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College of Dentistry

Estimation of Salivary Osteocalcin, α-Amylase, Total Protein Levels and Periodontal Health Status in Type II Diabetic and Non Diabetic Patients (A Comparative study)

A Thesis
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Abstract

Background:

Diabetes and periodontitis are complicated chronic diseases with an established bidirectional correlation .The hyperglycaemia in diabetic patients is the factor that effected for inflammation and influenced on the osteoclast activity and caused of abnormality bone turnover, which may increase the vulnerability to the progress of chronic periodontitis. Diabetes is caused greater variations in human salivary gland function, alterations in salivary flow rates and influence salivary composition and function, that affecting to the oral cavity.

Aims of the Study:

First, to determine and compare the periodontal health status of the study and control groups. Second, to estimate the levels of salivary Osteocalcin (OC), α-Amylase (α-Am) and Total protein (TO) in study and control groups and compare between them. Third, to correlate of the clinical parameters and biochemical parameters between study and control groups.

Materials and Methods: eighty (80) subjects, consisted of males and females; their age range was (35-50) years old were divided into four groups, (20 subjects each): two groups had poorly and well controlled Type 2Diabetes Mellitus both of them with chronic periodontitis, group of patients with only chronic periodontitis and control group with healthy periodontium and systemically healthy. From all subjects five ml of unstimulated total salivary samples were collected from the participants ,then, the samples were centrifuged and the supernatants were collected and kept frozen until the biochemical analysis to measure Osteocalcin (OC), α- Amylase (α-Am) and Total protein (TO) concentrations. The clinical periodontal parameters (plaque index, gingival index, bleeding on probing, probing pocket depth and clinical attachment loss) were recorded after collection of saliva.

Results:

Patients had chronic periodontitis with poorly controlled Type 2Diabetes Mellitus demonstrated the highest median, mean and ± standard deviation (SD) values of all clinical periodontal parameters, following by the group of patients had chronic periodontitis with well controlled Type 2Diabetes Mellitus, then the group of patients with only chronic periodontitis and control group with healthy periodontium and systemically healthy. Highest increase in levels of salivary Osteocalcin (OC), α- Amylase (α-Am) and Total protein (TO) in patients had chronic periodontitis with poorly controlled Type 2Diabetes Mellitus ,followed by the group of patients has chronic periodontitis with well controlled Type 2Diabetes Mellitus, then the group of patients with only chronic periodontitis and control group with healthy periodontium and systemically healthy , in addition to the highly significant differences among the study and control groups regarding biochemical parameters and clinical parameters. Highly significant strong positive correlations were revealed between Osteocalcin (OC), α- Amylase (α-Am) and Total protein (TO) levels and among of them with clinical periodontal parameters in the study and control groups.

There was excepted a non- significant weak correlation between clinical periodontal parameters and Osteocalcin (OC), α- Amylase (α-Am) and Total protein (TO) levels existed with CAL in chronic periodontitis with poorly controlled Type 2Diabetes Mellitus group, correlation with PPD in chronic periodontitis with well controlled Type 2Diabetes Mellitus group and correlation with GI existed in chronic periodontitis group .

Conclusion: Patients with poor glycemic control had greater periodontal tissue destruction with increase in levels of Osteocalcin (OC), α- Amylase (α-Am) and Total protein (TO).So, these biochemical markers which is used for assessment periodontal tissue destruction .