

**Republic of Iraq  
Ministry of Higher Education  
And Scientific Research  
University of Baghdad  
College of Dentistry  
Periodontics Department**



**Evaluation of Serum Interleukin-1 $\beta$  and  
Interleukin-6 Levels in Patients with Chronic  
Periodontitis in Relation to Atherosclerotic  
Heart Disease**

*A Thesis*

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**By  
Dr.Osama Hussein Abd  
B.D.S  
H.D.periodontics**

**Supervised By  
Assist. Prof. Dr. Saif Sehaam Saliem  
B.D.S  
M.Sc. periodontics**

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## **Abstract**

**Background:** Periodontitis and Atherosclerotic diseases are highly widespread diseases characterized by chronic inflammatory process. Through the last years, there has been an increase attention on the effect of oral health on atherosclerosis and other cardiovascular disease. Interleukin-1 $\beta$  and Interleukin-6 are considered as examples of important mediators in inflammation that share inflammatory process in both periodontitis and atherosclerosis.

**Aims of the study:** To assess the periodontal tissue status in study groups (patients having chronic periodontitis associate with Atherosclerotic disease patients and patients having chronic periodontitis) as well as control group(Healthy periodontium / systemically healthy), also to estimate the serum levels of interleukin-1 $\beta$  and interleukin-6 in both control and study groups, and to test the relationship between the serum of these biomediators levels with clinical periodontal parameters in all groups.

**Materials and Methods:** 80 males subjects, were included in this study with age limit between (30-60) years old; they were alienated into study groups {(30 subjects) chronic periodontitis with Atherosclerotic cardiovascular disease group and (30 subjects) chronic periodontitis group} as well as (20 subjects) control group which are healthy systemically and without periodontal tissue diseases. The condition of Periodontal health was estimated by evaluation of the periodontal parameters clinically {Gingival index, Plaque index, Bleeding on probing, Clinical attachment level , Probing pocket depth} for each tooth with the exception of third molar. After the clinical examination, 5ml venous blood was collected from study and control groups. After centrifusion, serum samples were kept frozen at (-20) $^{\circ}$ C. The serum interleukin-1 $\beta$  and interleukin-6 levels were quantified by mean of enzyme-linked immune-sorbent assay (ELISA).

## ***Abstract***

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**Results:** The results illustrated that the mean levels of all periodontal parameters were superior in the (Chronic periodontitis & Atherosclerotic) group than in the (Chronic periodontitis) group with significant differences. The levels of serum interleukin-1 $\beta$  and interleukin-6 were more in (Chronic periodontitis & Atherosclerotic) group when compared with (Chronic periodontitis) group and control group, and the differences were highly significant between all pair of study and control groups. Regarding the relationship of serum of interleukin-1 $\beta$  levels with clinical periodontal parameters, in (Chronic periodontitis & Atherosclerotic) group, the correlation between Probing pocket depth and serum levels of interleukin-1 $\beta$  was weak positive, and the correlation was, strong positive and highly significant between each of (Plaque index, Gingival index, Bleeding on probing and Clinical attachment level) and serum interleukin-1 $\beta$  levels. For (Chronic periodontitis) group, the correlation was weak positive between serum interleukin-1 $\beta$  levels with (Bleeding on probing), and strongly positive, highly significant correlation was established between serum interleukin-1 $\beta$  levels with (Plaque index, Gingival index, Probing pocket depth and Clinical attachment level). For the Correlation between of serum interleukin-6 levels with periodontal parameters, in both (Chronic periodontitis & Atherosclerotic) and (Chronic periodontitis) group, the correlation was weak positive between serum interleukin-6 levels with (Bleeding on probing), while the correlation was highly significant and strongly positive between serum interleukin-6 levels with (Plaque index, Gingival index, Probing pocket depth and Clinical attachment level).

**Conclusion:** The current results may provide support for the relationship between chronic periodontitis and Atherosclerosis, and suggest that the periodontitis may act vital role in activation and triggering immune response systemically. Chronic periodontitis may participate to the inflammation-associated with atherosclerotic process.