

CORRELATION BETWEEN APICAL PERIODONTITIS AND HEART FUNCTION IN HYPERTENSIVE RATS

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The aim of this study was to investigate the link between apical periodontitis (AP), cardiac function and oxidative stress in rats under conditions of hypertension and normotension.

The study included 48 *Wistar rats*, divided into four experimental groups: I-control, II-normotensive rats with AP, III-spontaneously hypertensive rats without AP, and IV-spontaneously hypertensive rats with AP. The pulp chambers of the mandibular first molars were exposed to the oral environment for inducing AP. After four weeks, the rats were sacrificed and hearts according to the *Langendorff technique* were perfused at a gradually increased coronary perfusion pressure of 40-120 cmH₂O. Hemimandibular tissue samples were used for radiographic, histopathological, histomorphometric analysis, and examination of the concentration of proinflammatory cytokines. Cardiac tissue was analyzed histopathologically. Markers of systemic and cardiac oxidative status were determined.

From the radiographic, pathohistological and histomorphometric aspects, the periodontal ligament thickness, alveolar bone and apical cementum resorption, intensity of inflammatory infiltrate and radiographic AP area, were significantly higher in the hypertensive rats. The concentration of proinflammatory cytokines in AP was significantly higher in hypertensive conditions. AP was associated with impaired cardiodynamics and pathohistological changes in isolated rat hearts in hypertensive conditions. Also, they were correlated with increased values of prooxidants and decreased mobility of antioxidants in a hypertensive state.

AP and hypertension were correlated in a rat model. Results may help to better understand the association between AP and cardiac function in hypertensive conditions, supporting the hypothesis that lesions may adversely affect cardiac function and potentially disrupt oxidative status homeostasis in an experimental rat model.

Keywords: Apical periodontitis; Hypertension; Cardiodynamics; Oxidative stress.