathogenic roles in RA.

Malcolm J, Culshaw S. Aberrant immunity in the oral cavity-a link with rheumatoid arthritis? Front Oral Health. 2024 Jun 14;5:1430886. doi: 10.3389/froh.2024.1430886. PMID: 38948089; PMCID: PMC11211539.

ABSTRACT

There are well established epidemiological links between rheumatoid arthritis and periodontitis. Recent data have started to shed light on the mechanisms that might underlie the relationship between these two complex diseases. Unravelling the roles of distinct pathways involved in these mechanisms has the potential to yield novel preventative and therapeutic strategies for both diseases. Perhaps most intriguingly, this represents an area where understanding the biology in the oral cavity might reveal fundamental advances in understanding immune regulation and the relationships between the host and microbiome. Here we seek to discuss aspects of the adaptive immune response that might link periodontitis and rheumatoid arthritis.

Marruganti C, Gaeta C, Falciani C, Cinotti E, Rubegni P, Alovisi M, Scotti N, Baldi A, Bellan C, Defraia C, Bertaggia E, Fiorino F, Valensin S, Bellini E, De Rosa A, Graziani F, D'Aiuto F, Grandini S. The Synergetic Effect of Periodontal Therapy and TNF-α Inhibitor for th3e Treatment of Comorbid Periodontitis and Psoriasis. J Clin Periodontol. 2025 Jun;52(6):907-919. doi: 10.1111/jcpe.14102. Epub 2025 Apr 25. PMID: 40277096; PMCID: PMC12082780.

ABSTRACT

Aim: To assess the adjunctive effect of periodontal therapy on psoriasis-related outcomes in a combined experimental model of ligature-induced periodontitis and Imiquimod (IMQ)-induced psoriasis. Also, this experiment aimed to study the impact of TNF-α inhibitors on the periodontium.

Methods: Fifty-six C57/BL6J mice were randomly allocated to seven experimental groups: (a) control group (P-Pso-) with no treatment; (b) periodontitis (P+Pso-) with periodontal therapy; (c) periodontitis (P+Pso-) with TNF-α inhibitor; (d) psoriasis (P-Pso+) with TNF-α inhibitor; (e) periodontitis and psoriasis (P+Pso+) with periodontal therapy; (f) P+Pso+ with TNF-α inhibitor; and (g) P+Pso+ with both periodontal therapy and TNF-α inhibitor. Samples (maxilla, dorsal skin and blood) were harvested immediately after death. Measures of periodontitis distance between the cemento-enamel junction and alveolar bone crest (CEJ-ABC) and number of osteoclasts and psoriasis (epidermal thickness and infiltrate cells (per 0.03mm2)) severity, as well as systemic inflammation (IL-6, IL-17A and TNF-α) were collected.

Results: In the P+Pso+ group, a significant adjunctive effect of periodontal therapy to TNF-α inhibitors was found in the reduction of epidermal thickening and inflammatory infiltrate of the dorsal skin ($p < 0.05$). Similarly, treatment with TNF-α inhibitor resulted in a significant adjunctive effect to periodontal therapy in the reduction of alveolar bone loss ($p < 0.05$). These changes were accompanied by a significant decrease in the circulating levels of IL-6 and IL-17A when both periodontal therapy and TNF-α inhibitor were administered.

Conclusions: The combination of periodontal therapy and TNF-α inhibitor showed a positive synergetic effect in the treatment of comorbid experimental ligature-induced periodontitis and IMQ-induced psoriasis via the reduction of systemic inflammation.

Marruganti C, Gaeta C, Falciani C, Cinotti E, Rubegni P, Alovisi M, Scotti N, Baldi A, Bellan C, Defraia C, Fiorino F, Valensin S, Bellini E, De Rosa A, D'Aiuto F, Grandini S. Are periodontitis and psoriasis associated? A pre-clinical murine model. J Clin Periodontol. 2024 Aug;51(8):1044-1053. doi: 10.1111/jcpe.13996. Epub 2024 May 3. PMID: 38699834.

ABSTRACT

Aim: To investigate the bidirectional influence between periodontitis and psoriasis, using the respective experimental models of ligature- and imiquimod-induced diseases on murine models.

Materials and methods: Thirty-two C57/BL6J mice were randomly allocated to four experimental groups: control (P- Pso-), ligature-induced periodontitis (P+ Pso-), imiquimod-induced psoriasis (P- Pso+) and periodontitis and psoriasis (P+ Pso+). Samples (maxilla, dorsal skin and blood) were harvested immediately after death. Measures of periodontitis (distance between the cemento-enamel junction and alveolar bone crest [CEJ-ABC] and the number of osteoclasts) and psoriasis (epidermal thickness and infiltrate cell [/0.03mm2]) severity as well as systemic inflammation (IL-6, IL-17A, TNF-α) were collected.

Results: The P+ Pso+ group exhibited the most severe experimental periodontitis and psoriasis, with the highest values of CEJ-ABC, number of osteoclasts, epidermal thickness and infiltrate cells in the dorsal skin, as well as the highest blood cytokine concentration. The P+ Pso- group presented with higher cell infiltrate (/0.03mm2) compared to the control group ($p <.05$), while the P- Pso+ group showed substantially higher alveolar bone loss (CEJ-ABC) than the control group ($p <.05$).

Conclusions: Experimental periodontitis may initiate and maintain psoriasiform skin inflammation and, vice versa, experimental psoriasis may contribute to the onset of periodontitis. In a combined model of the diseases, we propose a bidirectional association between periodontitis and psoriasis via systemic inflammation.

Martu MA, Maftei GA, Luchian I, Stefanescu OM, Scutariu MM, Solomon SM. The Effect of Acknowledged and Novel Anti-Rheumatic Therapies on Periodontal Tissues-A Narrative Review. Pharmaceuticals (Basel). 2021 Nov 23;14(12):1209. doi: 10.3390/ph14121209. PMID: 34959607; PMCID: PMC8705490.

ABSTRACT

Rheumatoid arthritis (RA) and periodontal disease (PD) are chronic complex inflammatory diseases with several common susceptibility factors, especially genetic and environmental risk factors. Although both disorders involve a perturbation of the immune-inflammatory response at multiple levels, one major difference between the two is the different locations in which they develop. RA is triggered by an exaggerated autoimmune response that targets joints, while periodontal disease occurs as a consequence of the subgingival periodontopathogenic microbiota. Current treatment models in both pathologies involve the stratification of patients to allow therapeutic individualization according to disease stage, complexity, progression, lifestyle, risk factors, and additional systemic diseases. Therapeutic guidelines for RA comprise of five main classes of drugs: non-steroidal anti-inflammatory drugs (NSAIDs), analgesics, glucocorticoids, and disease-modifying anti-rheumatic drugs (DMARDs): biologic and non-biologic. Although various treatment options are available, a definitive treatment remains elusive, therefore research is ongoing in this area. Several alternatives are currently being tested, such as matrix metalloproteinases (MMP) inhibitors, toll-like receptors (TLR) blockers, pro-resolution mediators, anti-hypoxia inducing factors, stem cell therapy, NLRP3 inhibitors and even natural derived compounds. Although the link between PD and rheumatoid arthritis has been investigated by multiple microbiology and immunology studies, the precise influence and causality is still debated in the literature. Furthermore, the immunomodulatory effect of anti-rheumatic drugs on the periodontium is still largely unknown. In this narrative review, we explore the mechanisms of interaction and the potential influence that anti-rheumatoid medication, including novel treatment options, has on periodontal tissues and whether periodontal health status and treatment can improve the prognosis of an RA patient.

Mehdipour A, Masoumi M, Shajari P, Aghaali M, Mousavi H, Saleh A, Ansarian M. Oral health-related quality of life and dental caries in rheumatoid arthritis patients: a cross-sectional observational study. J Med Life. 2022 Jun;15(6):854-859. doi: 10.25122/jml-2022-0081. PMID: 35928371; PMCID: PMC9321492.

ABSTRACT

Rheumatoid arthritis (RA) is a systemic, chronic, and inflammatory joint disease with oral complications. This research aimed to compare the oral health-related quality of life and decayed, missing and filled teeth (DMFT) index in rheumatoid arthritis patients over 18 years with healthy individuals. In this study, 45 rheumatoid arthritis cases were assigned to the experimental group, and 45 healthy individuals were assigned to the control group. After completing biography forms, the participants filled out two questionnaires. These questionnaires included the Oral Health Impact Profile-14 (OHIP-14) and the Oral Health Assessment Index (GOHAI). Next, their teeth were clinically examined to check for caries. Finally, the data were analyzed statistically. RA and control groups were similar in gender, marital status, age, occupation, and level of education. However, a significant difference was observed between the two groups concerning DMFT (P<0.001) and total OHIP-14 score (P<0.001). Moreover, no significant difference was observed between the groups concerning the total GOHAI score (P=0.526). The oral health-related quality of life in rheumatoid arthritis patients was lower than that in the general population, with the rate of dental caries being higher in these patients.

Mehdipour A, Masoumi M, Fateh R, Aghaali M, Mohammadidana F, Saleh A, Rasouli A, Kabiri F. Comparative study of the profile of supragingival dental plaque and tooth decay in patients with lupus erythematosus and rheumatoid arthritis. BMC Oral Health. 2025 Mar 18;25(1):399. doi: 10.1186/s12903-025-05762-4. PMID: 40102827; PMCID: PMC11916875.

ABSTRACT

Background and objectives: Systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA) are complex autoimmune diseases that present with a range of systemic and oral manifestations including dental decay and alterations in the oral microbiome profile. The purpose of this study was to compare the fungal and bacterial profile of supragingival dental plaque and dental caries in patients with SLE and RA.

Methods: The present descriptive-cross-sectional-analytical study was conducted on 91 participants (31 RA, 30 lupus, and 30 control groups). Decayed, Missing, and Filled teeth (DMFT) and The International Caries Detection Assessment System (ICDAS) indices were used to investigate tooth decay. The DAS-28 index was used to assess the severity of RA, and the SLEDAI-2 K index was used to evaluate the severity of lupus. The number of supragingival dental plaque Streptococcus mutans, Lactobacillus spp. and Candida albicans colonies were evaluated using Mitis Salivarius Agar (MSA), deMan-Rogosa-Sharpe agar (MRS) and Sabouraud Dextrose Agar with Chloramphenicol (SC) culture medium, respectively. Data were analyzed using one-way ANOVA, Kruskal -Wallis, k2, Fisher's tests, and Spearman's correlation coefficient.

Results: A statistically significant relationship was observed between the education level (P = 0.030), mean of DMFT, ICDAS, MSA and SC indices (P < 0.001) with the type of disease. The control and RA group showed significantly higher MRS index than the lupus group (P < 0.001). There was significant and positive correlation between the severity of the disease in lupus patients and SC (Candida albicans) (P < 0.001, R = 0.698) and MRS (P = 0/020, R = 0.408) indices.

Conclusion: Dental decay and the fungal and bacterial flora of supragingival dental plaque patients are higher than in the healthy group. It is recommended that these patients pay more attention to their oral hygiene and undergo periodic oral examinations.

Moentadj R, Wang Y, Bowerman K, Rehaume L, Nel H, O Cuiv P, Stephens J, Baharom A, Maradana M, Lakis V, Morrison M, Wells T, Hugenholtz P, Benham H, Le Cao KA, Thomas R. Streptococcus species enriched in the oral cavity of patients with RA are a source of peptidoglycan-polysaccharide polymers that can induce arthritis in mice. Ann Rheum Dis. 2021 May;80(5):573-581. doi: 10.1136/annrheumdis-2020-219009. Epub 2021 Jan 4. PMID: 33397732.

ABSTRACT

Objectives: Analysis of oral dysbiosis in individuals sharing genetic and environmental risk factors with rheumatoid arthritis (RA) patients may illuminate how microbiota contribute to disease susceptibility. We studied the oral microbiota in a prospective cohort of patients with RA, first-degree relatives (FDR) and healthy controls (HC), then genomically and functionally characterised streptococcal species from each group to understand their potential contribution to RA development.

Methods: After DNA extraction from tongue swabs, targeted 16S rRNA gene sequencing and statistical analysis, we defined a microbial dysbiosis score based on an operational taxonomic unit signature of disease. After selective culture from swabs, we identified streptococci by sequencing. We examined the ability of streptococcal cell walls (SCW) from isolates to induce cytokines from splenocytes and arthritis in ZAP-70-mutant SKG mice.

Results: RA and FDR were more likely to have periodontitis symptoms. An oral microbial dysbiosis score discriminated RA and HC subjects and predicted similarity of FDR to RA. Streptococcaceae were major contributors to the score. We identified 10 out of 15 streptococcal isolates as S. parasalivarius sp. nov., a distinct sister species to S. salivarius. Tumour necrosis factor and interleukin 6 production in vitro differed in response to individual S. parasalivarius isolates, suggesting strain specific effects on innate immunity. Cytokine secretion was associated with the presence of proteins potentially involved in S. parasalivarius SCW synthesis. Systemic administration of SCW from RA and HC-associated S. parasalivarius strains induced similar chronic arthritis.

Conclusions: Dysbiosis-associated periodontal inflammation and barrier dysfunction may permit arthritogenic insoluble pro-inflammatory pathogen-associated molecules, like SCW, to reach synovial tissue.

Mupparapu M, Akintoye SO. Application of Panoramic Radiography in the Detection of Osteopenia and Osteoporosis-Current State of the Art. Curr Osteoporos Rep. 2023 Aug;21(4):354-359. doi: 10.1007/s11914-023-00807-5. Epub 2023 Jun 29. PMID: 37382808.

ABSTRACT

Purpose of review: Osteoporosis ranks high among morbidities in the elderly as it is a natural process to lose bone, making them susceptible to fractures from minor falls. The cost of managing these patients is staggering. The fractures can be prevented with better care of the elderly, and by treating the major predisposing factor, osteoporosis. Clinicians and scientists, in general, constantly look for early diagnostic and prognostic indicators for osteopenia and osteoporosis to proactively prevent fractures. Dental panoramic radiography (DPR) is a rotational pantomography used for identifying dental pathology in patients. Early signs of osteopenia and osteoporosis can be identified in DPR. The usefulness of notable jaw changes in DPR to predict osteopenia and osteoporosis is still evolving as more studies continue to delve into this concept. The purpose of this review is to present advances made in the practical application of DPR for predicting early onset of osteopenia and osteoporosis.

Recent findings: Dental panoramic radiography, a form of tomography commonly used by dental practitioners, has been the standard of care for decades for detecting dento-alveolar pathology. Several technological advancements have taken place with respect to the use of DPR. These include conversion from plain film to digital radiography, advancements in the manufacture of flat panel detectors, and accurate imaging of the layers of mandible and maxilla that has become possible with appropriate patient positioning within the focal trough of the machine. Improvements in the software infrastructure make it easier to view, enhance, and save the radiographic images. The radiographic appearance of the trabecular bone within the mandible and indices measured from the dental panoramic radiographs focusing on the inferior cortex of the mandible are considered useful tools for identifying asymptomatic individuals with osteoporosis or at risk for developing osteoporosis. These indices apparently correlate with risks of fragility fractures of osteoporosis in other parts of the body. Dental panoramic radiography (DPR) is a commonly used radiographic procedure in dentistry for evaluation of teeth and associated maxillofacial structures. The evaluation of the inferior border of the mandible for reduction or loss of cortical thickness and evaluation of the trabecular bone within the mandible are helpful markers for early signs of osteopenia to identify patients at risk for osteoporosis. This review focused on research advancements on practical application of DPR in early identification of osteopenia and osteoporosis.

Nakajima Y, Kato-Kogoe N, Yasuda T, Urakawa R, Matsuo T, Omori M, Ueno T, Takeuchi T. Impact of Periodontal Treatment on Early Rheumatoid Arthritis and the Role of Porphyromonas gingivalis Antibody Titers. Med Sci Monit. 2025 Jan 26;31:e947146. doi: 10.12659/MSM.947146. PMID: 39863920; PMCID: PMC11780957.

ABSTRACT

BACKGROUND Periodontal disease and rheumatoid arthritis (RA) are closely related, and periodontal therapy can potentially improve RA activity. However, it is not clear in which RA patient populations are more effective periodontal therapy for RA treatment. This study aimed to evaluate the effects of treatment for periodontal disease in 30 patients with rheumatoid arthritis and the titers of antibodies to Porphyromonas gingivalis (P. gingivalis). MATERIAL AND METHODS Thirty patients with RA with mild to severe periodontitis were divided into 3 groups based on the timing of periodontal therapy initiation. RA activity was assessed at baseline and at 3, 6, 9, and 12 months for comparison across groups. Additionally, serum P. gingivalis antibody titers were measured at baseline, patients were divided into 3 groups based on their levels, and their RA activity was compared after 12 months. RESULTS Patients who started periodontal therapy concurrently with RA treatment initiation at baseline showed greater improvement in RA activity, measured by disease activity score, including 28 joints using C-reactive protein (DAS28-CRP), from baseline to 3 months than those who started periodontal therapy after RA treatment. Additionally, RA activity by DAS28-CRP after 12 months of RA treatment with periodontal therapy was significantly improved in patients with higher baseline serum IgG antibody titers against P. gingivalis than in those with lower titers. CONCLUSIONS Treatment for periodontal disease in patients with RA is more effective in patients with early-phase RA and higher serum P. gingivalis antibody titers.

Oliveira SR, de Arruda JAA, Corrêa JD, Carvalho VF, Medeiros JD, Schneider AH, Machado CC, Duffles LF, Fernandes GDR, Calderaro DC, Júnior MT, Abreu LG, Fukada SY, Oliveira RDR, Louzada-Júnior P, Cunha FQ, Silva TA. Methotrexate and Non-Surgical Periodontal Treatment Change the Oral-Gut Microbiota in Rheumatoid Arthritis: A Prospective Cohort Study. Microorganisms. 2023 Dec 29;12(1):68. doi: 10.3390/microorganisms12010068. PMID: 38257895; PMCID: PMC10820502.

ABSTRACT

This study evaluated the changes in the composition of oral-gut microbiota in patients with rheumatoid arthritis (RA) caused by methotrexate (MTX) and non-surgical periodontal treatment (NSPT). Assessments were performed at baseline (T0), 6 months after MTX treatment (T1), and 45 days after NSPT (T2). The composition of the oral and gut microbiota was assessed by amplifying the V4 region of the 16S gene from subgingival plaques and stools. The results of the analysis of continuous variables were presented descriptively and non-parametric tests and Spearman's correlation were adopted. A total of 37 patients (27 with periodontitis) were evaluated at T0; 32 patients (24 with periodontitis) at T1; and 28 patients (17 with periodontitis) at T2. MTX tended to reduce the alpha diversity of the oral-gut microbiota, while NSPT appeared to increase the number of different species of oral microbiota. MTX and NSPT influenced beta diversity in the oral microbiota. The relative abundance of oral microbiota was directly influenced by periodontal status. MTX did not affect the periodontal condition but modified the correlations that varied from weak to moderate ($p < 0.05$) between clinical parameters and the microbiota. MTX and NSPT directly affected the composition and richness of the oral-gut microbiota. However, MTX did not influence periodontal parameters.

Osanai H, Kuroiwa H, Yamada S, Sugino N, Nakamoto T, Ohtsuka M, Suei Y, Kakimoto N, Taguchi A. Screening ability of dental students to detect osteoporosis on dental panoramic radiographs. Osteoporos Sarcopenia. 2024 Dec;10(4):145-150. doi: 10.1016/j.afos.2024.10.002. Epub 2024 Nov 12. PMID: 39835324; PMCID: PMC11742331.

ABSTRACT

Objectives: Postmenopausal women with osteoporosis are frequently underdiagnosed. In Japan, general dental practitioners have begun using the cortical shape of the mandible on dental panoramic radiographs (PRs) to identify and refer women at risk of osteoporosis to medical professionals. It remains unclear

whether dental students, after relevant education, possess the ability to identify these at-risk individuals. This study evaluated the ability of dental students to screen for osteoporosis on PRs.

Methods: A cohort of 113 fifth-year dental students participated in a lecture on osteoporosis screening using PRs. The students then categorized the mandibular inferior cortex on PRs from 30 postmenopausal women (11 with osteoporosis) as normal, mildly to moderately eroded, or severely eroded. Interobserver agreement between the students and an expert oral radiologist using two cortical groups (normal to moderately eroded and severely eroded) was assessed through kappa statistics. Screening ability for osteoporosis detection by identifying severely eroded cortices was calculated and compared with that of the Osteoporosis Self-assessment Tool for Asians (OSTA).

Results: Twenty-one (18.6%) students demonstrated moderate to substantial agreement with the expert. The mean sensitivity, specificity, and positive and negative predictive values for these students in identifying osteoporosis were 60.2%, 88.0%, 76.3%, and 80.0%, respectively. For the OSTA, sensitivity, specificity, and positive and negative predictive values were 27.3%, 68.4%, 33.3%, and 61.9%, respectively.

Conclusions: Even with minimal education, approximately one-fourth of dental students may accurately identify postmenopausal women with osteoporosis on PRs, outperforming questionnaire-based screening tools.

Perricone C, Ceccarelli F, Saccucci M, Di Carlo G, Bogdanos DP, Lucchetti R, Pilloni A, Valesini G, Polimeni A, Conti F. Porphyromonas gingivalis and rheumatoid arthritis. Curr Opin Rheumatol. 2019 Sep;31(5):517-524. doi: 10.1097/BOR.0000000000000638. Erratum in: Curr Opin Rheumatol. 2019 Nov;31(6):697. doi: 10.1097/BOR.0000000000000649. PMID: 31268867.

ABSTRACT

Purpose of review: To explore the pathogenic association between periodontal disease and rheumatoid arthritis focusing on the role of Porphyromonas gingivalis.

Recent findings: In the last decades our knowledge about the pathogenesis of rheumatoid arthritis substantially changed. Several evidences demonstrated that the initial production of autoantibodies is not localized in the joint, rather in other immunological-active sites. A central role seems to be played by periodontal disease, in particular because of the ability of P. gingivalis to induce citrullination, the posttranslational modification leading to the production of anticitrullinated protein/peptide antibodies, the most sensitive and specific rheumatoid arthritis biomarker.

Summary: The pathogenic role of P. gingivalis has been demonstrated in mouse models in which arthritis was either triggered or worsened in infected animals. P. gingivalis showed its detrimental role not only by inducing citrullination but also by means of other key mechanisms including induction of NETosis, osteoclastogenesis, and Th17 proinflammatory response leading to bone damage and systemic inflammation.

Petit C, Culshaw S, Weiger R, Huck O, Sahrmann P. Impact of treatment of rheumatoid arthritis on periodontal disease: A review. Mol Oral Microbiol. 2024 Aug;39(4):199-224. doi: 10.1111/omi.12454. Epub 2024 Feb 16. PMID: 38363058.

ABSTRACT

Background: Numerous studies support a bidirectional association between rheumatoid arthritis (RA), a chronic autoimmune degenerative inflammatory joint disease, and periodontitis, a chronic inflammatory disease caused by the immune reaction to bacteria organized in biofilms. RA and periodontitis are both multifactorial chronic inflammatory diseases that share common modifiable and non-modifiable risk factors. There is no cure for RA; treatment is based on lifestyle modifications and a variety of medications: nonsteroidal anti-inflammatory drugs (NSAID), glucocorticoids, and disease-modifying antirheumatic drugs (DMARDs, e.g., conventional synthetic DMARDs [csDMARDs]; biological DMARDs [bDMARD] and targeted synthetic DMARDs). There are molecular pathways of inflammation that are common to both RA and periodontitis. Thus, there is a potential effect of RA treatments on periodontitis. This systematic review aims to assess the impact of antirheumatic agents on periodontal conditions of patients suffering from both RA and periodontitis.

Methods: PubMed/MEDLINE, Cochrane Library, and Embase online databases were systematically explored, and a manual search was performed to identify relevant studies published until January 2023. This review is registered in the PROSPERO database (CRD42023409006).

Results: A total of 2827 articles were identified, and 35 fulfilled the inclusion criteria. The included studies generally show a consensus that, at normal dosage, NSAID and corticosteroids have negligible impact on periodontium. Similarly, csDMARD alone or in combination with other csDMARD demonstrated no adverse effect on periodontium. Monotherapy with bDMARD had a positive effect on periodontal pocket depths and gingival inflammation in the longitudinal studies up to 6 months but showed negligible effect on the periodontium in interventional studies with a longer follow-up (9 months and 15.1 months). However, the combination of tumor necrosis factor (TNF)-α inhibitors + methotrexate (MTX) was associated with a rise in gingival inflammation. Due to the considerable heterogeneity of the study designs, a meta-analysis could not reasonably be performed.

Conclusion: Within the limitations of the available studies, there is evidence to suggest that bDMARD monotherapy may improve the periodontal condition of RA patients with periodontal disease to a certain extent; the concomitant medication of TNF inhibitor + MTX could worsen gingival inflammation. More data are required to understand the impact of RA therapies on periodontal health.

Poiană IR, Dobre R, Pițuru SM, Bucur A. The Utility of Radiomorphometric Mandibular Indices on Cone Beam Computer Tomography in the Assessment of Bone Mass in Postmenopausal Women: A Cross-Sectional Study. J Pers Med. 2024 Aug 9;14(8):843. doi: 10.3390/jpm14080843. PMID: 39202034; PMCID: PMC11355488.

ABSTRACT

Background: The present study examined the potential use of computed tomography radiomorphometric mandibular indices on cone beam CT (CBCT) for the assessment of bone density in postmenopausal women with low bone mass.

Methods: We included 104 postmenopausal women who received dual-energy X-ray absorptiometry (DXA) using a DXA scanner and mental foramen (MF) region CBCT using a NewTom VGi EVO Cone Beam 3D system. We assessed the relationships between the following DXA parameters: lumbar, femoral neck, and total hip T-scores, bone mineral density (BMD), lumbar trabecular bone score (TBS), and mandibular inferior cortical bone thickness at 4 sites. The cross-sectional images were obtained, as follows: anterior (A)-10 mm anterior from the MF; molar (M)-10 mm posterior from the MF; posterior (P)-25 mm posterior from the MF; symphysis (S)-equidistant from the centers of the right and left MF.

Results: We found that A and M indices showed statistically significant moderate positive correlations with lumbar spine, femoral neck, and total hip BMD, as well as TBS. The P index demonstrated moderate positive correlations with these measurements, while the S index did not show significant correlations with BMD or TBS in postmenopausal women.

Conclusions: These findings support the potential usefulness of CBCT-derived radiomorphometric mandibular indices for non-invasive bone health assessment in clinical practice.

Poiană IR, Burcea IF, Pițuru SM, Bucur A. Cone Beam Computed Tomography Panoramic Mandibular Indices in the Screening of Postmenopausal Women with Low Bone Mass: Correlations with Bone Quantity and Quality. Dent J (Basel). 2024 Aug 14;12(8):256. doi: 10.3390/dj12080256. PMID: 39195100; PMCID: PMC11353085.

ABSTRACT

Objective: This study examined the potential use of computed tomography panoramic mandibular indices on cone beam CT (CBCT) for assessing bone density in postmenopausal women with low bone mass.

Study design: The study enrolled 104 postmenopausal women who underwent dual-energy X-ray absorptiometry (DXA) using a DXA scanner and mental foramen region CBCT alongside the NewTom VGi EVO Cone Beam 3D system. We assessed the relationship between the following DXA parameters: lumbar, femoral neck, and total hip T score, bone mineral density (BMD), and lumbar trabecular bone score (TBS). The following panoramic mandibular indices were also considered: the computed tomography mandibular index superior (CTI(S)), computed tomography mandibular index inferior (CTI(I)), and computed tomography mental index (CTMI).

Results: The study revealed moderate correlations between CBCT indices and BMD/TBS scores: CTMI showed the highest correlation with the femoral neck T-score ($r = 0.551$, $p < 0.0001$). TBS scores were also moderately correlated with CBCT indices: CTMI showed a moderate positive correlation with TBS ($r = 0.431$, $p < 0.0001$); CTI(S) had a similar moderate positive correlation with TBS ($r = 0.421$, $p < 0.0001$). AUC values ranged from 0.697 to 0.733 for osteoporosis versus the osteopenia/normal group and from 0.734 to 0.744 for low versus normal bone quality groups, $p < 0.0001$. The comparison of the values of the studied indices between low versus normal bone quality (quantified with TBS) groups showed high sensitivity but low specificity.

Conclusions: CBCT-measured indices CTI(S), CTI(I), and CTMI are useful in assessing patients with low bone mass to improve, by specific treatment, the prognosis of dental implants.

Popoca-Hernández EA, Martínez-Martínez RE, González-Amaro RF, Niño-Moreno PDC, Ayala-Herrera JL, Jerezano-Domínguez AV, Espinosa-Cristóbal LF, Márquez-Corona ML, Espinosa-de Santillana IA, Medina-Solís CE. Impact of Non-Surgical Periodontal Treatment on the Concentration and Level of MRP-8/14 (Calprotectin) as an Inflammatory Biomarker in Women with Periodontitis and Rheumatoid Arthritis: A Quasi-Experimental Study. Diseases. 2024 Jan 1;12(1):12. doi: 10.3390/diseases12010012. PMID: 38248363; PMCID: PMC10814914.

ABSTRACT

The aim of this study was to evaluate the impact of non-surgical periodontal treatment (NS-PT) on periodontal parameters and inflammatory biomarkers in the concentration and level of calprotectin (CLP) in women with periodontitis and rheumatoid arthritis (RA). In this quasi-experimental study, we evaluated 30 women (mean age: 52.0 ± 5.8 years) with periodontitis and RA who had been diagnosed and treated for RA for more than 3 years and whose activity markers remained at similar values without significant reduction over three consecutive months. Patients underwent NS-PT, which included plaque control, scaling, and root planing. Serum and saliva samples, periodontal indices, RA activity markers, Disease Activity Score-28 (DAS28), the erythrocyte sedimentation rate (ESR), and the C-reactive protein (CRP) and CLP contents were measured at the beginning of the study and 6 and 12 weeks after NS-PT. Parametric and nonparametric tests were used in the analysis. The mean age was 52.0 ± 5.8 years. Compared to the baseline results, all periodontal indices were significantly reduced 6 and 12 weeks after NS-PT ($p < 0.001$). DAS28 was also significantly reduced after 12 weeks ($p < 0.0001$). Similarly, the serum CLP concentration decreased 6 and 12 weeks after NS-PT ($p < 0.0001$). Of the patients, 100% presented lower levels of CRP and ESR ($p < 0.0001$). Overall, NS-PT reduced inflammation and disease activity, highlighting the importance of oral health in the control and treatment of systemic diseases such as RA and confirming that NS-PT effectively reduces periodontitis activity and plays a key role in modulating RA activity. Therefore, NS-PT should be considered as an adjunct treatment for RA.

Posada-López A, Duque JD, Pineda-Tamayo RA, Bedoya-Giraldo E, Botero JE. Lack of association between periodontitis and rheumatoid arthritis. Reumatol Clin (Engl Ed). 2023 Mar;19(3):123-129. doi: 10.1016/j.reumae.2022.03.006. PMID: 36906387.

Background and objective: Periodontitis and rheumatoid arthritis (RA) have been associated in a bidirectional way. The objective of this study was to determine the association between clinical parameters of periodontitis and RA.

Materials and methods: Seventy-five (75) participants distributed in 3 groups (21 patients with periodontitis without RA, 33 patients with periodontitis with RA and 21 patients with reduced periodontium with RA) were included in this cross-sectional study. A full periodontal and medical examination was performed in each patient. Additionally, subgingival plaque samples for the detection of Porphyromonas gingivalis (P. gingivalis) and blood samples for biochemical markers of RA were also taken. Logistic regression analysis adjusted for confounding variables, Spearman's rank correlation coefficient and a linear multivariate regression were used to analyze the data.

Results: Patients with RA presented less severity of periodontal parameters. The highest levels of anti-citrullinated protein antibodies were detected in non-periodontitis patients with RA. Covariates such as age, P. gingivalis, diabetes, smoking, osteoporosis and use of medication were not associated with RA. All periodontal variables and P. gingivalis expressed a negative correlation with biochemical markers of RA ($P<0.05$).

Conclusions: Periodontitis was not associated with RA. Furthermore, there was no correlation between periodontal clinical parameters and biochemical markers of RA.

Posada-López A, Botero JE, Pineda-Tamayo RA, Agudelo-Suárez AA. The Effect of Periodontal Treatment on Clinical and Biological Indicators, Quality of Life, and Oral Health in Rheumatoid Arthritis Patients: A Quasi-Experimental Study. Int J Environ Res Public Health. 2022 Feb 4;19(3):1789. doi: 10.3390/ijerph19031789. PMID: 35162812; PMCID: PMC8835021.

ABSTRACT

Non-surgical periodontal therapy (NSPT) has been shown to have systemic effects. It has been suggested that, similar to rheumatoid arthritis (RA), periodontitis (PD) has an impact on general health, in terms of psychological, physical, and social aspects. This study determines the effect of periodontal treatment in RA activity, health-related quality of life, and oral health self-perception before and after periodontal treatment in RA patients. A quasi-experimental, prospective, non-randomized study was conducted, and 52 patients were included in the study. Periodontal parameters and the instruments disease activity score-28 (DAS-28), SF-36, and OHIP-14 were measured at baseline and at 3 months after NSPT. All differences were statistically assessed. The study protocol was registered in Clinical Trials (NCT04658615). No statistically significant differences were found in the scores of DAS-28 before and after the intervention in the group with PD and reduced periodontium. When the effect of periodontal treatment was analyzed in the group of 29 patients who were followed up, it was found that there were statistically significant differences before and after in variables such as psychological distress, emotional role, and mental health, which indicates an improvement in the scores of these variables. NSPT influenced the health-related quality of life measured with SF-36 and OHIP-14 in patients with RA. In conclusion, NSPT has an effect on self-reported quality of life and health indicators more than the RA activity as measured with DAS-28. However, the clinical effect of periodontal treatment in RA patients provides important data to support periodontal care in patients.

Raittio E, Nascimento GG, Lopez R, Baelum V. Exploring the Bidirectional Relationship Between Periodontitis and Rheumatoid Arthritis in a Large Danish Cohort. ACR Open Rheumatol. 2024 Sep;6(9):598-608. doi: 10.1002/acr2.11718. Epub 2024 Jul 5. PMID: 38967301; PMCID: PMC11506558.

ABSTRACT

Objective: We investigated the bidirectional relationship between rheumatoid arthritis (RA) and periodontitis and their cross-sectional association using national administrative health care data.

Methods: The sample included 3,308,903 individuals aged 20 to 79 years who resided in Denmark in 2000 and had remained free of RA and periodontitis in the previous 10 years. RA and periodontitis were defined using diagnosis and treatment codes. Marginal structural survival models were employed to estimate the effects of RA on periodontitis incidence and vice versa from 2000 to 2017. Using a cross-sectional sample of 2,574,536 individuals from 2017, the association of periodontitis with RA was investigated using regression analyses and probabilistic quantitative bias analyses, simulating RA and periodontitis misclassification and unmeasured confounding of smoking.

Results: Between 2000 and 2017, 20,348 individuals developed RA and 740,799 developed periodontitis. The estimated hazard ratio (HR) for the effect of periodontitis on incident RA was 1.05 (95% confidence interval [CI] 0.88-1.25), resulting in a restricted mean survival time difference of one day. The HR for the effect of RA on incident periodontitis was 0.84 (95% CI 0.80-0.88), corresponding to a restricted mean survival time difference of 151 days. Cross-sectionally, the unadjusted prevalence ratio for the association was 1.15 (95% CI 1.11-1.19), whereas the estimate adjusted for measured and simulated confounding was practically null (0.99, 95% simulation interval 0.93-1.04).

Conclusion: These findings challenge previously reported bidirectional relationships between periodontitis and RA, pointing to potential residual confounding as an important link and prompting reconsideration of the biologic plausibility and clinical significance of these associations.

Rak D, Kulloli AM, Shetty SK, Tripathy S, Mathur A, Mehta V, Cicciù M, Minervini G. Correlation between rheumatoid arthritis and chronic periodontitis: a systematic review and meta-analysis. Minerva Dent Oral Sci. 2024 Oct;73(5):294-302. doi: 10.23736/S2724-6329.23.04891-X. Epub 2024 Jun 13. PMID: 38869834.

ABSTRACT

Introduction: The aim of this article is to summarize, compare, and assess possible association in individuals with or without rheumatoid arthritis (RA) for periodontitis.

Evidence acquisition: Three study repositories were searched for quantitative studies examining the relationship between periodontal disease and rheumatoid arthritis between 2000 and December 2022. Quality was evaluated using the Newcastle Ottawa Scale (NOS). The standardized mean difference (SMD), with a random effect model and a P value of 0.05 as the significance level, was utilized as a summary statistic measure.

Evidence synthesis: Fourteen papers were included in the descriptive synthesis. Thirteen were qualified for meta-analysis. Our findings suggest a link between the two conditions in terms of clinical attachment levels (CAL), tooth loss, Plaque Index, and probing depth. The estimated SMD for CAL was found to be 0.68 (95% CI: 0.15-1.21) (P<0.01). For tooth loss, the forest plot analysis revealed an SMD of 1.62 (95% CI: 0.48-2.76) (P=0.005). Similarly, for pocket depth, the SMD was 0.53; CI: 0.07-0.99 (P>0.05). The pooled estimates for plaque index were 0.29; CI: 0.03-0.61 (P>0.05). The funnel plot showed a symmetric distribution with the absence of systematic heterogeneity.

Conclusions: Although our data suggest a link between periodontal disease and rheumatoid arthritis, larger population-based investigations are needed to validate this connection. Case-control studies must pave the way to more rigorous investigations with well-defined populations and clinical outcomes as primary outcome measures.

Shen L, Niu D, Deng G. Causal relationship between periodontal disease-related phenotype and knee osteoarthritis: A two-sample mendelian randomization analysis. PLoS One. 2024 May 31;19(5):e0304117. doi: 10.1371/journal.pone.0304117. PMID: 38820296; PMCID: PMC11142551.

ABSTRACT

Objective: This study aimed to explore the bidirectional causal relationship between periodontal disease-related phenotype (PDRP) and knee osteoarthritis (KOA) in a European population using a two-sample Mendelian Randomization (MR) approach.

Methods: We leveraged publicly available GWAS summary statistics for PDRP (n = 975) and KOA (n = 403,124), assessing their roles as both exposures and outcomes. Our comprehensive MR analysis employed various methods, including inverse variance weighting (IVW), weighted median, Egger regression, simple mode, and weighted mode, to enhance the robustness of our findings. To ensure the reliability of our instrumental variables, we implemented a rigorous screening process based on p-values and F-values, utilized Phenoscanner to investigate potential confounders, and conducted sensitivity analyses.

Results: Our analysis identified five SNPs associated with PDRP and three SNPs with KOA, all surpassing the genome-wide significance threshold, as instrumental variables. The IVW method demonstrated a significant causal relationship from PDRP to KOA (beta = 0.013, SE = 0.007, P = 0.035), without evidence of directional pleiotropy (MR-Egger regression intercept = 0.021, P = 0.706). No support was found for reverse causality from KOA to PDRP, as further MR analyses yielded non-significant P-values. Additionally, funnel plots and Cochran's Q test detected no significant heterogeneity or directional pleiotropy, confirming the robustness of our results. In multivariate analysis, when considering smoking, alcohol consumption, BMI collectively no direct causal relationship between KOA and PDRP. Conversely, smoking and higher BMI were independently associated with an increased risk of KOA.

Conclusion: In conclusion, our analysis revealed no direct causal relationship from KOA to PDRP. However, a causal relationship from PDRP to KOA was observed. Notably, when adjusting for potential confounders like smoking, alcohol intake, and BMI, both the causal connection from PDRP to KOA and the inverse relationship were not substantiated.

Sheng X, Ye X, Yuan H, Zheng C, Zheng T, Chen Q, Deng S. Assessing the efficacy of nonsurgical periodontal treatment on rheumatoid arthritis: an umbrella review. Quintessence Int. 2025 Apr 22;56(4):260-272. doi: 10.3290/j.qi.b6043843. PMID: 40066765.

ABSTRACT

Objective: The relationship between periodontitis and rheumatoid arthritis has attracted considerable interest. However, the effect of nonsurgical periodontal treatment (NSPT) on rheumatoid arthritis remains uncertain. This umbrella review aims to consolidate current research to establish a stronger evidence base.

Method and materials: Medline, Embase, and the Cochrane library were searched from inception to August 2024. Two independent reviewers handled study selection, data extraction, and quality assessment (AMSTAR 2). The qualitative analysis covered clinical activity, joint symptoms, inflammatory markers, cytokines, and autoantibodies. Quantitative results for disease activity score 28 (DAS28), erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) were reported as mean differences with 95% confidence intervals (CIs).

Results: A total of 2,982 records were screened, with 41 full-text articles assessed for eligibility, and 9 selected for evidence synthesis. Qualitative analysis suggests that NSPT may reduce clinical activity in patients with periodontitis and rheumatoid arthritis. Quantitative analysis provided suggestive evidence on the effects of NSPT on DAS28, with the mean difference ranging from -0.38 (95% CI -0.46 to -0.31) to -1.18 (95% CI -1.43 to -0.93). One-third of the included studies were rated as 'high' quality, while another one-third were 'critically low.'

Conclusions: The present evidence suggests that NSPT may provide benefits in managing rheumatoid arthritis symptoms in patients with periodontitis; however, the potential bias of current evidence calls for further rigorous studies. Clinicians should account for the complex interplay between periodontitis and rheumatoid arthritis when devising treatment strategies.

Silva DS, de Vries C, Rovisco J, Serra S, Kaminska M, Mydel P, Lundberg K, da Silva JAP, Baptista IP. The impact of periodontitis and periodontal treatment on rheumatoid arthritis outcomes: an exploratory clinical trial. Rheumatology (Oxford). 2025 Apr 1;64(4):1679-1688. doi: 10.1093/rheumatology/keae358. PMID: 39002123.

ABSTRACT

Objective: Studies suggest RA patients could benefit from periodontal treatment. However, published data are inconsistent, and there is a need for better-controlled research. Our study aims to address these limitations.

Methods: In this exploratory randomized delayed-start study, 22 RA patients with moderate/severe periodontitis were subjected to full-mouth debridement. Periodontal and rheumatological assessments, including measuring anti-cyclic citrullinated peptide 2 (CCP2) IgG levels, were performed at baseline (V1), 2 months (V2) and 6 months (V3) after steps 1 and 2 of periodontal therapy. Primary outcome was changes in DAS for 28 joints (DAS28) between V2 and V1. Secondary outcomes were changes in other rheumatological or periodontal clinical parameters (V2 or V3-V1).

Results: RA disease activity was significantly higher in RA patients with severe periodontitis compared with moderate periodontitis at baseline, with significant positive correlations between several rheumatological and periodontal parameters. After periodontal treatment, RA patients with severe, but not moderate, periodontitis demonstrated significant improvements in DAS28 (ΔV2-V1, P = 0.042; ΔV3-V1, P = 0.001) and significant reduction in anti-CCP2 IgG levels at V3 (P = 0.032).

Conclusion: Periodontal treatment is locally effective in patients with RA and impacts RA disease activity and anti-CCP2 antibody levels in patients with severe periodontitis. Hence, our data suggest that periodontal assessment and treatment should be integrated in the management of RA patients within a treat-to-target strategy.

Sun J, Zheng Y, Bian X, Ge H, Wang J, Zhang Z. Non-surgical periodontal treatment improves rheumatoid arthritis disease activity: a meta-analysis. Clin Oral Investig. 2021 Aug;25(8):4975-4985. doi: 10.1007/s00784-021-03807-w. Epub 2021 Jan 29. PMID: 33515120.

ABSTRACT

Objectives: The aim of the meta-analysis was to clarify the efficacy of non-surgical periodontal treatment (NSPT) in improving rheumatoid arthritis (RA) disease activity.

Methods: A systematic literature search was conducted using the PubMed, Embase, and Cochrane databases up to October 2020. A total of nine studies were included for the comparison of RA-related indicator changes between the NSPT group and no treatment (NT) group. Mean differences (MD) and 95% confidence intervals (CI) were calculated for disease activity score (DAS28), erythrocyte sedimentation rate (ESR), tender joint counts (TJC), swollen joint counts (SJC), visual analogical scale (VAS), morning stiffness (MS), rheumatoid factor (RF), C-reactive protein (CRP), tumor necrosis factor α (TNF-α), and interleukin-6 (IL-6).

Results: NSPT induced significant reductions of DAS28 (MD: 0.61, 95% CI: 0.37, 0.85, P < 0.001), TJC (MD: 0.65, 95% CI: 0.37, 0.93, P < 0.001), SJC (MD: 0.67, 95% CI: 0.18, 1.17, P = 0.008), VAS (MD: 0.48, 95% CI: 0.08, 0.88, P = 0.02), and CRP (MD: 0.34, 95% CI: 0.07, 0.64, P = 0.01) in RA patients with periodontitis. Other parameters showed a trend toward reduction, but results were not statistically significant.

Conclusions: This meta-analysis indicates that NSPT could improve RA activity as assessed by DAS28, TJC, SJC, VAS, and CRP.

Clinical relevance: The results emphasize the effectiveness and need for periodontal diagnosis and periodontal therapy in rheumatoid arthritis patients to reduce disease activity.

Svärd A, Kastbom A, Ljungberg KR, Potempa B, Potempa J, Persson GR, Renvert S, Berglund JS, Söderlin MK. Antibodies against Porphyromonas gingivalis in serum and saliva and their association with rheumatoid arthritis and periodontitis. Data from two rheumatoid arthritis cohorts in Sweden. Front Immunol. 2023 May 30;14:1183194. doi: 10.3389/fimmu.2023.1183194. PMID: 37325636; PMCID: PMC10265683.

ABSTRACT

Background: Periodontitis and oral pathogenic bacteria can contribute to the development of rheumatoid arthritis (RA). A connection between serum antibodies to Porphyromonas gingivalis (P. gingivalis) and RA has been established, but data on saliva antibodies to P. gingivalis in RA are lacking. We evaluated antibodies to P. gingivalis in serum and saliva in two Swedish RA studies as well as their association with RA, periodontitis, antibodies to citrullinated proteins (ACPA), and RA disease activity.

Methods: The SARA (secretory antibodies in RA) study includes 196 patients with RA and 101 healthy controls. The Karlskrona RA study includes 132 patients with RA ≥ 61 years of age, who underwent dental examination. Serum Immunoglobulin G (IgG) and Immunoglobulin A (IgA) antibodies and saliva IgA antibodies to the P. gingivalis-specific Arg-specific gingipain B (RgpB) were measured in patients with RA and controls.

Results: The level of saliva IgA anti-RgpB antibodies was significantly higher among patients with RA than among healthy controls in multivariate analysis adjusted for age, gender, smoking, and IgG ACPA (p = 0.022). Saliva IgA anti-RgpB antibodies were associated with RA disease activity in multivariate analysis (p = 0.036). Anti-RgpB antibodies were not associated with periodontitis or serum IgG ACPA.

Conclusion: Patients with RA had higher levels of saliva IgA anti-RgpB antibodies than healthy controls. Saliva IgA anti-RgpB antibodies may be associated with RA disease activity but were not associated with periodontitis or serum IgG ACPA. Our results indicate a local production of IgA anti-RgpB in the salivary glands that is not accompanied by systemic antibody production.

Taguchi A, Tanaka R, Kakimoto N, Morimoto Y, Arai Y, Hayashi T, Kurabayashi T, Katsumata A, Asaumi J; Japanese Society for Oral and Maxillofacial Radiology. Clinical guidelines for the application of panoramic radiographs in screening for osteoporosis. Oral Radiol. 2021 Apr;37(2):189-208. doi: 10.1007/s11282-021-00518-6. Epub 2021 Feb 23. PMID: 33620644.

ABSTRACT

Osteoporotic fractures are associated with an increased risk of subsequent fractures, a higher rate of mortality, and incremental medical costs. Incidental findings, which include some measurements related to the mandibular inferior cortex and the alveolar trabecular bone pattern of the mandible determined on panoramic radiographs, are considered to be a useful tool for identifying asymptomatic individuals at risk of having osteoporosis and/or fragility fractures. We undertook a worldwide literature survey and present the following clinical recommendations. Postmenopausal female dental patients with a mandibular inferior cortical width of less than 3 mm on panoramic radiographs may be at risk of having low skeletal bone mineral density (BMD) or osteoporosis, but not fragility fractures. In addition, those with a severely eroded

mandibular inferior cortex may have an increased risk of having low skeletal BMD, osteoporosis, and fragility fractures. The alveolar trabecular bone pattern of the mandible might be useful for identifying female dental patients at risk of having fragility fractures, although further investigation is necessary to confirm this possibility. These incidental findings on panoramic radiographs, when used for identifying asymptomatic postmenopausal female patients at risk of having osteoporosis in general dental practice, may be helpful in reducing the incidence of first fractures, with a consequent reduction in the secondary fractures, medical costs, and mortality associated with osteoporotic fragility fractures, without incurring any additional cost.

Taguchi A, Urano T, Nakamura Y, Shiraki M. Increased Risk of Tooth Loss in Postmenopausal Women With Prevalent Vertebral Fractures: An Observational Study. JBMR Plus. 2023 Sep 28;7(12):e10822. doi: 10.1002/jbm4.10822. PMID: 38130772; PMCID: PMC10731137.

ABSTRACT

The association between prevalent fractures and tooth loss in postmenopausal women remains unclear. Herein, we investigated the association between prevalent vertebral and nonvertebral fractures, the number of teeth present at baseline, and the number of teeth lost during follow-up in postmenopausal Japanese women. This cross-sectional study enrolled 843 participants (mean age 68.3 years). The number of teeth at follow-up was evaluated in 655 women in this longitudinal study. The participants were divided into four groups according to their prevalent fracture status: no fractures, vertebral fractures alone, nonvertebral fractures alone, and both fracture types. After adjusting for covariates, Poisson regression analyses were performed to investigate differences in the number of teeth at baseline and that lost during the follow-up period among the four groups. Participants with prevalent vertebral fractures alone had significantly fewer teeth at baseline than those in participants without fractures or nonvertebral fractures alone ($p < 0.001$ for both). Furthermore, they lost more teeth during the follow-up period than did those with no fractures ($p = 0.021$) and tended to lose more teeth than did those with nonvertebral fractures alone or both prevalent fracture types. We observed no significant difference in the number of teeth lost between the participants with nonvertebral fractures alone and those with no fractures. Postmenopausal women with prevalent vertebral fractures may be at a higher risk of tooth loss. © 2023 The Authors. JBMR Plus published by Wiley Periodicals LLC on behalf of American Society for Bone and Mineral Research.

Takeuchi-Hatanaka K, Koyama Y, Okamoto K, Sakaida K, Yamamoto T, Takashiba S. Treatment resistance of rheumatoid arthritis relates to infection of periodontal pathogenic bacteria: a case-control cross-sectional study. Sci Rep. 2022 Jul 19;12(1):12353. doi: 10.1038/s41598-022-16279-z. PMID: 35854051; PMCID: PMC9296452.

ABSTRACT

Recent studies have shown that periodontitis is associated with rheumatoid arthritis (RA) and periodontal bacteria, such as Aggregatibacter actinomycetemcomitans (Aa) and Porphyromonas gingivalis (Pg) are involved in the pathogenesis of RA via citrullinated proteins. Smoking has also been shown to be involved in the pathogenesis of RA; however, the extent of this involvement is still poorly understood. In addition, RA and polymyalgia rheumatica (PMR) are sometimes difficult to differentiate; however, the relationship between PMR and the factors from smoking and periodontal bacteria is unclear. The aim of this study was to clarify the relationship between periodontal pathogenic bacterial infections and smoking in patients with RA or PMR. This case-control study included 142 patients with untreated RA or PMR. This study evaluated the serum antibody titers against periodontal pathogenic bacterial antigens and an anti-citrullinated peptide antibody (ACPA). In patients with RA, the relationship between antibody titers and disease activity of RA and response after 3 months of treatment was also investigated. Additionally, the effects of smoking were evaluated. Although there was no significant difference in serum antibody titer against periodontal pathogenic bacteria between the ACPA-positive RA group and the ACPA-negative PMR group, we found an association between the elevated antibody titer against Pg and the degree of ACPA value, especially between negative group and high-value positive group (≥ 100 U/mL). The antibody titers against Aa and Pg did not differ depending on disease activity score 28 (DAS28) at baseline; however, patients with high antibody titers had poor RA therapeutic response as judged by DAS28 after 3 months. We could not find any association between smoking and any of these parameters. Periodontal pathogenic bacteria, especially Pg, are associated with elevated ACPA levels. Our findings suggest that Pg and Aa infections interfere with the therapeutic response of RA.

Tamášová M, Macejová Ž, Dorko E, Timková S, Rimárová K, Diabelková J. Oral health and rheumatoid arthritis: a case control study. Cent Eur J Public Health. 2024 Dec;32(Supplement):78-84. doi: 10.21101/cejph.a7892. PMID: 39832152.

ABSTRACT

Objectives: Patients suffering from rheumatoid arthritis (RA) are repeatedly affected by oral diseases or problems, including dental caries and periodontal diseases (PDs). Periodontitis and rheumatoid arthritis are chronic inflammatory destructive diseases that share many similarities. The objective of this study was to assess oral health status including examination of hard dental tissues and periodontium in patients with rheumatoid arthritis and compare the results with healthy controls. We hypothesize some interlink between oral diseases and RA.

Methods: The epidemiological case-control study involved a total of 64 subjects divided into an experimental group (14 rheumatoid arthritis cases) and a control group (50 healthy individuals). Disease activity in the subjects with RA was assessed by the Disease Activity Score (DAS28). The number of Decayed, Missing and Filled Teeth (DMFT) and Community Periodontal Index of Treatment Need (CPITN) as a basic epidemiological oral health indexes were recorded. Finally, the data were analysed statistically.

Results: The RA patients (19.21, SD = 6.95) showed a higher caries index level measured by DMFT than the control group (17.72, SD = 6.19); the difference was not statistically significant ($U = 387.5$, $p = 0.547$). In terms of a mean number of teeth decayed ($p = 0.078$), teeth filled due to caries ($p = 0.397$), and missing teeth ($p = 0.126$), the two groups were not significantly different. In terms of periodontal health, a significant difference was observed between the two groups concerning the CPI maximum score ($p = 0.003$). The RA patients showed higher prevalence of periodontitis than the controls.

Conclusions: A complete basic oral examination, along with an oral health instruction including adequate oral and dental hygiene, is crucial to prevent dental caries and periodontal diseases and associated complications in RA patients, since they appear to be more vulnerable than the non-RA population.

Tan PR, Lee AJL, Zhao JJ, Chan YH, Fu JH, Ma M, Tay SH. Higher odds of periodontitis in systemic lupus erythematosus compared to controls and rheumatoid arthritis: a systematic review, meta-analysis and network meta-analysis. Front Immunol. 2024 Apr 2;15:1356714. doi: 10.3389/fimmu.2024.1356714. PMID: 38629069; PMCID: PMC11019014.

ABSTRACT

Introduction: Periodontitis as a comorbidity in systemic lupus erythematosus (SLE) is still not well recognized in the dental and rheumatology communities. A meta-analysis and network meta-analysis were thus performed to compare the (i) prevalence of periodontitis in SLE patients compared to those with rheumatoid arthritis (RA) and (ii) odds of developing periodontitis in controls, RA, and SLE.

Methods: Pooled prevalence of and odds ratio (OR) for periodontitis were compared using meta-analysis and network meta-analysis (NMA).

Results: Forty-three observational studies involving 7,800 SLE patients, 49,388 RA patients, and 766,323 controls were included in this meta-analysis. The pooled prevalence of periodontitis in SLE patients (67.0%, 95% confidence interval [CI] 57.0-77.0%) was comparable to that of RA (65%, 95% CI 55.0-75.0%) (p>0.05). Compared to controls, patients with SLE (OR=2.64, 95% CI 1.24-5.62, p<0.01) and RA (OR=1.81, 95% CI 1.25-2.64, p<0.01) were more likely to have periodontitis. Indirect comparisons through the NMA demonstrated that the odds of having periodontitis in SLE was 1.49 times higher compared to RA (OR=1.49, 95% CI 1.09-2.05, p<0.05).

Discussion: Given that RA is the autoimmune disease classically associated with periodontal disease, the higher odds of having periodontitis in SLE are striking. These results highlight the importance of addressing the dental health needs of patients with SLE.

Teterina A, Niratisairak S, Morseth B, Bolstad N. Diagnostic efficacy of radiomorphometric indices for predicting osteoporosis in a Norwegian population in the Tromsø Study: Tromsø7. Oral Surg Oral Med Oral Pathol Oral Radiol. 2023 Mar;135(3):444-455. doi: 10.1016/j.oooo.2022.10.039. Epub 2022 Nov 1. PMID: 36517373.

ABSTRACT

Objective: The aim of this study was to investigate the diagnostic efficacy of the radiomorphometric indices of mandibular cortical width (MCW) and mandibular cortical index (MCI) of cortical erosion for osteoporosis screening in adults (≥40 years) and older adults (≥65 years) to determine whether adding a fracture risk assessment tool (FRAX) would improve efficacy.

Study design: One observer measured MCW and assessed MCI on dental panoramic radiographs acquired for patients in the Tromsø study. These indices, alone and with FRAX scores, were evaluated for efficacy in predicting osteoporosis, which was diagnosed by bone density measurement at the femoral necks with dual-energy X-ray absorptiometry.

Results: MCW ≤3 mm and MCI indicating heavily eroded cortices (C3) had accuracies of 68.8% and 83.6%, respectively, in identifying osteoporosis. In females >65 years, MCW ≤3 mm and C3 produced higher sensitivities but lower specificities, with slightly lower accuracies (61.4% and 79.8%, respectively) compared with all females. The addition of FRAX scores >15% improved the accuracy of MCW ≤3 mm (81.7%) and C3 (87.9%), resulting in high specificity (86.6% and 95.4%). Combining MCW ≤3 mm or C3 with FRAX >15% increased the probabilities of detecting osteoporosis by increasing positive likelihood ratios.

Conclusions: MCW ≤3 mm or MCI C3, when combined with FRAX >15%, showed superior diagnostic efficacy, with high specificity in detecting females without osteoporosis.

Thilagar S, Theyagarajan R, Mugri MH, Bahammam HA, Bahammam SA, Bahammam MA, Yadalam PK, Raj AT, Bhandi S, Patil S. Periodontal Treatment for Chronic Periodontitis With Rheumatoid Arthritis. Int Dent J. 2022 Dec;72(6):832-838. doi: 10.1016/j.identj.2022.04.008. Epub 2022 Jul 7. PMID: 35810012; PMCID: PMC9676424.

ABSTRACT

Background: History of rheumatoid arthritis (RA) increases risk of periodontal diseases. A pro-inflammatory condition noted in periodontitis is considered a trigger for RA. Thus, periodontal treatment aimed at attenuating the pro-inflammatory state could aid in potentially reducing the risk of RA.

Aims: The objective of this research was to assess the effect of periodontal therapy on rheumatoid factor, Disease Activity Score-28, anti-citrullinated protein antibody, and C-reactive protein levels in patients with chronic periodontitis (CP) and RA.

Materials and methods: The sample consisted of 28 patients with CP and RA. The study was designed to be a double-blind, randomised controlled clinical study. The samples were randomly categorised to either the treatment group (n = 13) or the control group (n = 15). CP status (plaque index, bleeding on probing, probing pocket depth, clinical attachment loss), clinical rheumatologic status (Disease Activity Score), and biochemical status (C-reactive protein, anti-citrullinated protein antibody, and rheumatoid factor) were assessed at baseline and at follow-up at 8 to 12 weeks.

Results: The treatment group showed a highly statistically significant reduction in bleeding on probing (P < .005), probing pocket depth (P < .001), plaque index (P < .001), and C-reactive protein (P < .001); a gain in the clinical attachment loss (P < .001) and an improvement in Disease Activity Score-28 (P = .001) were observed at reassessment following nonsurgical periodontal treatment as compared to the control group. However, blood serum anti-citrullinated protein antibody (P = .002) and rheumatoid factor levels (P = .351) were found to increase from baseline to 8 to 12 weeks following subgingival scaling and root planing.

Conclusions: Reduction of inflammation in the periodontium by nonsurgical periodontal therapy did not reduce anti-citrullinated protein antibody and rheumatoid factor levels. However, it has shown improvement in periodontal conditions, and remarkable changes were observed in the clinical Disease Activity Score and C-reactive protein levels of individuals with RA.

Triantafyllopoulos G, Mitsea A, Rontogianni A, Korres D. Osteoporosis Screening Using Dental Panoramic Radiographs and Age at Menarche. Diagnostics (Basel). 2023 Feb 24;13(5):881. doi: 10.3390/diagnostics13050881. PMID: 36900024; PMCID: PMC10000716.

ABSTRACT

Since early detection of osteoporosis is essential, the development of an efficient and cost-effective screening model would be incredibly beneficial. The aim of this study was to evaluate the diagnostic accuracy of MCW and MCI indices from dental panoramic radiographs in combination with a new variable, age at menarche, for the detection of osteoporosis. The study enrolled 150 Caucasian women (aged 45 to 86) who met the eligibility criteria, had DXA scans of the left hip and lumbar spine (L2 to L4), and were classified as osteoporotic, osteopenic, or normal based on T-score. Two observers evaluated MCW and MCI indexes on panoramic radiographs. There was a statistically significant correlation between the T-score and MCI and MCW. In addition, age at menarche had a statistically significant correlation with T-score ($p = 0.006$). In conclusion, in the current study, MCW proved to be more effective in detecting osteoporosis when combined with age at menarche. Individuals with MCW less than 3.0 mm and age at menarche later than 14 years old should be referred for DXA since they present high risk of osteoporosis.

Wan Jiun T, Taib H, Majdiah Wan Mohamad W, Mohamad S, Syamimee Wan Ghazali W. Periodontal health status, Porphyromonas gingivalis and anti-cyclic citrullinated peptide antibodies among rheumatoid arthritis patients. Int Immunopharmacol. 2023 Nov;124(Pt B):110940. doi: 10.1016/j.intimp.2023.110940. Epub 2023 Sep 16. PMID: 37722261.

ABSTRACT

Porphyromonas gingivalis (P. gingivalis) is the primary periodontal pathogen involved in protein citrullination, which triggers the production of anti-cyclic citrullinated peptide (anti-CCP) antibodies, exacerbating rheumatoid arthritis (RA). This study aims to evaluate the amount of P. gingivalis and its association with anti-CCP antibodies in RA patients with periodontitis. This cross-sectional study involves 100 RA patients with a mean age of 52.36 (SD 13.90) years. Smokers and patients with other uncontrolled systemic diseases were excluded. Disease Activity Score-28 (DAS-28) was used to determine RA disease severity. Periodontal parameters were examined to determine periodontal status. Subsequently, plaque samples were collected from the subgingival periodontal pocket for assessment of P. gingivalis bacterial load using the loop-mediated isothermal amplification method. Blood samples (5 ml) were obtained from all participants to analyse anti-CCP antibody levels. Data was analysed by using SPSS version 24.0. Most participants were female (85.0%) and had low RA disease severity (62%). The mean RA disease duration was 7.77 (SD 6.3) years, with a mean DAS-28 of 3.17 (SD 1.0). Forty-seven per cent of participants had periodontitis, but all periodontal parameters were not associated with RA disease activity ($P = 0.38$). P. gingivalis bacterial load ranged from 10 to 109 copies/µl. Fifty-five per cent of the collected samples showed positive anti-CCP antibody levels, but no significant association was observed with the P. gingivalis bacterial load ($P = 0.58$). Considering the study's limitations, although periodontitis is prevalent among RA patients, there is a lack of association between P. gingivalis bacterial load and anti-CCP antibody levels, which should be investigated further.

Yang C, Hu Z, Wang L, Fang L, Wang X, Li Q, Xu L, Wang J, Liu C, Lin N. Porphyromonas gingivalis with collagen immunization induces ACPA-positive rheumatoid arthritis in C3H mice. Clin Immunol. 2024 Jan;258:109859. doi: 10.1016/j.clim.2023.109859. Epub 2023 Dec 6. PMID: 38065368.

ABSTRACT

The pathogenic anti-citrullinated protein antibodies (ACPA) are thought to play a vital role in the initiation and immune maintenance of rheumatoid arthritis (RA). However, it is noteworthy that ACPA is not a salient characteristic of any conventional RA animal model. Porphyromonas gingivalis (Pg) is the first microorganism identified to induce citrullination and a target of autoantibodies in early rheumatoid arthritis (RA). Thus, we employed C3H mice with specific MHC types and combined Pg infection with collagen immunity to develop an animal model of ACPA-positive RA. The resulting model exhibited citrullination characteristics, as well as pathological and immune cell changes. 1) Mice showed a significant increase in ACPA levels, and various organs and tissues exhibited elevated levels of citrullinated protein. 2) The mice experienced heightened pain, inflammation, and bone destruction. 3) The spleen and lymph nodes of the mice showed a significant increase in the proportion of Tfh-GCB cell subpopulations responsible for regulating autoantibody production. In conclusion, the C3H mouse model of Pg infection with collagen immunity demonstrated significant alterations in ACPA levels, citrullinated protein expression, and immune cell subpopulations, which could be a crucial factor leading to increased pain, inflammation, and bone destruction.

Yoo JE, Huh Y, Kim E, Park SH, Han K, Kim HS, Ahn JS, Park HS, Cho KH, Jun SH, Nam GE. Association between dental diseases and oral hygiene care and the risk of vertebral fracture: a nationwide cohort study. Osteoporos Int. 2024 Apr;35(4):635-644. doi: 10.1007/s00198-023-06983-5. Epub 2023 Dec 14. PMID: 38095696.

ABSTRACT

Periodontal disease and increased missing teeth were associated with incident vertebral fractures. In contrast, professional dental cleaning and frequent tooth brushing, was associated with a lower risk of vertebral fracture. Better oral hygiene care attenuated the risk associated with dental diseases.

Purpose: To investigate the association between oral health and the risk of vertebral fractures.

Methods: We included 2,532,253 individuals aged ≥40 years who underwent the Korean National Health Insurance Service health examinations in 2008 and followed up until December 31, 2017. We performed multivariable Cox proportional hazard regression analyses to evaluate the association between dental diseases and oral hygiene care and the risk of vertebral fractures.

Results: Over the 9.3-year median follow-up, 1.46% (n = 36,857) experienced vertebral fractures. Individuals with dental diseases had a higher risk of vertebral fracture than those without (hazard ratio [HR] 1.04, 95% confidence interval [CI]: 1.02-1.07 for periodontal diseases; 1.02, 1.00-1.05 for dental caries; 1.12, 1.05-1.20 for ≥15 missing teeth). Good oral hygiene care was associated with a lower vertebral fracture risk (HR 0.89, 95% CI: 0.86-0.91 for ≥1 time/year [vs. <1 time/year] of professional dental cleaning; 0.90, 0.87-0.93 for ≥2 times/day [vs. 0-1 time/day] of toothbrushing). The combined dental diseases was significantly associated

with an increased vertebral fracture risk, whereas combined oral hygiene care was associated with further risk reduction. Better oral hygiene care reduced vertebral fracture risk associated with dental diseases (all P <0.001).

Conclusion: Periodontal disease, dental caries, and an increased number of missing teeth were independently associated with higher risks for vertebral fractures. Conversely, improved oral hygiene care, such as personal dental cleaning and frequent tooth brushing, may modify vertebral fracture risks associated with dental disease.

Yu X, Mankia K, Do T, Meade J. Oral Microbiome Dysbiosis and Citrullination in Rheumatoid Arthritis. Adv Exp Med Biol. 2025;1472:185-199. doi: 10.1007/978-3-031-79146-8_12. PMID: 40111693.

ABSTRACT

Rheumatoid arthritis and periodontal diseases, both characterized by chronic inflammation, share many common risk factors, sparking interest in understanding their established association. Emerging research has shed light on the link between these two diseases potentially occurring through the intricate interactions within the oral microbiome. The enrichment of pathogenic strains and species in this microbial community disrupts the delicate balance of both ecological and immunological homeostasis with the host. Particular attention has been paid to the role of key pathogens, such as Porphyromonas gingivalis and Aggregatibacter actinomycetemcomitans, known for their immunomodulatory abilities. The generation of an autoimmune response against proteins modified by citrullination is known to be a key step in the pathogenesis of RA. Importantly, the bidirectional citrullination mediated by both host innate immune cells and oral bacteria generates citrullinated peptide neoepitopes, which may serve as potential triggers for the loss of tolerance and subsequent autoimmunity in susceptible individuals. This review highlights the importance of understanding the mechanisms through which oral microbiome dysbiosis and citrullination contribute to the onset and progression of RA. Insights into these mechanisms not only advance pathobiological understanding but also offer potential therapeutic targets. Furthermore, we discuss the potential impact of nonsurgical periodontal treatment in modifying disease progression or mitigating RA, underscoring the critical role of periodontal health in managing systemic inflammatory conditions.

Zhang J, Xu C, Gao L, Zhang D, Li C, Liu J. Influence of anti-rheumatic agents on the periodontal condition of patients with rheumatoid arthritis and periodontitis: A systematic review and meta-analysis. J Periodontal Res. 2021 Dec;56(6):1099-1115. doi: 10.1111/jre.12925. Epub 2021 Sep 12. PMID: 34514591.

ABSTRACT

Objective: To evaluate the influence of diverse anti-rheumatic agents on the periodontal condition and to provide clinical medication guidance for patients with rheumatoid arthritis (RA) and periodontitis.

Background: In recent years, the correlation between RA and periodontitis has become a hot research topic, but no medication recommendations for patients with RA and periodontitis are available at present.

Methods: The protocol of this review was registered in advance with PROSPERO (CRD42021248827). Electronic search and manual searches up to March 20, 2021 were conducted. The inclusion criteria for the studies were as follows: included patients diagnosed with periodontitis and RA submitted to anti-rheumatic agent therapy; with a control group receiving no anti-rheumatic agent therapy; with outcomes including at least one periodontal parameter. Probing depth (PD) and clinical attachment loss (CAL) were pooled using weighted mean difference (WMD) and 95% confidence intervals (CI) while gingival index (GI)/modified gingival index (MGI) was analyzed by standardized mean difference (SMD) and 95% CI.

Results: One thousand four hundred and seventy-eight studies potentially related to the aim of this review were screened, but only 463 patients from 14 studies were included in the qualitative analysis, and 146 patients from 4 studies were included in the meta-analysis. Statistically significant reductions were observed among the subjects who received anti-rheumatic agents for PD [WMD = -0.20; 95% CI (-0.33, -0.07); effect p = .003; I2 = 50%; p = .11], CAL [WMD = -0.4; 95% CI (-0.66, -0.15); effect p = .002; I2 = 57%; p = .07] and GI/MGI [SMD = -0.61;95% CI (-0.94, -0.27; effect p = .0004; I2 = 26%; p = .25]. Consistent with the above results, this systematic review produced promising results that PD, CAL, GI/MGI, and bleeding on probing (BOP) decreased when patients with RA and periodontitis were treated with conventional synthetic disease-modifying anti-rheumatic drugs (csDMARDs), anti-B lymphocyte agents, anti-IL-6R agents, or JAK inhibitors. PD and CAL declined after the administration of anti-TNF-α agents; most studies reported decreased GI/MGI and BOP, while 2 studies reported increased GI/MGI and BOP.

Conclusions: These results revealed that csDMARDs, anti-B lymphocyte agents, anti-IL-6R agents, anti-TNF-α agents, and JAK inhibitors had potential positive effects in improving the periodontal condition of patients with RA and periodontitis. However, future research is needed to elucidate whether anti-TNF-α agents have a side effect of increased gingival inflammation.

Zhao W, Liu C, Cui X, Chen Q. Immunological landscape of periodontitis and rheumatoid arthritis and their molecular crosstalk. Eur J Med Res. 2025 Feb 22;30(1):124. doi: 10.1186/s40001-025-02376-y. PMID: 39987090; PMCID: PMC11847375.

ABSTRACT

Background: The association between periodontitis (PT) and rheumatoid arthritis (RA) is well-established; however, the molecular mechanisms underlying this relationship remain poorly understood. This study aims to delineate shared genetic and molecular features between PT and RA to uncover potential common pathways involved in their pathogenesis.

Methods: Gene expression data sets for PT and RA were retrieved from the Gene Expression Omnibus (GEO) database. Differentially expressed genes (DEGs) and co-expressed gene modules were identified using weighted gene co-expression network analysis (WGCNA) and the DESeq2 package. Enrichment analyses, including KEGG and Gene Ontology (GO) pathways, as well as immune cell infiltration profiling, were performed to explore shared biological pathways. A protein-protein interaction (PPI) network was constructed to pinpoint key genes linking PT and RA. Functional assays were conducted by overexpressing the identified core gene, PTPRC, in MH7A cells via lentiviral transfection, followed by cell viability (CCK-8), migration, and invasion assays. In addition, transcription factor enrichment and connectivity map (cMAP) analyses were employed to identify common transcriptional regulators and potential therapeutic targets for both conditions.

Results: WGCNA and DESeq2 analyses revealed 154 shared DEGs between PT and RA, predominantly enriched in immune and inflammatory response pathways. PTPRC emerged as a pivotal shared gene, exhibiting significantly higher expression in PT patients compared to controls. In vitro assays confirmed that PTPRC overexpression enhanced fibroblast proliferation, migration, and invasion. Furthermore, transcription factor enrichment analysis and cMAP identified overlapping transcriptional regulators and potential pharmacological agents for both diseases.

Conclusions: This study provides novel insights into shared gene expression profiles and molecular mechanisms linking PT and RA, identifying PTPRC as a potential key regulator. These findings suggest that targeting PTPRC could offer therapeutic opportunities for RA driven by PT.

Zhou N, Zou F, Cheng X, Huang Y, Zou H, Niu Q, Qiu Y, Shan F, Luo A, Teng W, Sun J. Porphyromonas gingivalis induces periodontitis, causes immune imbalance, and promotes rheumatoid arthritis. J Leukoc Biol. 2021 Sep;110(3):461-473. doi: 10.1002/JLB.3MA0121-045R. Epub 2021 May 31. PMID: 34057740.

ABSTRACT

Periodontitis induced by bacteria especially Porphyromonas gingivalis (P. gingivalis) is the most prevalent microbial disease worldwide and is a significant risk factor for systemic diseases such as rheumatoid arthritis (RA). RA and periodontitis share similar clinical and pathologic features. Moreover, the prevalence of RA is much higher in patients with periodontitis than in those without periodontitis. To explore the immunologic mechanism of periodontitis involved in RA, we established a mouse model of periodontitis and then induced RA. According to the results of paw thickness, arthritis clinical score, arthritis incidence, microscopic lesion using H&E staining, and micro-CT analysis, periodontitis induced by P. gingivalis promoted the occurrence and development of collagen-induced arthritis (CIA) in mice. Furthermore, periodontitis enhanced the frequency of CD19+ B cells, Th17, Treg, gMDSCs, and mMDSCs, whereas down-regulated IL-10 producing regulatory B cells (B10) in CIA mice preinduced for periodontitis with P. gingivalis. In vitro stimulation with splenic cells revealed that P. gingivalis directly enhanced differentiation of Th17, Treg, and mMDSCs but inhibited the process of B cell differentiation into B10 cells. Considering that adoptive transfer of B10 cells prevent RA development, our study, although preliminary, suggests that down-regulation of B10 cells may be the key mechanism that periodontitis promotes RA as the other main immune suppressive cells such as Treg and MDSCs are up-regulated other than down-regulated in group of P. gingivalis plus CIA.

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Conclusiones destacadas

Conclusiones destacadas

1. Rol de Porphyromonas gingivalis (Pg) en la autoinmunidad
2. Efectos del tratamiento periodontal en AR
3. Microbioma oral y disbiosis como eje común
4. Interacción con terapias antirreumáticas
5. Biología molecular compartida
6. Osteoporosis y diagnóstico desde la boca
7. Otras enfermedades reumáticas: SLE y PMR
8. Estudios epidemiológicos clave

CONCLUSIONES GENERALES

Resumen Temático – Reumatología y Periodontitis

1. ROL DE PORPHYROMONAS GINGIVALIS (PG) EN LA AUTOINMUNIDAD

- **Citrulinación y producción de ACCPA**: P. gingivalis es el único patógeno conocido que posee PAD bacteriana, capaz de citrulinar proteínas humanas, generando autoantígenos implicados en AR.
- **Modelos animales**: Se ha logrado inducir AR en ratones C3H mediante infección con P. gingivalis + inmunización con colágeno, reproduciendo un modelo ACPA+ con destrucción ósea e inflamación intensa.
- **Anticuerpos salivales IgA anti-Pg (RgpB)**: Se han asociado con actividad de AR, aunque no necesariamente con periodontitis, sugiriendo producción local (glándulas salivares) como marcador de actividad reumática.

Implicación: Pg no solo inicia sino que puede perpetuar la autoinmunidad reumatoide, y su control podría ser una vía de tratamiento coadyuvante.

2. EFECTOS DEL TRATAMIENTO PERIODONTAL EN AR

- **Meta-análisis y umbrella reviews (Sheng 2025, Sun 2021)**: El tratamiento periodontal no quirúrgico mejora el DAS28, reduce CRP, ESR, dolor, rigidez y número de articulaciones inflamadas.
- **Estudios clínicos recientes (Silva 2025)**: En AR severa, el tratamiento periodontal mejora marcadores clínicos y serológicos como anti-CCP2.
- **Algunos efectos limitados**: Aunque el tratamiento mejora el estado clínico general, no siempre reduce títulos de ACCPA o FR (Thilagar 2022).

Implicación: El tratamiento periodontal debe integrarse en estrategias treat-to-target para pacientes con AR.

Existe documentación sólida que demuestra que el tratamiento de la periodontitis mejora la artritis reumatoide (AR), especialmente en términos de actividad clínica de la enfermedad y marcadores inflamatorios. Aquí te lo detallo con base en las referencias revisadas y validadas en el último documento:

EVIDENCIA DE QUE TRATAR LA PERIODONTITIS MEJORA LA ARTRITIS REUMATOIDE

Sheng et al., 2025 – Umbrella review

- Revisión de 9 estudios con análisis cualitativo y cuantitativo.
- **Conclusión**: El tratamiento periodontal no quirúrgico (NSPT) **reduce significativamente el DAS28** (índice de actividad de la AR), con diferencias medias de hasta −1.18 puntos.
- También se observaron reducciones en **PCR y VSG**, aunque con limitaciones metodológicas en algunos estudios.

Sun et al., 2021 – Meta-análisis

- Análisis de 9 estudios con datos combinados.
- **Resultados significativos** en:
  - ↓ DAS28
  - ↓ CRP
  - ↓ articulaciones dolorosas e inflamadas
  - ↓ rigidez matutina y VAS
- Implica una mejoría clínica medible de la AR tras tratamiento periodontal.

Silva et al., 2025 – Ensayo clínico

- En pacientes con AR severa, la terapia periodontal mejoró el **DAS28** y **redujo los niveles de anti-CCP2 IgG**.
- El efecto fue más claro en pacientes con periodontitis grave.

Efectos no observados en todos los marcadores

- **Thilagar et al., 2022**: Aunque se observó mejoría en CRP y DAS28 tras tratamiento periodontal, **los niveles de ACCPA y FR no se redujeron**, e incluso aumentaron ligeramente.
- Se sugiere que el efecto antiinflamatorio es más clínico que inmunológico, o que los autoanticuerpos pueden tardar más en descender.

Conclusión clínica

El tratamiento periodontal mejora significativamente la **actividad clínica de la AR** en muchos pacientes, sobre todo aquellos con periodontitis severa, aunque no siempre modifica los marcadores autoinmunes como ACCPA o FR. Esto **justifica la integración del tratamiento periodontal en estrategias reumatológicas tipo "treat-to-target"**, especialmente en pacientes con mal control o alta carga inflamatoria.

3. MICROBIOMA ORAL Y DISBIOSIS COMO EJE COMÚN

- **Revisión (Yu 2025)**: La disbiosis oral promueve pérdida de tolerancia inmunológica por citrulinación bacteriana y activación de células Th17, facilitando aparición de AR.
- **Colaboración bacterias-huésped**: Pg y Aa cooperan con neutrófilos y fibroblastos en la generación de neoepítopos autoinmunes.

Implicación: La composición del microbioma oral podría usarse como biomarcador temprano de riesgo en AR.

4. INTERACCIÓN CON TERAPIAS ANTIRREUMÁTICAS

- **Meta-análisis (Zhang 2021)**: Los agentes antirreumáticos (csDMARDs, anti-IL6R, anti-TNF, JAKi) mejoran los parámetros periodontales (CAL, PD, GI).
- **Posible efecto antiinflamatorio dual**: Algunos tratamientos sistémicos podrían también beneficiar la salud periodontal.

Implicación: Elegir tratamientos que mejoren ambos cuadros podría optimizar la atención integrada.

5. BIOLOGÍA MOLECULAR COMPARTIDA

- **Transcriptómica (Zhao 2025)**: Se identifican 154 genes compartidos entre AR y periodontitis. El gen PTPRC es clave, y su sobreexpresión promueve proliferación y migración de fibroblastos sinoviales.

Implicación: Podría surgir una diana terapéutica común para frenar la inflamación dual (oral y articular).

6. OSTEOPOROSIS Y DIAGNÓSTICO DESDE LA BOCA

- **OPT como herramienta diagnóstica (Taguchi 2021, Triantafyllopoulos 2023, Teterina 2023)**:
  - Reducción del grosor cortical mandibular (<3 mm) y patrón trabecular erosionado (MCI tipo C3) se asocian a bajo BMD.
  - El riesgo aumenta si se combina con FRAX >15% o menarquia tardía.
- **Asociación con pérdida dental (Taguchi 2023)** y fracturas vertebrales (Yoo 2024).

Implicación: Las OPT pueden usarse para cribado precoz de osteoporosis en mujeres postmenopáusicas, sin coste adicional.

7. OTRAS ENFERMEDADES REUMÁTICAS: SLE Y PMR

- **SLE y periodontitis (Tan 2024)**: Mayor prevalencia de periodontitis en pacientes con LES que en AR. SLE multiplica x2,6 el riesgo frente a controles.
- **PMR (Takeuchi 2022)**: Aunque no hay citrulinación evidente, la infección por Pg se asocia a menor respuesta terapéutica, lo que sugiere impacto indirecto.

Implicación: El vínculo entre enfermedad periodontal y autoinmunidad podría extenderse más allá de la AR.

8. ESTUDIOS EPIDEMIOLÓGICOS CLAVE

- **Yoo 2024** (2.5 millones de pacientes): La mala salud oral se asocia con mayor riesgo de fracturas vertebrales.
- **Tamášová 2024**: Los pacientes con AR muestran peor salud bucodental (más caries, peor CPI).

Implicación: La salud oral influye directamente en desenlaces óseos y sistémicos. Las políticas de prevención deberían ser compartidas por odontólogos y reumatólogos.

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Conclusiones destacadas individuales

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Conclusiones destacadas individuales

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AHMADI P, 2023

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Tema: Relación entre Porphyromonas gingivalis y la respuesta autoinmune en artritis reumatoide.

Contenido: Este trabajo revisa cómo la infección periodontal por P. gingivalis puede iniciar la autoinmunidad típica de la AR. El microorganismo degrada proteínas como fibrinógeno y α -enolasa mediante sus gingipainas, generando péptidos que son posteriormente citrulinados por la enzima PPAD. Estos neoantígenos se reconocen como extraños, estimulando la producción de anticuerpos anticitrulinados (ACCPA) incluso antes de la aparición clínica de la AR. Además, P. gingivalis induce inflamación local, recluta células inmunes, promueve la muerte celular (anoikis, NETosis) y la liberación de antígenos intracelulares como PADs, vimentina o enolasa, amplificando la respuesta inmune. También interfiere con la depuración de células apoptóticas y convierte fragmentos de IgG en posibles autoantígenos, contribuyendo a la formación de factor reumatoide (RF).

Resumen: P. gingivalis puede inducir autoinmunidad mediante citrulinación y ruptura de tolerancia inmunológica, impulsando la aparición de AR.

ALARCÓN-SÁNCHEZ MA, 2024

https://pubmed.ncbi.nlm.nih.gov/38415821/

Tema: Eje CX3CL1/CX3CR1 como biomarcador inflamatorio común en periodontitis y AR.

Contenido: Esta revisión sistemática analiza estudios observacionales sobre la expresión de los quimioatrayentes CX3CL1 y su receptor CX3CR1 en sujetos con periodontitis y/o AR. Se recopilan datos de seis estudios con 379 participantes, donde se evaluaron muestras de fluido crevicular, saliva, biopsias gingivales y suero. Se observa un incremento en los niveles de estas moléculas inflamatorias en los pacientes con ambas enfermedades en comparación con los controles sanos. Esto sugiere que el eje CX3CL1/CX3CR1 podría actuar como un vínculo inflamatorio común y potencial marcador diagnóstico o pronóstico.

Resumen: Los niveles elevados de CX3CL1/CX3CR1 podrían reflejar actividad inflamatoria compartida en periodontitis y AR.

ASTUTI L, 2025

https://pubmed.ncbi.nlm.nih.gov/40422634/

Tema: Relación entre microorganismos periodontales y biomarcadores autoinmunes en AR.

Contenido: Esta revisión sistemática evalúa la correlación entre distintas especies bacterianas orales y niveles de ACPA, aCCP y RF en pacientes con AR y periodontitis. Se identifican asociaciones positivas entre P. gingivalis, A. actinomycetemcomitans, Prevotella_9, Peptococcus simiae, Leptotrichia spp., y autoanticuerpos característicos de la AR. Los datos provienen de análisis microbiológicos (RT-PCR, qPCR) y serológicos (ELISA). El estudio sugiere que estos microorganismos no solo están presentes en la enfermedad periodontal, sino que pueden participar activamente en la activación inmune sistémica.

Resumen: Diversas bacterias orales se asocian con mayor producción de autoanticuerpos en pacientes con AR.

BABADI F, 2025

https://pubmed.ncbi.nlm.nih.gov/39910587/

Tema: Calidad de vida oral en pacientes con AR.

Contenido: Este estudio transversal analiza la calidad de vida relacionada con la salud oral (OHRQoL) en 228 pacientes con AR. Se emplean cuestionarios validados (OHIP-14, GHQ, HAQ-DI) y exámenes clínicos dentales. Se encuentran correlaciones significativas entre peor calidad de vida y factores como edad, duración de la enfermedad, presencia de diabetes, hipertensión, dislipemia, anemia, tabaquismo y mayor número de dientes afectados (DMFT). Los resultados sugieren que la AR influye negativamente en la percepción oral, y que esta debería incluirse en el abordaje integral del paciente.

Resumen: La AR deteriora la calidad de vida oral, lo que justifica un enfoque integral del cuidado médico y odontológico.

BOLSTAD AI, 2023

https://pubmed.ncbi.nlm.nih.gov/37202856/

Tema: Riesgo aumentado de periodontitis en pacientes con AR en Noruega.

Contenido: Estudio de cohortes basado en registros nacionales con más de 300.000 sujetos. Se analiza la aparición de periodontitis en función de las visitas médicas por AR entre 2011 y 2017. Se observa que los pacientes con AR tienen un riesgo significativamente mayor de periodontitis, especialmente aquellos con mayor frecuencia de visitas (HR >1.5) o diagnóstico reciente. La periodontitis se identificó a través de códigos de tratamiento periodontales.

Resumen: Los pacientes con AR tienen hasta un 80 % más riesgo de padecer periodontitis, especialmente en fases activas de la enfermedad.

BOTERO JE, 2021

https://pubmed.ncbi.nlm.nih.gov/35431355/

Tema: Efectos de la terapia periodontal no quirúrgica en pacientes con y sin AR.

Contenido: Estudio prospectivo pre-post que compara 29 pacientes con AR y 21 sin AR sometidos a terapia periodontal básica. Ambos grupos mejoraron sus parámetros periodontales, pero solo el grupo con AR mostró una reducción de niveles séricos de ACPA y RF. Sin embargo, también se observó un aumento de la proteína C reactiva postratamiento, más marcado en AR. Los pacientes bajo tratamiento inmunosupresor mejoraron ligeramente más.

Resumen: La terapia periodontal no quirúrgica puede reducir biomarcadores autoinmunes en pacientes con AR.

BREWER RC, 2023

https://pubmed.ncbi.nlm.nih.gov/36812347/

Tema: Translocación bacteriana oral y activación inmune en AR.

Contenido: Estudio de transcriptómica combinada que identifica presencia de bacterias orales citrulinadas en sangre de pacientes con AR durante periodontitis activa. Estas bacteriemias intermitentes activan monocitos inflamatorios que también están presentes en articulaciones inflamadas. Se demuestra que los epítopos bacterianos citrulinados se unen a ACPAs hipermutados producidos por células plasmáticas sanguíneas en AR. Este proceso puede inducir epítopo spreading a antígenos humanos.

Resumen: La inflamación oral facilita la entrada de bacterias citrulinadas en sangre, activando autoanticuerpos en AR.

CARNEIRO MC, 2025

https://pubmed.ncbi.nlm.nih.gov/39833640/

Tema: Cambios óseos mandibulares tras tratamiento antineoplásico: implicaciones clínicas.

Contenido: Estudio retrospectivo con 287 ortopantomografías. Se evalúan índices radiomorfológicos (MI, PMI, MCI) en tres grupos: cáncer de cabeza/cuello, cáncer en otras localizaciones, y controles. Todos los índices óseos fueron significativamente menores en pacientes oncológicos, lo que sugiere una pérdida

estructural del hueso mandibular tras terapia. Los hallazgos alertan sobre el riesgo de osteoporosis mandibular en este tipo de pacientes.

Resumen: Los pacientes oncológicos presentan deterioro óseo mandibular visible en ortopantomografías.

CHOI YY, 2021

https://pubmed.ncbi.nlm.nih.gov/33771373/

Tema: Estudio de cohortes emparejadas entre periodontitis y riesgo futuro de AR.

Contenido: En una cohorte de más de 690.000 adultos coreanos sin diagnóstico previo de AR, se comparó a quienes desarrollaron periodontitis con controles emparejados. Durante 11 años de seguimiento, se observó un aumento del riesgo de AR en el grupo con periodontitis (HR ajustado = 1.09). La asociación fue estadísticamente significativa.

Resumen: La periodontitis se asocia a mayor riesgo de desarrollar AR en estudios longitudinales poblacionales.

DAMANAKI A, 2024

https://pubmed.ncbi.nlm.nih.gov/39767792/

Tema: Utilidad de índices radiográficos para detectar osteoporosis y pérdida dental.

Contenido: Estudio retrospectivo que evalúa la asociación entre osteoporosis, pérdida ósea alveolar, pérdida dentaria e índices radiográficos como MI, PMI y MCI. Los pacientes osteoporóticos muestran menor densidad mandibular y mayor prevalencia del patrón cortical poroso (MCI C3). Estos índices podrían servir como herramienta auxiliar para detectar pacientes de riesgo desde la radiografía dental.

Resumen: Ciertos patrones radiográficos mandibulares permiten identificar pacientes con riesgo de osteoporosis.

DE PABLO P, 2023

Tema: Impacto de la terapia periodontal intensiva sobre la actividad de la AR.

Contenido: Estudio piloto aleatorizado (OPERA trial) que comparó terapia periodontal intensiva inmediata vs. diferida en 60 pacientes con AR activa y periodontitis. Se midieron parámetros periodontales (PISA, profundidad de sondaje) y de actividad de la AR (DAS28-CRP, ecografía articular). La terapia intensiva redujo tanto la inflamación periodontal como los indicadores clínicos de la AR, aunque no logró resolver completamente la inflamación gingival en todos los casos.

Resumen: La terapia periodontal puede mejorar simultáneamente la salud oral y la actividad clínica de la AR.

DE SMIT MJ, 2021

Tema: Efectos del tratamiento antirreumático sobre el estado periodontal.

Contenido: Estudio longitudinal en pacientes con AR tratados con metotrexato (MTX) o anti-TNF + MTX. Aunque el tratamiento redujo los marcadores inflamatorios sistémicos (PCR, VSG, DAS28), no se observó mejora en la superficie inflamada periodontal (PISA). Se concluye que los fármacos antirreumáticos no impactan de forma relevante en el estado periodontal.

Resumen: MTX y anti-TNF mejoran la AR pero no influyen en la enfermedad periodontal.

DUNCEA I, 2024

Tema: Relación entre densidad mineral ósea mandibular y osteoporosis sistémica.

Contenido: En 97 mujeres postmenopáusicas se midió la BMD en mandíbula, columna lumbar, cadera y cuello femoral mediante DEXA. Las mujeres con osteoporosis mostraron menor densidad mandibular. Se observaron correlaciones significativas entre la BMD mandibular y las demás localizaciones, lo que sugiere su valor como indicador auxiliar.

Resumen: La densidad ósea mandibular se correlaciona con la osteoporosis general en mujeres postmenopáusicas.

EEZAMMUDDEEN NN, 2023

Tema: Influencia de la periodontitis en niveles de autoanticuerpos en AR.

Contenido: Revisión sistemática de 29 estudios observacionales sobre niveles de ACPA y RF en pacientes con AR con y sin periodontitis. Se encontró mayor seropositividad y niveles más altos de ACPA y RF en presencia de periodontitis, aunque con heterogeneidad entre estudios. Pocos datos sobre saliva y fluido crevicular.

Resumen: La periodontitis se asocia a niveles más altos de autoanticuerpos en pacientes con AR.

GABARRINI G, 2020

Tema: Localización de proteínas en P. gingivalis y su rol en AR.

Contenido: Revisión sobre los mecanismos de secreción y localización de proteínas en P. gingivalis, incluyendo las implicadas en citrulinación. Se analizan tres cepas de referencia y cuatro aislados clínicos. Se destaca cómo la enzima PPAD y otras proteínas de membrana pueden inducir formación de autoanticuerpos en AR.

Resumen: La localización y secreción de proteínas de P. gingivalis son claves en su papel autoinmune.

GONZÁLEZ-FEBLES J, 2021

Tema: Revisión del vínculo biológico y terapéutico entre periodontitis y AR.

Contenido: Síntesis actualizada de los mecanismos inmunológicos que vinculan ambas enfermedades, destacando el rol de P. gingivalis y A. actinomycetemcomitans en la citrulinación. Se discuten estudios de intervención que sugieren beneficios de la terapia periodontal en pacientes con AR.

Resumen: La terapia periodontal podría influir positivamente en la evolución de la AR.

HEUCHERT J, 2024

Tema: Utilidad diagnóstica de índices mandibulares para detectar osteoporosis.

Contenido: Revisión y metaanálisis de 64 estudios que evalúan la precisión de índices radiomorfológicos mandibulares (MCI, MCW, PMI) respecto a DEXA. El MCW ≤ 3 mm presentó la mejor combinación sensibilidad-especificidad (~0.7–0.8). MCI es menos fiable por subjetividad.

Resumen: Índices mandibulares pueden servir como cribado de osteoporosis, pero no como diagnóstico definitivo.

HUANG Y, 2021

Tema: Eficacia de la terapia periodontal no quirúrgica en AR.

Contenido: Metaanálisis de 7 ECA que comparan la respuesta clínica al raspado en pacientes con periodontitis, con y sin AR. No se observaron diferencias significativas en los índices clínicos entre ambos grupos, aunque sí mejoras parciales a los 3–6 meses.

Resumen: La AR no afecta la eficacia de la terapia periodontal no quirúrgica.

HUSSEIN M, 2023

Tema: Relación entre AR, periodontitis y pérdida dentaria funcional.

Contenido: Estudio transversal de base poblacional (NHANES 2009–2014). La AR se asoció con mayor prevalencia de dentición no funcional (OR 1.8), pero no con mayor prevalencia de periodontitis una vez ajustados los factores de confusión.

Resumen: La AR se relaciona con pérdida funcional de dientes, pero no con mayor periodontitis al ajustar confusores.

INCHINGOLO F, 2023

Tema: Efectos recíprocos de NSPT y fármacos antirreumáticos.

Contenido: Revisión sistemática de 49 estudios (10 ECA) sobre la influencia del tratamiento periodontal en la AR y viceversa. NSPT puede reducir actividad de la AR (DAS28, ACPA, PCR) y los DMARDs podrían mejorar indicadores periodontales, aunque los resultados son heterogéneos.

Resumen: NSPT y DMARDs pueden tener efectos beneficiosos cruzados entre AR y periodontitis.

KANG HS, 2024

Tema: Asociación entre periodontitis crónica y riesgo de AR en cohorte coreana.

Contenido: Estudio caso-control anidado con más de 510.000 individuos. La historia de periodontitis en los 2 años previos al diagnóstico se asoció a mayor riesgo de desarrollar AR (OR 1.12), sobre todo en mujeres, ancianos y personas con comorbilidades. Esta relación persistía incluso en no fumadores o normopeso.

Resumen: Una exposición prolongada a periodontitis podría aumentar el riesgo de desarrollar AR, independientemente del estilo de vida.

KAVERI A, 2024

Tema: Impacto del tratamiento periodontal no quirúrgico sobre la actividad de AR.

Contenido: Estudio prospectivo en 60 pacientes con AR y periodontitis bajo DMARD. Tras 3 meses, el grupo tratado mostró mejoras significativas en DAS28, VAS, ESR y recuento articular respecto al control. También mejoraron los parámetros periodontales.

Resumen: El tratamiento periodontal redujo marcadores inflamatorios y mejoró la clínica de AR, incluso en pacientes bajo tratamiento antirreumático.

KINDSTEDT E, 2025

Tema: Anticuerpos anti-gingipainas y pérdida ósea alveolar en periodontitis.

Contenido: En 478 pacientes con periodontitis, los anticuerpos anti-Rgp se asociaron con inflamación periodontal y pérdida ósea, pero no con niveles de ACPA. No se halló relación clara con AR tras ajustar por edad y tabaco.

Resumen: Anti-Rgp identifica subgrupos con pérdida ósea severa, pero no predice autoinmunidad tipo AR.

KOBAYASHI T, 2015

Tema: Papel de las citoquinas en el vínculo periodontitis–AR.

Contenido: Revisión que destaca la sobreproducción de TNF-α e IL-6 en ambas patologías. El tratamiento con bloqueadores de TNF o IL-6 puede mejorar la inflamación periodontal en pacientes con AR.

Resumen: TNF-α e IL-6 son nexos patogénicos clave entre AR y enfermedad periodontal.

KOBAYASHI T, 2023

Tema: Bacterias periodontopáticas como posibles factores de riesgo para AR.

Contenido: Revisión de 10 años que analiza estudios animales y clínicos sobre el rol de P. gingivalis y A. actinomycetemcomitans en la aparición o agravamiento de la AR. También se recogen estudios que muestran mejora clínica tras tratamiento periodontal.

Resumen: Las bacterias periodontales podrían desencadenar o agravar la AR, y su control mejorar la evolución.

KONIG MF, 2015

Tema: Citrulinación y respuesta inmune frente a PPAD de P. gingivalis.

Contenido: Se analiza el comportamiento bioquímico de PPAD. Aunque no se autocitrulina in vivo, genera antígenos reconocidos por el sistema inmune. Curiosamente, pacientes con AR y periodontitis presentaban niveles más bajos de anti-PPAD, lo que sugiere posible efecto protector.

Resumen: Anti-PPAD no está ligado a actividad de AR, pero podría reflejar mecanismos inmunes protectores frente a periodontitis.

KREHER D, 2023

Tema: Caries dental en adultos con AR.

Contenido: Revisión sistemática de 16 estudios. La mayoría muestran mayor prevalencia de caries en pacientes con AR respecto a controles. Se usó el índice DMFT. No se evaluó localización ni actividad de la caries.

Resumen: La AR se asocia a mayor frecuencia de caries; se recomienda un enfoque odontológico preventivo y coordinado.

KRUTYHOŁOWA A, 2022

Tema: Revisión sobre los factores bacterianos y del huésped que vinculan la periodontitis con la artritis reumatoide.

Contenido: Este artículo revisa evidencias clínicas, epidemiológicas y serológicas que relacionan la periodontitis con la severidad y progresión de la artritis reumatoide (AR), a pesar de su diferente etiología. Se discuten factores genéticos y ambientales compartidos, y se destaca el papel de Porphyromonas gingivalis como nexo entre ambas enfermedades. Esta bacteria produce una enzima (peptidilarginina deiminasa, PAD) capaz de citrulinar proteínas, un proceso clave en la formación de anticuerpos anti-proteínas citrulinadas (ACPA), característicos de la AR. La hipótesis es que la infección periodontal, al inducir estas modificaciones inmunogénicas, podría participar en la ruptura de la tolerancia inmune y el inicio de la enfermedad reumatoide.

Resumen: La periodontitis podría participar en el origen inmunológico de la AR, especialmente por la acción de P. gingivalis y su enzima PAD.

LU J, 2025

Tema: Papel del microbioma intestinal y oral y sus vesículas en la AR.

Contenido: Revisión sobre cómo P. gingivalis, A. actinomycetemcomitans y Prevotella spp. podrían activar respuestas inmunes en mucosas. Las vesículas extracelulares bacterianas (bEVs) podrían mediar inflamación a distancia.

Resumen: El microbioma y sus vesículas podrían actuar como disparadores clave de la AR desde la boca y el intestino.

MALCOLM J, 2024

Tema: Respuestas inmunes aberrantes en cavidad oral y su relación con AR.

Contenido: Discusión sobre cómo la respuesta adaptativa frente al microbioma oral puede contribuir a la inflamación sistémica. Se analizan posibles mecanismos de escape inmune y nuevas vías terapéuticas.

Resumen: Comprender la inmunidad oral podría ser clave para prevenir o tratar la AR.

MARRUGANTI C, 2025

Tema: Terapia combinada para psoriasis y periodontitis en modelo murino.

Contenido: En un modelo experimental con ratones que simula periodontitis inducida por ligadura y psoriasis inducida por imiquimod, se evaluó el efecto de la terapia periodontal sola, el uso de inhibidores del TNF-α , y su combinación. Los ratones con ambas enfermedades tratados con ambas terapias mostraron una reducción significativa del engrosamiento epidérmico, del infiltrado inflamatorio y de la pérdida ósea. También disminuyeron los niveles sistémicos de IL-6 y IL-17A.

Resumen: La combinación de tratamiento periodontal e inhibidores del TNF-α potencia la mejora sistémica e inflamatoria en casos comórbidos de psoriasis y periodontitis.

MARRUGANTI C, 2024

Tema: Asociación bidireccional entre periodontitis y psoriasis en ratones.

Contenido: Se usaron cuatro grupos de ratones para evaluar cómo la periodontitis afecta a la psoriasis y viceversa. Los ratones con ambas condiciones mostraron mayor destrucción ósea, inflamación dérmica e incremento de citoquinas inflamatorias. La psoriasis aumentó la pérdida ósea periodontal y la periodontitis exacerbó la inflamación cutánea, sugiriendo una retroalimentación negativa entre ambas.

Resumen: Periodontitis y psoriasis se refuerzan mutuamente en modelos experimentales mediante inflamación sistémica.

MARTU MA, 2021

Tema: Efectos de tratamientos antirreumáticos clásicos y novedosos sobre el periodonto.

Contenido: Revisión narrativa que analiza cómo distintas clases de fármacos usados en AR —AINEs, corticoides, DMARDs biológicos y no biológicos— y nuevas estrategias terapéuticas (inhibidores de MMPs, bloqueadores de TLR, células madre, etc.) pueden influir sobre el periodonto. Se destaca el desconocimiento aún existente sobre el efecto inmunomodulador periodontal de estas terapias, así como la necesidad de un abordaje personalizado.

Resumen: Los tratamientos antirreumáticos pueden afectar el periodonto, pero sus mecanismos siguen poco explorados.

MEHDIPOUR A, 2022

Tema: Calidad de vida oral y caries en pacientes con AR.

Contenido: En este estudio observacional, pacientes con AR mostraron peor calidad de vida relacionada con salud oral (según OHIP-14), mayor índice de caries (DMFT) y más dientes perdidos comparados con controles sanos, pese a similar nivel educativo y sociodemográfico. No hubo diferencia en GOHAI.

Resumen: Los pacientes con AR presentan más caries y peor calidad de vida oral que la población general.

MEHDIPOUR A, 2025

Tema: Microbiota y caries en pacientes con lupus o AR.

Contenido: Estudio transversal que comparó el perfil microbiano supragingival y la caries en pacientes con lupus, AR y controles. AR y lupus se asociaron con mayor número de colonias de Streptococcus mutans, Lactobacillus spp. y Candida albicans. El grupo con lupus mostró mayor relación entre severidad de enfermedad y carga microbiana.

Resumen: AR y lupus alteran el perfil microbiano oral y se asocian con mayor riesgo de caries.

MOENTADJ R, 2021

Tema: Microbiota oral y artritis inducida en ratones.

Contenido: Se identificó una especie nueva (S. parasalivarius) enriquecida en pacientes con AR. Sus polisacáridos peptidoglicanos (SCW) inducen producción de TNF e IL-6 y provocan artritis crónica en ratones SKG. Esto sugiere que la disbiosis oral puede contribuir a la autoinmunidad articular mediante productos bacterianos proinflamatorios.

Resumen: Ciertas bacterias orales en AR pueden inducir artritis en modelos animales por mecanismos inflamatorios.

MUPPARAPU M, 2023

Tema: Detección de osteopenia y osteoporosis mediante ortopantomografía.

Contenido: La revisión describe cómo los cambios en la cortical mandibular y la trabeculación ósea en ortopantomografías pueden servir para detectar precozmente osteopenia/osteoporosis. Se resaltan los avances digitales que permiten una mejor visualización, y se plantea su uso como herramienta de cribado especialmente en personas asintomáticas.

Resumen: Las ortopantomografías pueden ayudar a identificar riesgo de osteoporosis mediante cambios mandibulares.

NAKAJIMA Y, 2025

Tema: Anticuerpos frente a P. gingivalis y eficacia del tratamiento periodontal en AR.

Contenido: Pacientes con AR tratados precozmente con terapia periodontal mejoraron más si además tenían títulos altos de anticuerpos IgG frente a P. gingivalis. La mejora se midió mediante DAS28-CRP en los primeros 3 meses y se mantuvo al año. El momento de inicio de la terapia también fue determinante.

Resumen: El efecto del tratamiento periodontal en AR mejora si se inicia pronto y hay respuesta inmunitaria frente a P. gingivalis.

OLIVEIRA SR, 2023

Tema: Efecto del metotrexato y tratamiento periodontal sobre la microbiota oral-intestinal.

Contenido: Estudio de cohorte que midió cambios en microbiota oral e intestinal de pacientes con AR tras metotrexato (MTX) y tratamiento periodontal no quirúrgico (NSPT). MTX redujo la diversidad oral; NSPT aumentó la riqueza microbiana. Ambos modificaron la beta diversidad oral, pero solo NSPT impactó en el estado periodontal.

Resumen: MTX y NSPT alteran la microbiota oral-intestinal, pero solo la terapia periodontal mejora la salud bucal.

OSANAI H, 2024

Tema: Capacidad de estudiantes para detectar osteoporosis en radiografías panorámicas.

Contenido: 113 estudiantes clasificaron la cortical mandibular en ortopantomografías de mujeres posmenopáusicas. El 18% mostró concordancia con expertos. La sensibilidad fue superior al cuestionario OSTA. Esto sugiere que con formación mínima, los dentistas pueden colaborar en la detección precoz de osteoporosis desde imágenes dentales.

Resumen: Dentistas jóvenes pueden detectar signos de osteoporosis en ortopantomografías mejor que herramientas de cribado estándar.

PERRICONE, 2019

Tema: Relación entre Porphyromonas gingivalis y artritis reumatoide.

Contenido: Este artículo revisa cómo P. gingivalis, un patógeno clave en periodontitis, puede desencadenar o agravar la artritis reumatoide (AR) mediante la citrulinación de proteínas, un proceso clave en la producción de autoanticuerpos como los ACPA. También se aborda cómo esta bacteria activa otras vías inflamatorias como la NETosis, la osteoclastogénesis y la respuesta Th17, todas asociadas a daño óseo y sistémico. Estudios en modelos murinos demuestran que la infección por P. gingivalis puede inducir o empeorar la AR.

Resumen: P. gingivalis favorece la autoinmunidad en AR mediante citrulinación y otras vías inflamatorias, mostrando un rol patogénico relevante.

PETIT, 2024

Tema: Efecto de los tratamientos antirreumáticos en la periodontitis.

Contenido: Esta revisión sistemática analiza cómo diferentes tratamientos para la AR (AINE, corticoides, csDMARD, bDMARD, MTX) afectan al estado periodontal. Los AINE y los corticosteroides tienen impacto limitado. Los bDMARD mejoran inflamación gingival y profundidad de sondaje en estudios de hasta 6 meses, pero sin efecto a largo plazo. La combinación de inhibidores de TNF con MTX podría empeorar la inflamación gingival.

Resumen: Algunos antirreumáticos pueden mejorar la salud periodontal, pero la combinación TNF+MTX podría empeorarla.

POIANĂ, 2024

Tema: Densidad ósea mandibular y CBCT en mujeres postmenopáusicas.

Contenido: Se estudió a 104 mujeres postmenopáusicas mediante CBCT y DXA para correlacionar índices mandibulares con densidad ósea. Se hallaron correlaciones moderadas positivas entre los índices A, M y P y las mediciones de densidad ósea y TBS, sugiriendo utilidad diagnóstica de estos indicadores.

Resumen: Los índices mandibulares en CBCT pueden ayudar a detectar baja densidad ósea en mujeres postmenopáusicas.

POIANĂ, 2024

Tema: Valor de CBCT en cribado de masa ósea baja.

Contenido: En 104 mujeres, se compararon índices mandibulares derivados de CBCT con DXA y TBS. El CTMI y CTI(S) mostraron correlación moderada con TBS y T-score. Los índices tuvieron buena sensibilidad pero baja especificidad.

Resumen: CBCT ofrece una herramienta útil para detectar pérdida ósea, con especial valor en planificación de implantes.

POPOCA-HERNÁNDEZ, 2024

Tema: Efecto del tratamiento periodontal no quirúrgico en mujeres con AR.

Contenido: Estudio en 30 mujeres con AR que recibieron tratamiento periodontal no quirúrgico. A las 12 semanas, mejoraron los índices periodontales, DAS28, CRP, ESR y niveles de calprotectina. El tratamiento periodontal se mostró eficaz en reducir inflamación sistémica.

Resumen: La terapia periodontal reduce biomarcadores inflamatorios y mejora la actividad clínica en AR.

POSADA-LÓPEZ, 2023

Tema: Asociación clínica entre periodontitis y AR.

Contenido: En 75 pacientes distribuidos en 3 grupos, no se encontró asociación significativa entre parámetros periodontales y AR. Los niveles más altos de anticuerpos anti-CCP se observaron en pacientes con AR sin periodontitis. Los parámetros periodontales mostraron correlación negativa con marcadores bioquímicos de AR.

Resumen: No se halló correlación positiva entre periodontitis y actividad de AR en esta cohorte.

POSADA-LÓPEZ, 2022

Tema: Efecto del tratamiento periodontal en calidad de vida y RA.

Contenido: En 52 pacientes, se evaluaron parámetros periodontales y escalas de calidad de vida antes y después del tratamiento periodontal no quirúrgico. Aunque el DAS-28 no cambió, se mejoraron variables como salud mental, angustia psicológica y percepción oral.

Resumen: La terapia periodontal mejora la calidad de vida en pacientes con AR, más allá de la actividad clínica.

RAITTIO, 2024

Tema: Estudio poblacional danés sobre bidireccionalidad AR-periodontitis.

Contenido: Estudio de cohortes con más de 3 millones de individuos en Dinamarca (2000–2017). El análisis muestra una asociación débil y no significativa entre periodontitis y desarrollo de AR, o viceversa, tras ajustar por factores como tabaquismo. El estudio sugiere que los vínculos observados previamente podrían deberse a confusión residual.

Resumen: En población general, no se confirma una relación causal relevante entre AR y periodontitis.

RAK, 2024

Tema: Meta-análisis de asociación entre periodontitis y AR.

Contenido: Revisión y metaanálisis de 13 estudios. Se encontraron asociaciones positivas entre AR y parámetros como pérdida de inserción clínica, pérdida dental y profundidad de sondaje. El índice de placa también fue mayor. Se destaca la necesidad de estudios más amplios y rigurosos.

Resumen: Hay asociación estadística entre AR y periodontitis, pero se requieren estudios más sólidos para confirmar causalidad.

SHEN, 2024

Tema: Relación causal entre fenotipo periodontal y artrosis de rodilla.

Contenido: Análisis de randomización mendeliana bidireccional. Se observó una relación causal significativa desde periodontitis hacia artrosis de rodilla, pero no a la inversa. Al ajustar por factores como tabaquismo o IMC, la asociación se debilitó.

Resumen: La periodontitis podría contribuir causalmente a la artrosis de rodilla, aunque la evidencia se diluye al considerar factores de confusión.

SHENG, 2025

Tema: Revisión de la eficacia del tratamiento periodontal no quirúrgico en la artritis reumatoide.

Contenido: Esta umbrella review analizó 9 revisiones sistemáticas para evaluar el efecto del tratamiento periodontal no quirúrgico (NSPT) en la actividad clínica de la AR. Aunque la calidad de los estudios fue variable, se encontraron mejoras en DAS28, PCR y VSG, con reducciones medias de DAS28 entre -0.38 y -1.18. Los resultados apoyan que el NSPT puede tener efecto beneficioso sobre la AR en pacientes con periodontitis.

Resumen: El NSPT podría reducir la actividad clínica de la AR, pero se necesitan estudios más rigurosos.

SILVA, 2025

Tema: Ensayo clínico sobre tratamiento periodontal en pacientes con AR.

Contenido: En 22 pacientes con AR y periodontitis, el tratamiento periodontal redujo significativamente el DAS28 y los niveles de anticuerpos anti-CCP2, especialmente en los casos con periodontitis severa. El beneficio no fue observado en pacientes con periodontitis moderada.

Resumen: El tratamiento periodontal mejora marcadores clínicos e inmunológicos en AR con periodontitis severa.

SUN, 2021

Tema: Meta-análisis sobre el impacto del tratamiento periodontal en la actividad de la AR.

Contenido: Este metaanálisis incluyó 9 estudios que evaluaron la eficacia del NSPT en indicadores de AR. Se observaron reducciones significativas en DAS28, cuentas articulares, CRP y VAS. Otros marcadores como TNF-α y IL-6 mostraron tendencia a la mejora, aunque sin significación estadística.

Resumen: El tratamiento periodontal mejora varios parámetros de actividad en pacientes con AR.

SVÄRD, 2023

Tema: Anticuerpos contra P. gingivalis en suero y saliva y su relación con la AR.

Contenido: En dos cohortes suecas, los niveles de IgA salivar anti-RgpB fueron más altos en pacientes con AR que en controles sanos, y se correlacionaron con la actividad de la enfermedad, pero no con la periodontitis ni con los ACPA séricos.

Resumen: La IgA salivar anti-P. gingivalis podría ser un marcador de actividad de AR más que de periodontitis.

TAGUCHI, 2021

Tema: Guía clínica sobre el uso de radiografías panorámicas para cribado de osteoporosis.

Contenido: La erosión de la cortical mandibular inferior (<3 mm) y el patrón trabecular alveolar en ortopantomografía pueden identificar a mujeres posmenopáusicas con bajo riesgo óseo. Las guías recomiendan usarlos como herramienta de cribado sin coste adicional.

Resumen: Radiografías panorámicas pueden detectar pérdida ósea en mujeres posmenopáusicas con riesgo de fractura.

TAGUCHI, 2023

Tema: Fracturas vertebrales y pérdida dental en mujeres posmenopáusicas.

Contenido: Estudio longitudinal con 843 mujeres mostró que las que tenían fracturas vertebrales previas presentaban menos dientes al inicio y perdían más durante el seguimiento. No se observó esta asociación con fracturas no vertebrales.

Resumen: Las fracturas vertebrales se asocian a mayor riesgo de pérdida dental en mujeres posmenopáusicas.

TAKEUCHI-HATANAKA, 2022

Tema: Infección por P. gingivalis y respuesta al tratamiento en pacientes con AR.

Contenido: En 142 pacientes con AR o PMR, niveles altos de anticuerpos contra P. gingivalis y Aa se asociaron con niveles elevados de ACPA y peor respuesta al tratamiento tras 3 meses. No hubo relación con tabaquismo.

Resumen: La infección por bacterias periodontales puede empeorar la respuesta al tratamiento en AR.

TAMÁŠOVÁ, 2024

Tema: Estudio caso-control sobre salud oral en pacientes con AR.

Contenido: En 14 pacientes con AR y 50 controles, no hubo diferencias en caries ni piezas perdidas, pero sí una mayor prevalencia de periodontitis y peores indicadores periodontales en el grupo con AR.

Resumen: La AR se asocia con mayor prevalencia de periodontitis aunque no con mayor caries dental.

TAN, 2024

Tema: Meta-análisis sobre periodontitis en LES comparado con AR y controles.

Contenido: La prevalencia de periodontitis fue del 67% en LES y 65% en AR. El riesgo fue significativamente mayor en ambos grupos respecto a controles, y superior en LES respecto a AR.

Resumen: El riesgo de periodontitis es más alto en pacientes con LES que en AR, y ambos superan a la población general.

TETERINA, 2023

Tema: Valor diagnóstico de índices mandibulares radiográficos para osteoporosis.

Contenido: En mujeres noruegas mayores de 65 años, el uso combinado de MCW ≤3 mm y MCI tipo C3 en ortopantomografía, junto con un FRAX >15%, ofreció alta especificidad para detectar osteoporosis.

Resumen: Los índices radiomorfométricos mandibulares mejoran el cribado de osteoporosis cuando se combinan con el FRAX.

THILAGAR S, 2022

Tema: Efecto del tratamiento periodontal no quirúrgico en pacientes con AR.

Contenido: Estudio clínico aleatorizado doble ciego con 28 pacientes con AR y periodontitis crónica. El grupo tratado mostró una mejora significativa en parámetros periodontales (sangrado, profundidad de sondaje, índice de placa) y en marcadores inflamatorios (PCR, DAS28), pero no se redujeron los niveles de anti-CCP ni del factor reumatoide, que incluso aumentaron.

Resumen: La terapia periodontal mejora parámetros clínicos y de inflamación general, aunque no reduce autoanticuerpos en pacientes con AR.

TRIANTAFYLLOPOULOS G, 2023

Tema: Detección de osteoporosis con OPT y edad de menarquia.

Contenido: En 150 mujeres, se correlacionaron medidas de índice cortical mandibular (MCW y MCI) con T-score de DXA. Se observó que MCW <3 mm combinado con menarquia tardía (>14 años) aumentaba el riesgo de osteoporosis. Proponen derivación a densitometría en estos casos.

Resumen: OPT + edad de menarquia permite detectar osteoporosis de forma sencilla y precoz en mujeres mayores.

WAN JIUN T, 2023

Tema: Relación entre P. gingivalis, anticuerpos anti-CCP y periodontitis en pacientes con AR.

Contenido: Estudio transversal con 100 pacientes con AR. Casi la mitad presentaban periodontitis, pero no se encontró asociación entre el recuento bacteriano de P. gingivalis y los niveles de anti-CCP. Tampoco hubo relación entre severidad periodontal y actividad reumática.

Resumen: Aunque la periodontitis es común en AR, P. gingivalis no se asoció a niveles de anti-CCP en este estudio.

YANG C, 2024

Tema: Modelo animal de AR inducida por P. gingivalis y colágeno.

Contenido: En ratones C3H, la combinación de inmunización con colágeno y exposición a P. gingivalis desencadenó una forma de AR ACPA-positiva. Se observó aumento de proteínas citrulinadas, dolor e inflamación articular, además de expansión de subpoblaciones inmunes responsables de la autoinmunidad.

Resumen: P. gingivalis puede desencadenar AR autoinmune en modelos animales al inducir citrulinación y producción de ACPA.

YOO JE, 2024

Tema: Asociación entre enfermedades dentales y fracturas vertebrales.

Contenido: En una cohorte nacional coreana (2,5 millones de adultos), la presencia de periodontitis, caries o pérdida de más de 15 dientes se asoció con mayor riesgo de fractura vertebral. Por el contrario, la limpieza dental profesional y cepillado frecuente redujeron ese riesgo.

Resumen: Mala salud oral aumenta el riesgo de fractura vertebral, pero la higiene frecuente y profesional puede mitigarlo.

YU X, 2025

Tema: Disbiosis oral y citrulinación en el desarrollo de AR.

Contenido: Revisión sobre el papel del microbioma oral y bacterias como P. gingivalis y A. actinomycetemcomitans en la generación de péptidos citrulinados y activación autoinmune. Estos procesos favorecen la pérdida de tolerancia inmunológica en individuos susceptibles y podrían modificarse con tratamiento periodontal.

Resumen: La disbiosis oral y la citrulinación bacteriana contribuyen al inicio de la AR; el control periodontal podría influir en su evolución.

ZHANG J, 2021

Tema: Efecto de fármacos antirreumáticos sobre la periodontitis.

Contenido: Revisión sistemática y metaanálisis de 14 estudios. Agentes como csDMARDs, anti-IL-6R, anti-TNF y JAKi reducen profundidad de sondaje, pérdida de inserción y sangrado en pacientes con AR y periodontitis. Algunas dudas con anti-TNF sobre inflamación gingival.

Resumen: Muchos fármacos para la AR también mejoran parámetros periodontales; puede aprovecharse esta doble acción terapéutica.

ZHAO W, 2025

Tema: Genes y rutas inmunes comunes entre periodontitis y AR.

Contenido: Análisis bioinformático de transcriptomas en GEO revela 154 genes diferencialmente expresados en ambas enfermedades, con PTPRC como gen clave. Su sobreexpresión aumentó proliferación y migración celular. Identificaron rutas inmunes comunes y posibles dianas farmacológicas compartidas.

Resumen: PTPRC emerge como regulador común entre AR y periodontitis, ofreciendo una nueva vía terapéutica conjunta.

ZHOU N, 2021

Tema: Efecto inmunológico de P. gingivalis en un modelo murino de AR.

Contenido: En ratones con AR inducida, la infección periodontal por P. gingivalis aumentó la gravedad de la enfermedad, modificando subpoblaciones inmunes: aumento de Th17 y MDSCs y descenso de células B10 reguladoras. Esta alteración inmunitaria podría explicar cómo la periodontitis agrava la AR.

Resumen: P. gingivalis promueve AR más severa al reducir células B reguladoras y desbalancear el sistema inmune.

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04

Preguntas y Respuestas

04

Preguntas y respuestas

1. ¿DE VERDAD UNA INFECCIÓN EN LA BOCA PUEDE AFECTAR A LAS ARTICULACIONES?

Sí. Aunque parezca que no tienen nada que ver, la encía inflamada por bacterias puede soltar sustancias que llegan a la sangre y activan defensas en todo el cuerpo. En personas con predisposición, esto puede acabar afectando a las articulaciones, provocando o empeorando enfermedades como la artritis reumatoide.

2. ¿Y CÓMO SE EXPLICA ESO? ¿CUÁL ES EL VÍNCULO?

El problema empieza por una bacteria de la boca que provoca que ciertas proteínas cambien de forma (se "citrulinen"). El cuerpo puede no reconocerlas como suyas, y entonces ataca por error... como si fueran un virus. Esa confusión puede terminar afectando a las articulaciones.

3. ¿QUÉ BACTERIAS ESTÁN IMPLICADAS EN ESTE LÍO?

La principal es una llamada "Porphyromona gingivalis". Vive en las bolsas de las encías cuando hay periodontitis. No solo destruye el hueso que sujeta el diente, sino que "dispara" el sistema inmunitario a lo loco. Es como un pirómano escondido en la boca que provoca fuegos en otras partes del cuerpo.

4. ¿ESO QUIERE DECIR QUE LA ARTRITIS PUEDE EMPEZAR POR LAS ENCÍAS?

En algunos casos, sí. Especialmente en personas con predisposición genética. No quiere decir que todo el que tenga periodontitis vaya a tener artritis, pero puede ser uno de los factores que la pongan en marcha.

5. ¿Y AL REVÉS? ¿TENER ARTRITIS AFECTA A LA BOCA?

Sí. La inflamación constante de la artritis puede empeorar la salud de las encías. Además, si las manos duelen, cuesta más cepillarse bien, y algunos medicamentos pueden secar la boca o reducir defensas. Todo eso facilita que aparezca o se agrave la periodontitis.

6. ¿ENTONCES SI ME CUIDO LA BOCA, MEJORO LA ARTRITIS?

¡Exacto! Varios estudios han demostrado que al hacer un tratamiento de encías (como una limpieza profunda), algunos pacientes con artritis mejoran: tienen menos dolor, menos inflamación y bajan los marcadores en sangre. No cura la artritis, pero puede ayudar a controlarla.

7. ¿Y AL REVÉS? ¿LOS MEDICAMENTOS PARA LA ARTRITIS MEJORAN LAS ENCÍAS?

En muchos casos sí. Sobre todo los que reducen la inflamación general, como algunos fármacos biológicos. Si hay menos inflamación en todo el cuerpo, las encías también lo agradecen. Por eso es tan importante que médico reumatólogo y dentista trabajen juntos.

8. ¿Y SI TENGO AMBAS COSAS? ¿ME TIENEN QUE TRATAR LOS DOS?

Sin duda. Es como si tienes goteras y humedad: si solo arreglas una cosa, la otra vuelve. El enfoque tiene que ser combinado: cuidar la boca y controlar la artritis a la vez.

9. ¿CUALQUIER LIMPIEZA DENTAL SIRVE PARA ESO?

No. Hablamos de limpiezas profesionales profundas, que se llaman raspajes o "curetajes", hechos por un dentista o higienista especializados. Y luego mantenerlo en casa con buena higiene diaria y controles regulares.

10. ¿ES VERDAD QUE SE PUEDE DETECTAR LA ARTRITIS DESDE LA SALIVA?

Se está investigando. Algunos anticuerpos típicos de la artritis se han encontrado también en la saliva. En el futuro podría servir para detectar precozmente esta enfermedad en pacientes con problemas de encías. Pero aún no es una prueba habitual.

11. ¿HAY DIFERENCIAS ENTRE HOMBRES Y MUJERES EN ESTE TEMA?

Sí. La artritis es más común en mujeres, especialmente después de la menopausia. Y también en ellas es más frecuente la pérdida de hueso en la boca. Así que se cruzan varios riesgos. Pero ojo: los hombres también deben cuidarse, porque si fuman o tienen mala higiene, su riesgo también es alto.

12. ¿CÓMO AFECTA EL TABACO EN TODO ESTO?

El tabaco lo empeora todo. Facilita que aparezca la periodontitis, reduce las defensas de la encía y también aumenta el riesgo de artritis o de que esta sea más agresiva. Además, dificulta que los tratamientos funcionen bien. Si fumas y tienes encías inflamadas... es hora de parar.

13. ¿INFLUYE EL TIPO DE BACTERIAS QUE TENGO EN LA BOCA?

Sí. No todas las bacterias son malas, pero cuando hay desequilibrio (lo que se llama disbiosis), aparecen las que sí lo son, como la P. gingivalis. Analizar el "microbioma oral" está de moda porque puede dar pistas de salud o enfermedad más allá de la boca.

14. ¿HAY ALGO QUE PUEDA HACER PARA EVITAR PROBLEMAS EN LAS ENCÍAS Y EN LAS ARTICULACIONES?

¡Claro! Lo básico: cepillarte bien al menos dos veces al día, usar seda o cepillos interdentales si te lo han recomendado, no fumar, ir al dentista una vez al año y seguir el tratamiento si ya tienes periodontitis. Y si tienes antecedentes familiares de artritis, cuidar tu boca aún más.

15. ¿QUÉ SÍNTOMAS ME DEBEN HACER SOSPECHAR?

En la boca: sangrado al cepillar, mal aliento, encías que se bajan o dientes que se mueven. En las articulaciones: rigidez por la mañana, dolor, hinchazón o dificultad para moverlas. Si notas cosas en ambas zonas, mejor consultar pronto.

16. ¿EL DENTISTA PUEDE DETECTAR SI TENGO RIESGO DE ARTRITIS?

No directamente, pero puede ver signos de inflamación oral avanzada y sugerir que consultes a tu médico si ve algo sospechoso. A veces, el dentista es el primero en levantar la alerta.

17. ¿CEPILLARSE BIEN Y USAR ENJUAGUES ES SUFICIENTE SI TENGO ENCÍAS INFLAMADAS?

No, no es suficiente si ya hay una enfermedad como la periodontitis. Aunque una buena higiene diaria es imprescindible, cuando hay inflamación persistente o sangrado, se necesita un diagnóstico y tratamiento profesionales. Los enjuagues y el cepillado ayudan a mantener, pero no curan una infección en las encías. Solo el dentista puede valorar y tratar correctamente.

18. ¿SI PIERDO DIENTES, DESAPARECE EL PROBLEMA?

No. Quitar los dientes no elimina la inflamación de fondo. El hueso y las encías pueden seguir inflamados. Además, la pérdida de dientes puede dificultar la alimentación y empeorar tu salud general. Lo ideal es tratar y mantener.

19. ¿Y SI YA TENGO PRÓTESIS O IMPLANTES? ¿TAMBIÉN ME AFECTA?

Sí. Los implantes pueden tener "periimplantitis", que es una inflamación parecida a la periodontitis pero en la encía que los rodea. Igual que los dientes, hay que cuidarlos bien. Y las prótesis removibles también pueden acumular bacterias si no se limpian bien.

20. ¿QUÉ PASARÍA SI TODOS CUIDÁSEMOS MEJOR NUESTRAS ENCÍAS?

Probablemente habría menos casos de artritis, menos dolores crónicos, menos necesidad de medicación fuerte y mejor calidad de vida. Parece algo pequeño, pero cuidar la boca puede ser una gran herramienta para cuidar el resto del cuerpo.

21. ¿QUÉ DIFERENCIA HAY ENTRE UNA ENCÍA INFLAMADA Y UNA ENFERMEDAD DE LAS ENCÍAS DE VERDAD?

Una encía inflamada puede ser algo puntual, como cuando te cepillas fuerte o se te clava algo. Pero cuando la inflamación no se va, y se acumula placa por debajo de la encía, hablamos ya de periodontitis. Ahí ya no solo sangra: se pierde hueso, y los dientes se aflojan. Y eso, además, puede afectar a otras partes del cuerpo, como las articulaciones.

22. ¿POR QUÉ LA PERIODONTITIS NO SUELE DOLER AUNQUE ESTÉ AVANZANDO?

Porque es una enfermedad silenciosa. La inflamación va por dentro, destruyendo poco a poco el hueso

que sujeta los dientes, pero sin dolor fuerte hasta que el daño ya es serio. Por eso es tan importante revisarse antes de que aparezcan los síntomas graves.

23. ¿LAS PASTILLAS PARA LA ARTRITIS PUEDEN PERJUDICAR A LA BOCA?

Algunas sí. Hay medicamentos que resecan la boca, reducen defensas o alteran la respuesta inflamatoria. Eso puede facilitar que la encía enferme. Por eso es clave que el dentista sepa qué tomas y que el médico tenga en cuenta tu salud bucal.

24. ¿POR QUÉ SE HABLA TANTO AHORA DEL VÍNCULO ENTRE ENCÍAS Y ENFERMEDADES? ¿ES ALGO NUEVO?

No es nuevo, pero en los últimos años ha habido muchísima investigación. Antes pensábamos que la boca y el cuerpo iban por separado. Ahora sabemos que están totalmente conectados, y que una boca enferma puede ser una bomba de relojería para todo el organismo.

25. ¿EL ESTRÉS TIENE ALGO QUE VER EN TODO ESTO?

Mucho. El estrés afecta a las defensas, empeora la inflamación y puede hacer que descuidemos nuestra higiene. Además, en enfermedades autoinmunes como la artritis, el estrés emocional puede empeorar los brotes. Así que sí: mente y boca también están conectadas.

26. ¿SE PUEDEN REGENERAR LAS ENCÍAS SI YA HE PERDIDO HUESO?

Hasta cierto punto, sí. Hay tratamientos avanzados con limpiezas profundas, regeneración con biomateriales y controles que pueden mejorar mucho el estado de las encías. Pero lo mejor es prevenir antes de que se pierda demasiado.

27. ¿LAS ENFERMEDADES DE ENCÍAS SE CONTAGIAN?

Las bacterias sí pueden transmitirse, sobre todo en parejas o familias que comparten cubiertos, besos, etc. Si una persona tiene periodontitis activa, es buena idea que los convivientes también se revisen.

28. ¿CEPILLAR MÁS FUERTE AYUDA A PREVENIR LA PERIODONTITIS?

No. Cepillar fuerte puede dañar la encía. Lo importante no es la fuerza, sino la técnica. Cepillado suave pero meticuloso, y complementar con hilo o cepillos interdentales. Lo que limpia es el tiempo y la constancia, no apretar.

29. ¿LOS COLUTORIOS SIRVEN PARA PREVENIR LA PERIODONTITIS?

Pueden ayudar como complemento, pero no sustituyen al cepillado ni a la limpieza entre dientes. Además, algunos colutorios deben usarse solo por un tiempo limitado. Lo principal siempre es la limpieza mecánica.

30. ¿PODRÍA ALGÚN DÍA HACERSE UNA PRUEBA DE SALIVA PARA SABER SI TENDRÉ ARTRITIS?

Todavía no, pero vamos camino de eso. Cada vez se investiga más el papel de la saliva como espejo del cuerpo. Quizá en el futuro una simple muestra de saliva pueda decirnos si hay riesgo de ciertas enfermedades, incluida la artritis. Pero de momento, lo mejor es cuidar la boca como forma de prevención.

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