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The Levels of C - Reactive Protein and Leptin Salivary Biomarkers in Relation to Periodontal Health Among Patients with Rheumatoid Arthritis

A thesis

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Abstract

Back ground: Rheumatoid arthritis is a chronic inflammatory disease associated with destruction of joint connective tissues and bones, affecting 0.5%–1% of the population worldwide with reporting higher prevalence of periodontitis in patients with rheumatoid arthritis.

Aims of the study: Evaluate the occurrence and severity of the periodontal disease and dental plaque among group of patients with rheumatoid arthritis and investigate the biochemical and the physiochemical characteristics of unstimulated saliva including salivary flow rate, pH, salivary Leptin and C-reactive protein and their relations to periodontal health.

Material and Methods: Fifty women patients with rheumatoid arthritis; twenty five on Methotrexate and twenty five on combination of Methotrexate and Etanercept selected as study groups with an age range (30-40) years old and twenty five gender, age and Body Mass Index matched healthy looking persons were selected as control. Disease activity score (DAS-28) was measured to assess the activity of disease. Collection of unstimulated salivary samples was carried out under standard conditions, then salivary flow rate, salivary pH and salivary biomarkers (Leptin and C-reactive protein) was estimated. Plaque Index of Silness and Loe (1964) recorded the dental plaque for both study and control groups. The periodontal conditions measured using the Community Periodontal Index (CPI) (WHO, 1997). The body mass index was calculated as (body weight/height²).

Results: After adjustment for age, gender and body mass index; mean salivary flow rate was highest among rheumatoid arthritis cases on combination treatment (Etanercept + Methotrexate) =0.4±0.202 ml/min and Least Significant Difference test between three groups was statistically significant (p< 0.05). The mean salivary pH was highest among rheumatoid arthritis cases on combination

treatment (Etanercept + Methotrexate) = 7.1 ± 0.29 , the differences between three groups observed however, failed to reach the level of statistical significance. Regarding plaque index the mean was highest among rheumatoid arthritis cases on methotrexate treatment (1.9 ± 0.78), the difference observed in mean Plaque Index between three groups was statistically significant ($p < 0.05$). Regarding count of sextants with community periodontal index, median count of sextant with CPI-score 0 was highest among controls (2) and lowest among both rheumatoid arthritis cases (0). The median count of sextant with CPI-score 3 was lowest among controls (0) and highest among both RA cases (2) and the difference observed in median count of sextant with CPI-score 3 between three groups was statistically significant ($p < 0.01$). The mean rank of salivary C-reactive protein was highest among controls (39.7 mg/l) without statistically significant difference between three groups. Median of salivary Leptin was highest among Methotrexate group (0.65ng/ml) without statistical significant difference between three groups, Furthermore, the levels of salivary Leptin in this study reveals weak correlation with salivary C-reactive protein, disease activity score 28 among rheumatoid arthritis patients ($r=0.242/p=0.09$, $0.127/p=0.42$) respectively.

Conclusions: The whole unstimulated salivary flow rate was found to be higher among rheumatoid arthritis cases on combination of treatment (Methotrexate and Etanercept) revealing improvements in salivary gland functions. Research revealed increasing plaque index and higher shallow pocket among rheumatoid arthritis patients suggesting special periodontal preventive programs. The study also concluded that a salivary Leptin level is of low importance to assess disease activity to rheumatoid arthritis patients.