DOI: http://dx.doi.org/10.21270/archi.v7i0.3910

MAST CELLS CONTRIBUTE TO PERIODONTAL DISEASE-INDUCED BONE RESORPTION MARKERS EXPRESSION ON MANDIBLE OF HYPERTENSIVE RATS

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Tema: Ciências Básicas

Hypertension can lead to enhanced inflammatory response and bone resorption on periodontaldisease (PD), and resident immune cells have a crucial role in PD progression; however, mast cells (MC) roles are not well understood. So, we aimed to evaluate the role of MC on gene expression of bone markers on mandibles of normotensive and hypertensive rats with PD. 10 weeks old male Wistar and SHR were pre-treated with compound 48/80 (MC degranulation-inducing pharmacological agent) and subjected to 15 days of PD, induced by a bilateral silk wire ligature placed on the first inferior molars. Experimental groups were labeled as Control (C), PD and 48/80+PD of Wistar (W) and SHR (S). Hemimandibles were harvested for microCT and real-time RT-PCR analysis of bone formation (Runx2, Osterix, Ctnb, Opg, Bmp2, Alp, Ocn, Opn and Bsp) and resorption/remodeling markers (Trap, Rank, Rankl, CtsK, Mmp2, Mmp9, and Oscar). The protocol was approved by Institutional Animal Care and Use Committees (School of Dentistry of Araçatuba; Process 00686- 2016). MicroCT showed increased alveolar bone loss in SPD, than in WPD, what was prevented by MC depletion, on both strains. Gene expression analysis of bone formation markers did not reveal major alterations, except for Opn, which was significantly increased on WPD and SPD groups. Bone resorption markers Trap, Mmp9, CtsK and, Oscar, showed higher expression on SC, compared to WC. PD groups showed higher expression of those markers compared to C group, especially on SPD, who had further increased resorption markers expression. MCs depletion was able to partially prevent the PD-induced increased expression, especially on hypertensive animals. Our results indicate that MC may have an important role in PD-induced alveolar destruction, mainly on hypertensive animals, in parts explained by bone related gene expression modulation. Financial support: FAPESP Grant 2015/03965-2 and CAPES (Masters Fellowship).

Descritores: Periodontal Disease; Hypertension; Mast Cells; Alveolar Bone Resorption.