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Periodontal Health Status in Women with Breast Cancer and Assessment of Vascular Endothelial Growth Factor and Vitamin D Serum Levels

A Thesis
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Abstract

Background: Periodontal diseases are inflammatory diseases that affect the periodontium of the teeth which may lead to attachment and alveolar bone loss. Breast cancer is the most common and lethal cancer in women worldwide. Breast cancer may be involved with elevated prevalence of periodontal diseases. Expression of Vascular Endothelial Growth Factor (VEGF) is elevated in both periodontal diseases and breast cancer and it is the marker of angiogenesis related to cancer development. Vitamin D exhibits physiological and pharmacological effects in human body; it is present in normal breast tissue and has antiproliferative effects on the differentiation of breast cancer cells. Vitamin D deficiency has also been linked to periodontal diseases risks.

Aims of the study: 1. To determine the periodontal health status and serum levels of Vascular Endothelial Growth Factor (VEGF) and Vitamin D in women with breast cancer in comparison to women without breast cancer.

2. To correlate between serum levels of VEGF and Vitamin D with clinical periodontal parameters.

Materials and Methods: Eighty females were recruited in this study with age ranged from (30-60) years old, 40 women with breast cancer and another 40 women without. Periodontal health status was taken for all participants and then they were subdivided into four equal groups which was 20 in number: the first group (BC +CP) group which included participants with breast cancer and chronic periodontitis, the second group (BC+ G) group included participants with breast cancer and gingivitis, the third group (CP) group which included participants with chronic periodontitis only and the fourth group (G) group which included participants with gingivitis only. Other than breast cancer, all subjects were systemically healthy females. Periodontal health status was determined by clinical periodontal examination of plaque index (PLI), gingival index (GI), bleeding on probing (BOP), probing pocket depth (PPD) and

clinical attachment level (CAL). Blood samples were collected from each participant, serum levels of VEGF and Vitamin D were determined by enzyme - linked immune-sorbent assay (ELISA).

Results: The results of this study showed that the median values of PLI and GI were slightly increased in (BC+G) group in comparison to other groups with non-significant differences, the percentages of BOP showed highly significant differences among all groups at P <0.01. The median values of PPD showed slight increase in (BC+CP) group than (CP) group with non-significant differences. Median values of CAL were increased in (CP) group than (BC+CP) group with non-significant differences. VEGF serum levels were elevated in (BC+CP) group than other groups with non-significant differences. Vitamin D serum levels showed highly significant differences among the groups at P <0.01, the (G) group had the higher median of Vitamin D level among the groups. Also by using Spearman's rank Correlation Coefficient, serum levels of VEGF were correlated positively with all clinical periodontal parameters. Serum levels of Vitamin D correlated negatively with all clinical periodontal parameters.

Conclusion: Vascular Endothelial Growth Factor (VEGF) and Vitamin D serum levels could be used as biomarkers for the diagnosis and prediction of progression of both periodontal diseases and breast cancer.