Quantitative Detection and Correlation of *Epstein-Barr Virus* in plasma with Gingivitis and severity of Chronic Periodontitis by Using Real-Time polymerase chain reaction Technique

A thesis

Submitted to the council of College of Dentistry / University of Baghdad in partial fulfillment for the requirement toaward the degree of Master of Science in Periodontics.

By

Nada Kadhim Imran

B.D.S

Supervised by:

Assist. Prof. Dr. Basima Gh. Ali

M.Sc. Periodontics

2013 A.D. 1434 A.H.

Abstract

Background: Chronic periodontitis is an inflammatory disease that extend into the tissues supporting the teeth. It is intiated by oral bacterial biofilms that develop in the soft tissue pockets between the gingiva and the roots of the teeth.

Recent studies have demonstrate that various human herpesviruses especially *Epstein-Barr virus EBV* may play a role in the pathogenesis of human chronic periodontitis and shows correlation with periodontal disease severity .

Aims of the study: To detect *EBV* quantitatively in plasma using Real-Time polymerase chain reaction (Real-Time PCR) technique in chronic periodontitis, gingivitis patients and to compare the finding with control subjects (healthy periodontium) and to investigate the relationship between the presence of *EBV* & the severity of periodontal diseases using the clinical periodontal parameters (PLI ,GI , BOP ,PPD and CAL) between each of (chronic periodontitis and gingivitis) patients and compare with control (healthy periodontium) subjects .

Materials and methods: The study sample consisted of (101) individual of both genders , (61) chronic periodontitis patients which were subdivided according to the severity of disease into (mild, moderate & severe) depending on the scores of clinical attachment level , (20) gingivitis patients and (20) control subjects (healthy periodontium) with age ranged from (30-50) years , all the groups without any history of systemic diseases.

Clinical periodontal parameters used in this study were (Plaque index, Gingival index, Bleeding on probing, Probing pocket depth and Clinical attachment level). Clinical attachment level and probing pocket depth were given a scale from (1-3 scores) according to loss of clinical attachment and probing pocket depth .

Blood samples were collected from all individuals and examined by Real-Time PCR technique for the detection of *EBV* . The quantitative counts of the virus grouped into 5 levels according to the number of copies of *EBV*/10^5 cells (Negative , % <100 copy/10^5 cells , 100-500 copy/10^5 cells , 600-1000 copy/10^5 cells and % >1000 copy/10^5 cells), each with (- &+) pictures of *EBV* and the (100-500 copy/10^5 cells) level represent the cutoff point .

Results: The results of the present study observed that there was highly significant differences between study and control groups , the higher mean number of sites were recorded in score 1 of mild chronic periodontitis subgroup with probing pocket depth (≥3mm) , also the higher mean number of sites with clinical attachment loss appears at score 1 of mild chronic periodontitis subgroup .

The result of comparison for the occurance of *EBV* among study groups compare to control group and according to sequential responding of *EBV* appears to be highly significant at negative level of *EBV* , significant in (100 - 500 copy/10^5 cells) level and this level represent cutoff point of sequential responding method of *EBV* and the results of leftover levels appear non significant difference .

The correlation between the actual occurance of *EBV* and probing pocket depth scores in severe chronic periodontitis subgroup appears to be significant at probing pocket depth score (1) , while it appears non significant at probing pocket depth scores (2&3) .On the other hand the correlations between *EBV* and probing pocket depth scores in moderate and mild chronic periodontitis subgroups appear to be non significant with all scores . The results of correlation between *EBV* and clinical attachment level parameter appear to be non significant among all scores of chronic periodontitis subgroups . Concerning plaque index , the correlation appears to be significant in mild chronic periodonttis subgroup, while it appears non significant in case of

(moderate and severe) chronic periodontitis subgroups & gingivitis group and highly significant in control group. In case of gingival index , the correlation appears to be significant in severe chronic periodontitis subgroup, while it is non significant in (mild and moderate) chronic periodontitis subgroups and gingivitis group and significant in control group .

The result of correlation with (Bleeding on probing score 1) appears to be highly significant in severe subgroup of chronic periodontitis group and non significant in (mild and moderate) chronic periodontitis subgroups and control group and significant in gingivitis group , in case of (Bleeding on probing score 0) , the correlation appears to be significant in severe chronic periodonttis subgroup , while it appears non significant in (mild and moderate) chronic periodontitis subgroups , gingivitis and control groups .

Conclusions: The present findings revealed that there may be an association between *EBV* infection and the severity of periodontal diseases and thus coinfection with *EBV* may play a role in increase destruction of periodontal tissues .