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College of Dentistry



**Assessment of Serum Levels of Matrix
Metalloproteinase-8 and High Sensitive C - Reactive
protein in Chronic Periodontitis Patients in Relation
to Atherosclerotic Cardiovascular Disease**

A Thesis

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Abstract

Background: Periodontitis and Atherosclerosis Cardiovascular disease are chronic inflammatory diseases which are highly prevalent. During the last two decades, there has been an increasing interest in the impact of oral health on atherosclerosis and subsequent cardiovascular disease.

Aims of the study: To evaluate the periodontal health status in study groups (Atherosclerotic cardiovascular disease patients with chronic periodontitis and patients having chronic periodontitis) and control group ,to estimate the serum levels of Matrixmetalloproteinase-8 and high sensitive C-reactive protein in study and control groups and compare between them. Also,test the correlation between the serum levels of Matrix metalloproteinase-8 and high sensitive C-reactive protein with clinical periodontal parameters at each study group.

Subjects, materials and methods: 80 subjects, males and females were included in this study with age range (35-50) years old, they were divided into study groups (Atherosclerotic cardiovascular disease& chronic periodontitis group (30 patients) and chronic periodontitis group (30 patients)) and control group (20 systemically healthy subjects, have healthy periodontium). Periodontal health status was determined by measuring the following clinical periodontal parameters (Plaque index (PL.I), Gingival index (GI), Bleeding on probing (BOP), Probing pocket depth (PPD) and Clinical attachment level (CAL)) for all teeth except third molar. After the clinical examination ,5ml venous blood were collected from study and control groups. After centrifusion, serum samples were kept frozen at(- 20)°C. Matrix matalloprotinase -8 and

high-sensitive C-reactive protein serum levels were determined by mean of enzyme – linked immune-sorbent assay(ELISA).

Results: The results showed that the mean values of clinical periodontal parameters (GI, PPD and CAL), were higher in the (Atherosclerotic cardiovascular disease &Chronic periodontitis) group than in the (Chronic periodontitis) group with significant differences. Mean value of PL.I was higher in (Atherosclerotic cardiovascular disease & Chronic periodontitis) group than in the (Chronic periodontitis) group, but there was no statistically significant difference between study groups. A higher percentage of score one of BOP sites demonstrated by (Chronic periodontitis) group than in the (Atherosclerotic cardiovascular disease & Chronic periodontitis) group with highly significant difference.

The levels of serum Matrix metalloproteinase-8 and high sensitive C-reactive protein were higher in (Atherosclerotic cardiovascular disease & Chronic periodontitis) group when compared with (Chronic periodontitis) group and control group, with highly significant differences between all pair of study and control groups.

Regarding the Correlation between serum levels of Matrix metalloproteinase-8 and clinical periodontal parameters, in (Atherosclerotic cardiovascular disease & Chronic periodontitis) group there was weak positive correlation between GI with serum levels of Matrix metalloproteinase-8, and there were highly significant, strong positive correlation between each of (PL.I,BOP, PPD and CAL) and serum levels of Matrix metalloproteinase-8. For (Chronic periodontitis) group, there was weak positive correlation between serum levels of MMP-8 with (PL.I ,GI and PPD) and highly significant, strong positive correlation was found between serum levels of Matrix metalloproteinase-8 with (BOP and CAL) .

Regarding the Correlation between serum levels of high sensitive C-reactive protein and clinical periodontal parameters, in (Atherosclerotic cardiovascular disease & Chronic periodontitis) group there was weak positive correlation between serum levels of hs C-reactive protein with (PL.I GI, BOP and PPD). A highly significant strong positive correlation was found between serum levels of high sensitive C-reactive protein with CAL. In (Chronic periodontitis) group , highly significant strong positive correlation were found between serum levels of high sensitive C-reactive protein with each of (GI, BOP, PPD and CAL), while the correlation between serum levels of high sensitive C-reactive protein and PL.I, was weak positive.

Conclusion: The present results my provide evidence of association between Chronic periodontitis and Atherosclerotic cardiovascular disease and suggest that periodontitis may play important role in activation and triggering immune response .Chronic Periodontitis may contribute to the inflammation-associated to atherosclerotic process.