Evaluation of systemic cytokines IL-1β, IL-4, IL-6, IL-10 and TNF-α in health, chronic periodontitis and type 2 diabetes mellitus

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Thesis

Submitted to

Rajiv Gandhi University of Health Sciences, Karnataka
Bengaluru
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy (Ph. D.)

in Dental Sciences (Periodontology)

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2016

Background: Cytokine dysregulation plays an important role in CP and T2DM with a commonality in pathogenic mechanisms. CP may have an increased influence on systemic levels of cytokines in individuals with T2DM.This study investigated serum levels of pro-, and anti-inflammatory cytokines and their ratios in the serum of healthy individuals, in chronic periodontitis with and without T2DM and in T2DM alone.

Methodology: Eighty participants were divided equally into four groups as healthy individuals (H) and patients having CP with and without T2DM (CP, and CP+T2D) and only T2DM (T2D). Periodontal clinical parameters, namely, PlI, GI, PPD, CAL, BoP were evaluated. Serum samples were collected to measure HbA1c, RBS and also, IL-1β, -4, -6, -10 and TNF-α were assessed using commercially available ELISA kits.

Results: The cytokines were detected in all groups. Significant differences were observed between groups for all the clinical, biochemical parameters and cytokines. Cytokine levels and the ratios showed significant correlations. The ratios of the cytokines differed significantly amongst groups, were highest in CP+T2D with a statistically significant COP and AUC by ROC.

Conclusion: In this study, the inflammatory burden of CP on a systemic disease like T2DM was reflected by the levels of serum cytokines and the cytokine ratios seemed to provide a better profile than the absolute values of the systemic inflammatory state of T2DM with periodontitis, when evaluating the qualitative and quantitative behavior of cytokines. CP influences the systemic inflammation in T2DM, according to the data of this study. Larger investigations involving more cytokines need to be done.

Key Words: Cytokines; Chronic Periodontitis, Diabetes Mellitus, Type 2; Serum.