Salivary osteonectin in osteoporotic Old Adults women in relation to Oral health status

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By

Hiba Fawaz Al-Sekab

B.D.S

Supervised by

Dr. Ban Sahib Diab

Assistant Prof., M.Sc., Ph.D.

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Abstract

Background: Osteoporosis is a condition characterized by low bone mass especially in older people. Saliva could be used as a fluid for assay of human biomarkers of bone turnover such as osteonectin which in turn lead to an adverse effect on oral health status.

Aims of the study: The aims of this study were to assess salivary osteonectin biomarker levels in addition to salivary physical characteristics and their effect on dental caries and periodontal diseases among osteoporotic old adult women in comparison with control group.

Materials and Methods: The total sample composed of 60 women aged 60_65 years attending Al-Yarmook Teaching Hospital, 30 women diagnosed with osteoporosis before taking any treatment and 30 women with normal bone mineral density as appeared in dual energy x-ray absorptiometry scan report (control group). Dental caries was recorded by lesion severity through the application of D_{1-4} MFS index (Mühlemman, 1976). Periodontal disease was evaluated by using the gingival index (Löe and Silness, 1963), probing pocket depth (Carranza, 1996) and clinical attachment loss (Ramfjord, 1959). All teeth were examined in this research except third molar.

Stimulated Salivary samples were collected under standardized condition, according to (Tenovuo and Lagerlöf, 1994) and salivary flow rates were estimated, then analyzed for measuring of non-collagenous glycoprotein (osteonectin), by using quantitative sandwich enzyme immunoassay technique (Enzyme-linked immunosorbent assay (ELISA).

Results: The percentage of dental caries occurrence was 100% among osteoporotic group and control group. Caries experience (DMFS) was higher among osteoporotic group (67.17±33.851) compared with control group (54.70±25.946) with no significant difference.

The percentage of gingivitis occurrence among osteoporotic group and control group was 100%. Cases with severe gingivitis were found in osteoporotic group. The occurrence and extent of pocket depth were higher among osteoporotic group at ≥4 and ≥5 mm and lower at ≥3 mm. However, no significant difference was recorded in mean pocket depth between the two groups. Clinical attachment loss occurrence and extent were higher among osteoporotic group at all thresholds of severity. Also the mean attachment level was higher among them, with statistically no significant difference.

Salivary flow rate and viscosity were higher in osteoporotic group compared to control one with no significant difference. While osteonectin level was lower in osteoporotic group with no significant difference.

Generally salivary physicochemical characteristics showed no significant correlation with dental caries that was in inverse direction for both salivary flow rate and viscosity, except for osteonectin as revealed apositive significant correlation in osteoporotic group, while in the control group there was no significant inverse correlation with both viscosity and osteonectin and positive with flow rate.

Generally salivary physicochemical characteristics showed no significant correlation with periodontal disease indicators that was in positive direction among osteoporotic women, except for clinical attachment loss that show an inverse correlation only with salivary viscosity, while among control group, salivary flow rate results showed no significant inverse correlation with both pocket depth and clinical attachment loss, while it was positive with gingival index. Salivary viscosity revealed a positive correlation for both gingival index and clinical attachment level and a negative one for pocket depth with no significant differences. Apposite figure was found concerning salivary

osteonectin that showed no significant positive correlation for both pocket depth and clinical attachment loss and negative with gingival index.

Conclusions: Osteoporosis associated with decreased bone mineral density had an effect on oral health status, leading to an increase in dental caries experience and periodontal disease. This was affected by changes in physiochemical characteristic especially osteonectin. Therefore old adult women may need special oral health preventive and educational programs.