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"ESTIMATION AND CORRELATION OF SERUM AND SALIVARY GLUCOSE, IgA LEVELS AND SALIVARY CANDIDAL CARRIAGE IN DIABETIC AND NON DIABETIC PATIENTS"

BY

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ABSTRACT

Objective: An association between diabetes mellitus (DM) and alterations in the oral cavity has been noted. The present study was conducted to estimate, compare and correlate Serum and Salivary Glucose, IgA levels and Salivary Candidal carriage in diabetics (Controlled DM and Uncontrolled DM) with that of Non-diabetic individuals and also to determine if Salivary Glucose levels and constituents can be used as a non invasive tool in monitoring glycemic control and in description and management of oral findings in diabetic patients.

Materials and Methods:

A total of 88 subjects were divided into 3 groups: **Group I (Controlled diabetic subjects**; n=27) with random non fasting plasma glucose (RNFPG) values >120 mg/dL and ≤ 200 mg/dL; **Group II (Uncontrolled diabetic subjects**; n=32) with RNFPG >200 mg/dL, composed of patients 40-60 years old who had been diagnosed as diabetes mellitus (DM) and **Group III (Non-diabetic subjects;** n=29) with RNFPG 80-120 mg/dL who were age and gender matched with Groups I and II, according to the inclusion and exclusion criteria. Unstimulated saliva (US) was collected from patients and investigated for Glucose and IgA levels. Serum and Salivary Glucose levels were assessed using glucose oxidase peroxidase (GOD-POD) method using spectrophotometer (systronics uv-vis double beam spectrophotometer – 2201). Serum and Salivary IgA levels estimated using a diagnostic kit (Quantia IgA turbidometric immunoassay, Tulip diagnostics [P] Ltd., Mumbai, India). For candidal colony formation analysis, the subject were provided with a container containing 10 ml of phosphate buffer saline solution (pH 7.4, 0.1 mol/L) and was asked to rinse the

mouth. After rinsing the mouth thoroughly expelled the mouth rinse into sterile container. Candidal colonization was studied by inoculating sample into Sabouraud dextrose agar plate (SDA) by inoculating loop. The growth of Candida was identified by the smooth, white or creamy coloured buttery colony and colony forming units (CFUs) were counted manually.

Statistical Analysis:

One way ANOVA test was done to compare three groups followed by tukeys multiple posts hoc test. Pearson correlation coefficient was computed among Serum and Salivary Glucose, IgA, and Salivary Candidal colony. Regression analysis was done to predict the levels of Serum Glucose based on Salivary Glucose levels and the levels of Serum IgA based on Salivay IgA in 3 groups and to show statistical significance ($P < 0.05$).

Results:

The study population consisted of 88 subjects, 27 in Controlled diabetics (Group I), 32 in Uncontrolled diabetics (Group II), and 29 in Non-diabetics (Group III). The mean Serum Glucose levels were significantly increased in Uncontrolled diabetics compared to Controlled diabetics and least in Non-diabetics, whereas Salivary Glucose levels were statistically insignificant in all three study groups.

The mean difference in Serum IgA levels between Controlled diabetics (Group I) and Uncontrolled diabetics (Group II) and also between Controlled diabetics (Group I) and Non-diabetics (Group III) shows statistical insignificance. However, significant increase in Serum IgA levels was observed in Uncontrolled diabetics (Group II) compared to Non-diabetics (Group III). In addition, we found significant fall in

Salivary IgA levels from Controlled diabetics (Group I) & Uncontrolled diabetics (Group II). But, in remaining Groups there is no any significant change was observed.

Candidal CFUs were significantly higher in Uncontrolled diabetics (Group II) compared to Non-diabetics (Group III). But, there is no any difference between other groups. We found statistically significant correlation in Serum Glucose and Salivary IgA levels in Controlled diabetics (Group I). However, in Controlled diabetics (Group I), correlation among remaining parameters was statistically insignificant. Regression analysis of Serum Glucose based on Salivary Glucose predicts that as the levels of Salivary Glucose increases, Serum Glucose levels decreases in Controlled diabetics (Group I). Regression analysis between the levels of Serum IgA based on Salivary IgA shows both levels rise simultaneously in Controlled diabetics (Group I).

Results of Uncontrolled diabetics (Group II) shows significant positive correlation between the levels of Serum and Salivary glucose and between Serum and Salivary IgA and remaining parameters remain insignificant. Regression analysis of the levels of Serum Glucose based on Salivary Glucose predicts reciprocal relation and in between the levels of Serum IgA based on Salivary IgA shows concurrent rise.

In Non-diabetics (Group III), there was significant correlation between Serum Glucose and Serum IgA. We didn't found any correlation between other parameter. Regression analysis predicts null relation in Salivary Glucose based on Serum Glucose levels and negative link between Salivary IgA and Serum IgA.

Conclusion:

Salivary Glucose levels could be a potentially non invasive diagnostic tool to monitor glycemic status in diabetic individuals. Determination of salivary constituents such as

IgA may be useful in the description and management of oral findings in diabetic patients. The increase in Salivary Glucose levels in diabetic subjects likely contributes to their increased Candidal carriage and the potential for increased susceptibility to oral candidiasis.

Key words: Diabetes mellitus (DM), Random non fasting plasma glucose level (RNFPG), Serum and Saliva, Immunoglobulin A (IgA), Candidal colony forming units (CFUs)