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Influence of hypertension on periapical lesion regarding to osteoclast differentiation, periapical lesion phenotype and expression of inflammatory cytokines

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The aim of this study was to compare potential aspects of periapical lesion formation in hypertensive and normotensive condition using hypertensive BPH/2J and wild type control BPN/3J mice. Bone marrow stem cells were isolated from adult mice femur in 2 strains and osteoclast differentiation was evaluated by Tartrate-resistant acid phosphatase (TRAP) *in vitro*. The mandibular first molars of both strains had their dental pulp exposed. At day 21 the mice were euthanized and right mandibular molars were used to evaluate the size and phenotype of periapical lesion by microCT. Proteins were extracted from periapical lesion on left side and the expression of IL1 α , IL1 β and TNF α was analyzed by ELISA. The amount of differentiated osteoclastic cells was nearly double in hypertensive mice when compared to the normotensive strain ($p < 0.03$). Periapical lesion size did not differ between hypertensive and normotensive strains ($p > 0.7$). IL1 α , IL1 β and TNF α cytokines expression were similar for both systemic conditions ($p > 0.05$). Despite the fact that no differences could be observed in periapical lesion size and cytokines expression on the systemic conditions tested, hypertension showed elevated number of osteoclast differentiation.

Descriptors: Hypertension; Periapical Diseases; Inflammation.