

Research Article

Increased Plasma Osteocalcin, Oral Disease, and Altered Mandibular Bone Density in Postmenopausal Women

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An association between oral diseases and postmenopausal status has been recognized. However, the relationship between all oral disease, mandibular bone density, health status, and osteocalcin (OCN) bone markers in postmenopausal dental patients has not been reported. This study was therefore to verify the differences in plasma OCN levels, dental, periodontal, and oral mucosal disease, and mandibular bone density alterations from panoramic radiograph and systemic parameters in postmenopausal women, compared to premenopausal women. Oral, radiographic, and blood examination were performed in 92 females. Dental, periodontal, and oral mucosal statuses were recorded. Health profile parameters were collected from medical charts. Plasma OCN was evaluated by enzyme-linked immunosorbent assay. Forty-two (45.7%) participants were postmenopausal with a higher median age (55 (51, 62) years) than the premenopausal group (43 (38, 45) years). Overweight or obesity, hypercholesterolemia, and impaired fasting blood sugar were more prevalent in postmenopause. The average postmenopausal OCN level (425.62 ng/mL) was significantly higher than the premenopausal group (234.77 ng/mL, $p < 0.001$). The average number of missing teeth, mean attachment loss, alveolar bone loss, periapical lesion count, and clinical oral dryness score were also significantly higher in postmenopause ($p = 0.008, < 0.001, 0.031, 0.006, \text{ and } 0.005$, respectively). However, mandibular bone density determined by mandibular cortical index was lower in postmenopause ($p < 0.001$). The panoramic mandibular index, mandibular cortical width, fractal dimension, and other oral mucosal disease did not differ between the groups. Postmenopause was associated with elevated plasma OCN ($\beta = 0.504, p < 0.001$) when related covariates were adjusted. Elevated plasma OCN, oral mucosal dryness, high number of periapical radiolucencies and missing teeth, and lower mandibular bone density from panoramic radiograph were prevalent in postmenopausal women. Dentists should suspect an increased risk of low bone mineral density in postmenopausal patients who display these clinical and radiographic findings, and they should be referred for further examination. Plasma OCN may interconnect a relationship between postmenopausal status and the low mandibular bone density.