BONE MINERAL DENSITY ANALYSIS OF MANDIBULAR CONDYLE IN ADULTS RATS UNDER PREMATURE CONTACT CONDITION.

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Abstract

The knowledge of load occlusal distribution through natural dentition because changes in magnitude and/or direction of occlusal forces can cause significant changes on structure of cortical and trabecular bone in the mandible. The aim of this study was evaluated the bone mineral density of the mandibular condyle in rat molars through bone mineral density (BMD) analysis.

Key words:

Bone mineral density, morphology, mandibular condyle.

Introduction

Bone Mineral Density (BMD) is the result of the dynamic process of bone tissue formation and is characterized by the concentration of a particular tissue of volume of bone. Bone quality is clinically monitored by measuring BMD. In animal models, the trabecular bone density of the samples was related to the mechanical strength observing a strong positive correlation between density and stiffness. Despite the BMD represent an important component of mechanical strength, it is not influenced by the trabecular bone microstructure and does not explain certain variations observed in this resistance¹.

Studies² have used different conditions resulting in changes in the intensity of stresses in the temporomandibular joint tissues, especially the mandibular condyle. In this study, we evaluated the BMD of the mandibular condyle in adult rats submitted to dental premature contact condition.

Results and Discussion

We used 45 male rats, Wistar, with 2 months of age (200-250). When these animals completed 2 month of age, the premature contact condition was performed. Then these animals were divided into 4 subgroups (n = 9). For control group, the dentition was maintained with normal occlusion. The mandibular condyle of each rat was submitted to computed microtomography on a SkyScan 1174 (SkyScan, Leuven, Belgium) equipment. After the three-dimensional reconstruction of both sides of each jaw, the BMD of subchondral bone of mandibular condyle was performed in the CT-Analyzer software (SkyScan, Leuven, Belgium). In results, we observed that the mean of BMD in posterior and anterior region of the mandibular condyle, in 7 days was higher (0.18906 and 0.18867, respectively) than we compared with 14, 21 and 28 days.

Conclusions

After induction of premature contact, BMD of the subchondral bone of mandibular condyle increases and then decreases according the periods evaluated.

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¹ Ciarelli, M.J.; Legrand, E.; Pascaretti, C.; Baslé, M.F.; Audran, M., *Microscopy. Res. and Technique.*, **1999**, 45, 303-12.

² Mavropoulos, A.; Ammann, P.; Bresin, A.; Kiliaridis, S., *Angle. Orthod.*, **2005**, 75, 625-630.