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Evaluation of Salivary Melatonin, Secretory IgA Levels and Periodontal Parameters in Type 2 Diabetic Patients with Chronic Periodontitis (A comparative study)

A Thesis
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Abstract

Background: Diabetes and periodontitis are complicated chronic disorders with an established bidirectional relationship. Melatonin is naturally occurring neuroendocrine hormone which act as anti-oxidant and anti-inflammatory, thus plays a significant role in chronic periodontitis and diabetic mellitus. Secretory immunoglobulin A is the principal immunoglobulin isotype in saliva and other body secretion, it consider as first line of defense in the body against pathogenic microorganism and plays an important role in protection against infections. Melatonin and secretory immunoglobulin A play an important role in immunity and inflammatory diseases.

Aims of the Study: First, to determine and compare the periodontal health status in the study and control groups by measuring clinical periodontal parameters. Second, to estimate the salivary melatonin, secretory immunoglobulin A levels and flow rate in the study and control groups and compare between them. Third, to determine the correlation between the salivary melatonin with secretory immunoglobulin A, then correlate them with the clinical periodontal parameters. Fourth, to correlate salivary flow rate with the clinical periodontal parameters, salivary melatonin and secretory immunoglobulin A in study and control groups. Fifth, to assess the effect of the glycemic control on the periodontal health status, the levels of the salivary melatonin, secretory immunoglobulin A and the salivary flow rate.

Materials and Methods: eighty males were recruited for the study with an age range of (35-55) years old. The subjects were divided into four groups, (20 subjects each): first and second groups, had moderately and well controlled type 2 diabetes mellitus both of them with chronic periodontitis, third group, apparently systemically healthy with chronic periodontitis and fourth group

(control) with apparently systemically healthy and healthy periodontium. Unstimulated total salivary samples were collected from all the participants; salivary flow rate was measured. Then, the samples were centrifuged and the supernatants were collected and kept frozen until the biochemical analysis to measure salivary melatonin and secretory immunoglobulin A concentrations by ELISA principle. The clinical periodontal parameters (plaque index, gingival index, probing pocket depth and clinical attachment loss) were recorded after collection of saliva.

Results: Patients had moderately controlled type 2 diabetic with chronic periodontitis demonstrated the highest mean values of all clinical periodontal parameters and all of clinical periodontal parameters demonstrated highly significant differences among study groups. The biochemical analysis of secretory immunoglobulin A concentration revealed that highest concentration was in moderately controlled type 2 diabetics with chronic periodontitis (3.60). Furthermore, the biochemical analysis of salivary melatonin concentration revealed that highest concentration was in control group (103.93). The highest mean value of salivary flow rate was in control group (0.46).

Conclusion: Patients with moderate glycemic control had greater periodontal tissue destruction and less salivary flow rate than well controlled type 2 diabetic and non-diabetic patients all with chronic periodontitis. Salivary melatonin and secretory immunoglobulin A levels affected by glycemic control , thus the concentrations of these biochemical markers could be used as indicators for assessment of periodontal tissue destruction.