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Serum Levels of Macrophage Activating Factor (MAF) and Advanced Glycation End Products (AGEs): A Potential Biomarkers of Periodontal Health status in Diabetic and Non-Diabetic Patients

A Thesis Submitted to the Council of the College of
Dentistry/University of Baghdad in Partial Fulfillment of the
Requirements for the Degree of Master of Science in Periodontics

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2019 A.D

1440 A.H

Abstract

Background: diabetes and periodontitis considered as chronic diseases with a bidirectional relationship between them. The prevalence, incidence and severity of periodontal disease found to be much more in diabetic patients. Furthermore, the risk of developing periodontitis was reported to be higher in diabetic patient specially with poorly control diabetes mellitus, which, in turn can negatively impact glycemic control. Macrophage activating factor and advanced glycation end products have rolle in inflammatory and immune responses in the body.

Aim of the Study: To evaluate the association between serum levels of (macrophage activating factor, advanced glycation end products) and periodontal health status in diabetic and non-diabetic patients.

Materials and Methods: 80 males, age range (35-55) years old were divided into three groups: two groups had severe chronic periodontitis one of them with diabetes and the other one systemically healthy, the third group was the control group with clinically healthy periodontium and systemically healthy. From all the participants, the clinical periodontal parameters (plaque index, gingival index, bleeding on probing, probing pocket depth and clinical attachment loss) were recorded, then five ml of venous blood samples were gathered, centrifuged and the serum were collected and kept frozen until the biochemical analysis by enzyme linked immunosorbent assay to measure serum macrophage activating factor and advanced glycation end products concentrations.

Results: Patients with chronic periodontitis with poorly controlled type 2 diabetes mellitus revealed the highest mean value of clinical periodontal parameters followed by systemically healthy chronic periodontitis group then the control group. The biochemical analysis of serum macrophage activating factor demonstrated that the highest concentration was in chronic periodontitis

with poor controlled type 2 diabetes mellitus. Furthermore, the biochemical analysis of serum advanced glycation end products revealed that the highest concentration was in severe chronic periodontitis with poorly controlled type 2 diabetes mellitus followed by the chronic periodontitis group then the control group. Concerning the biochemical parameters, there was a significant difference among the study and control groups. A non-significant weak correlation was reported between serum macrophage activating factor and advanced glycation end products levels with all the clinical periodontal parameters.

Conclusion: Patients with diabetes mellitus had higher destruction in periodontal tissue with higher levels of macrophage activating factor and advanced glycation end products and higher level of advanced glycation end products in chronic periodontitis group than control group. So, it can be concluded that these biochemical parameters could be used as markers for evaluation of periodontal tissue destruction.