Evaluation of Salivary Levels of proteinaceous biomarkers Matrix Metalloproteinase(MMP-8) and C-Reactive protein (CRP) in type 2 diabetic patients with periodontitis

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 Oral Medicine.

By

Afrah Abd -UL-Sahib Abbas
B.D.S.

Supervised by

Professor Dr. Raja - Al- Jubouri
B.D.S. , M.Sc. , Ph.D. (Oral Medicine)

2012 AD *1433 AH*

Abstract

Back ground : Diabetes mellitus is a chronic metabolic disorder of the carbohydrate , protein and fat metabolism , resulting in increased blood glucose levels . Various complications of diabetes have been described with periodontitis being added as the sixth complication of diabetes mellitus .

Matrix metalloproteinase-8 (MMP-8) has been identified as major tissue-destructive enzyme in periodontal disease . MMP-8 is released from neutrophils in a latent, in active pro form and becomes activated during periodontal inflammation by independent and/or combined actions of host-derived inflammatory mediators .C-reactive protein is a systemic marker released during the acute phase of an inflammatory response. C-reactive protein is produced by the liver and is stimulated by circulating cytokines, such as tumor necrosis factor-a and interleukin-1, from local and ⁄ or systemic inflammation such as periodontal inflammation .

Aims of study :

1- To evaluate the salivary level of matrix metalloproteinase (MMP-8) and C-reactive protein (CRP) in type 2 diabetic patient with periodontitis and non diabetic with periodontitis and compared with normal control .

2- To evaluate the level of blood erythrocyte sedimentation rate (ESR) in groups of our study .

3- To measure the levels of glycated hemoglobin (HbA1C) and fasting blood sugar (FBS) in type 2 diabetic patient to study the relationship between periodontal disease and the level of glycemic control among type 2 diabetic subjects .

Subjects, materials and methods :

The study was performed in Marjan General Hospital in Hilla city , total samples composed of sixty participant , the samples were divided into groups as follow :

Group 1 :Twenty patients un complicated type 2 diabetes with periodontitis .

Group 2 : Twenty patients non diabetic with periodontitis .

Group 3 : Twenty subjects normal control (with no sign of gingivitis or periodontitis).

Diabetes assessment :

The patient was asked whether he has type 1 or type 2 diabetes mellitus , type of medication taken by the patient was recorded in a case sheet , clinical examination was conducted to assess the attachment loss condition , then blood sample and saliva sample was taken .

Periodontal assessment :

The periodontal examination were performed under the natural light with the patients seated on an office chair . A mouth mirror , William periodontal probe and sterilized gauze were used for intra oral examination and the assessment of the patients (pocket depth and gingival rescission to measure attachment loss) .

Attachment loss were assessed using periodontal disease index of Ramfjord 1959 .

Results :

It was found that the salivary MMP-8 level was lower in normal controls compared to other groups, the salivary CRP level was lower in normal controls compared to other groups ,the blood ESR level was lower in normal controls compared to other groups and there were no important differences in mean blood ESR , salivary MMP-8 and median salivary CRP between diabetic and non diabetic with periodontitis .

Conclusions:

Severity of periodontitis increase with increase age , Salivary MMP-8 ,CRP and blood ESR levels were elevated in patients with periodontitis with or without diabetes , CRP and MMP-8 are considered a useful tests in predicting periodontitis ,and in type 2 diabetic patient there was a relationship between metabolic control of diabetes and severity of periodontal disease.