

ABSTRACT

Quantification of the alterations in cone beam computed tomography in medication-related osteonecrosis of the jaw

Medication-related osteonecrosis of the jaw (MRONJ) is one of the most serious side effects resulting from the treatment with antiresorptive and antiangiogenic drugs, used to treat diseases such as malignant tumors. This condition is associated with bone alterations that can be evaluated in detail in exams from Cone Beam Computed Tomography (CBCT). Therefore, the objective of this study was to quantify the bone alterations observed in CBCT in patients that had a clinical diagnosis of MRONJ and to associate them with the quadrants without the clinical signs of MRONJ, in addition to relating them to the type of medication, route of administration, period that the medication was used, underlying disease and use of corticosteroids. The CBCT images of 27 patients diagnosed with at least one quadrant with clinical diagnosis - totaling 92 bone quadrants - were analyzed simultaneously by two examiners ($\kappa = 1$). Bone changes and clinical parameters of the patients were recorded and tabulated and, by means of multivariate logistic regression, the following significant associations were found: periodontal ligament thickening and bone resorption with period of medication use; osteosclerosis, thickening of the base of the mandible, bone resorption, thickening of the lamina dura and type 1 bone with antiangiogenic medication; type 1 bone with intravenous medication; and persistent alveolus, thickening of the lamina dura and bone type 1 with cancer patients. Finally, there were no differences between the quadrants with MRONJ and the other quadrants of the jaws without the clinical diagnosis of MRONJ regarding bone alterations ($p \geq 0.2$). Within the limits of the study, therefore, it is possible to indicate that antiangiogenic or intravenous medications in cancer patients presented a higher risk for MRONJ. At least two or more imaging bone changes that can be identified on CBCT images occurred in all quadrants.

Keywords: Osteonecrosis of the jaw. Medication related osteonecrosis. Cone beam computed tomography.