

Republic of Iraq
Ministry of Higher Education
And Scientific Research
University of Baghdad
Collage of Dentistry



Clinical and Sonographic Changes of Parotid Gland in Patients with Type I and Type II Diabetes Mellitus and its Effect on Physical Properties of Saliva

A Thesis

Submitted to College of Dentistry University of Baghdad
In Partial Fulfillment of the Requirements for the Degree of
Master of Science in Oral Medicine

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2016 A.D.

1437 A.H.

Abstract

Background:

Sialosis can be defined as a multifactorial disease of the salivary glands which is characterized by a painless bilateral swelling. Such growth is commonly seen in parotid gland and followed by a decreased salivary production which invariably leads to xerostomia. Sialosis described as a particular consequence of diabetes. Sialosis, in diabetic, mean the increased volume of the glands is due to the infiltration of fatty in the parenchyma. Ultrasonography B-scan is the most common accepted tool for determining parotid gland enlargement.

Saliva is essential biological oral fluid which plays a crucial role in maintaining homeostasis of the oral cavity. Oral health is to a large extent dependent on quality and quantity of saliva, both of which may be altered in diabetics.

Diabetes mellitus (DM) is a common but with complicated metabolic disorder affecting various systems in the body causes a wide spectrum of oral manifestations which include sialosis, xerostomia, dental caries, fungal infections, taste impairment, decreased resistance to infection and delayed wound healing.

Aim of study:

To evaluate the dimensional changes off parotid gland in diabetic patient type I &II and its relation with physical properties of saliva. Study the changes in physical properties of saliva in diabetes mellitus patients.

Materials and Method:

This study was administered on 102 participants, their age range (20-65) years; all subjects were selected from patients attending to Endocrine center for diabetic patients in Al-Yarmok Teaching Hospital. According to Broca's formula the body weight must not be over 20% of the ideal body weight (ideal body weight= height-100), for each groups. Assessment of diabetes mellitus was done by two laboratory tests according to the values mentioned by American Diabetes Association in 2009, which are fasting plasma glucose and glycosylated hemoglobin HbA1C. In

collection of saliva samples, participant were advised never eat, or drink other than water for one hour prior saliva collection, then the flow rate, pH and viscosity were measured. All subjects groups were examined by (FUKUDA DENSHI) ultrasonography mode-B with 6-9MHz linear array transducer. Parotid gland in both sides were measured in longitudinal section (parallel to the mandibular ramus), and transverse section (antero-posterior dimension) and the mean of depth between the axis lateral to mandible and dorsal to the mandible, measurement unit was in millimeter (mm).

Result:

The statistical analysis revealed that: The right-left mean difference in three dimensions (length, transverse, depth) and volume ultrasonographic measurements of parotid gland in diabetic study groups, showed statistically non-significant difference, the same result was obtained among control group. The effect of Diabetes mellitus is marked on the parotid gland measurements as the disease progresses and the HbA1c increase. Physical properties of saliva give obvious decrease in flow rate and pH in diabetic patient while the viscosity was increased in diabetic rather than normal.

Conclusion:

It was concluded that there is positive correlation between the progressions of DM and salivary gland dimensions. On the other hand, the present study showed that there is negative association between flow rate, pH, and viscosity in comparison with enlargement of salivary gland.