



Republic of Iraq
Ministry of Higher Education
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University of Baghdad
College of Dentistry



**ASSESSMENT OF SERUM LEVELS OF SOLUBLE
UROKINASE PLASMINOGEN ACTIVATOR
RECEPTOR AND MONOCYTE
CHEMOATTRACTANT PROTEIN 1 IN PATIENTS
WITH PERIODONTITIS AND
ATHEROSCLEROTIC CARDIOVASCULAR
DISEASE**

A thesis

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Baghdad, in partial fulfilment of requirements for the Degree of Master of
Science in Periodontics

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ABSTRACT

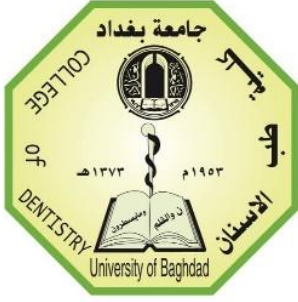
Introduction: Monocyte chemotactic protein-1 is a chemokine expressed by inflammatory and endothelial cells. It has a crucial role in periodontal inflammation and atherosclerotic lesions. Soluble urokinase plasminogen activator receptor has been identified as a biomarker of inflammation and immune activation and hence coronary heart disease and periodontitis. The aims of the study are to assess and compare the periodontal health status of the study groups (atherosclerosis, periodontitis, atherosclerosis with periodontitis) and control group, and to investigate the serum levels of MCP-1 and suPAR in both study and control groups and compare between them, testing the correlations between the biomarkers and clinical periodontal parameters.

Materials and Methods: 88 subjects, males and females were recruited in this study with age range (34-66) years old, they were divided into four groups: group **I** with atherosclerotic cardiovascular disease (ASCVD) and clinically healthy periodontium (25 patients), group **II** apparently healthy subjects with periodontitis (25 patients), group **III** with both ASCVD and periodontitis (25 patients), and group **IV** apparently healthy subjects with clinically healthy periodontium (13 patients). The following clinical periodontal parameters were used to evaluate periodontal health: plaque index (PLI), bleeding on probing (BOP), probing pocket depth (PPD), and clinical attachment loss (CAL). Following the clinical periodontal evaluation, five milliliter (5ml) of venous blood was taken from each participant from the cubital fossa using a disposable syringe. Serum levels of suPAR and MCP-1 were then determined by enzyme-linked immunosorbent assay (ELISA).

Results: The results of this study revealed that the mean values of PLI and BOP were higher in group II and III than in group I and IV with a significant difference at ($p<0.05$). The mean values of PPD and CAL were higher in group III than in group II with a significant difference at ($p<0.05$).

The serum level of MCP-1 was higher in group III than in group I, II, and IV with a significant difference at ($p<0.05$). For suPAR, there was a significant difference between each of the study groups and group IV at ($p<0.05$). Regarding the correlations between MCP-1 and clinical periodontal parameters, a significant positive correlation was shown with PPD and CAL in group II, and with CAL in group III at ($p<0.05$). For the suPAR, there were significant positive correlations with CAL in group II and III at ($p<0.05$). Regarding the diagnostic accuracy of the two biomarkers, in group I, both of them are very good with AUC values (0.843, 0.863) respectively, in group II, the diagnostic accuracy of MCP-1 increased while the suPAR's decreased, with AUC values (0.877, 0.760) respectively in group III, also MCP-1 become more efficient (excellent) in differentiation than suPAR with AUC values (1, 0.787)) respectively, and when comparing their diagnostic accuracy between group III & II the MCP-1 found to be very good while suPAR became only sufficient with AUC values (0.869, 0.600) respectively, and when making the comparison between group III & I the suPAR became useless as a test with AUC values (0.8512, 0.4456) respectively.

Conclusion: Periodontitis-related higher MCP-1 levels may be linked to an increased risk of atherosclerosis. These findings suggest that the level of MCP-1 in serum can be used as a predictor of periodontal destruction severity, and It could be a reflection of the systemic influence of this local inflammatory condition. Moreover, the progressive increase in serum suPAR level in groups I, II, and III compared to group IV could reflect the role of periodontal disease in atherosclerotic cardiovascular disease.



جمهورية العراق
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تقييم مستويات المصل لمستقبل منشط البلازمينوجين نمط يوروكيناز القابل للذوبان والبروتين الجاذب لأحادي الخلية 1 لدى مرضى التهاب دواعم الاسنان مع مرض التصلب العصيدي

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