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Morphological Study of Mandible of Sapajus apella monkeys

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Abstract
The aim of this study was to evaluate the morphology of the mandible of Sapajus apella monkeys by morphometry. Specifically, to understand the regions and anatomical structures of the forces trajectories of the mandibles of Sapajus apella monkeys.

Key words: *anatomy, mandible, Sapajus apella.*

Introduction

The bone remodeling is a continuous process, with no rupture with the aged bone and damaged by new tissue. From the macroscopic point of view, since the mechanical forces of the masticatory are derived from the teeth that are dissipated by the skull, and by means of structures that the same areas or regions that function as true paths or trajectories of force dissipation are not a skeleton craniofacial (Cattaneo et al., 2003; Prado et al., 2016; Panagiotopoulou et al., 2017).

Several species of primates, such as Rhesus and Pan, have been studied with the interest of investigating the phylogenetic species with humans, since the most important research parameters and with greater robustness of extrapolation results to a biomechanics of the human body (Zeller, 1999). An interesting parameter for an investigation of this phylogenetics is chewing. The monkeys of the family were the primates, the monkeys that were submitted to Central and South America (Szabuniewicz et al., 1971).

Sapajus apella is popularly known as monkey-nail because of its flattened appearance of its glands and head (Napier and Napier, 1967). It is known that Sapajus apella the complex biomechanics by the method of production of bite force of great intensity, but that vary according to the implant tooth, are the incisor teeth, canines and premolars or molars. According to the studies, these morphological adaptations do not seem to restrict only the Sapajus apella diet (Wright, 2012). It is still unclear how the biomechanical forces acting on the craniofacial skeleton of Sapajus apella, around the teeth, affect the level of balance of changes in the mandible.

Results and Discussion

Morphometric analysis was performed on each mandible with a digital caliper. The measures were taken on both sides to determine the morphology of the Sapajus apella monkeys. Shapiro-wilk test showed the normal distribution of the data. Mean and standard deviation of all measurements and repetitions were performed. Wilcoxson test was applied to verify if there was difference between the right and left sides of some measures, since the measurements were non-parametric. Statistical analysis was perfomed in R software (Free software). There was a significant difference in the comparative analysis between the sides right and left for the measurements: Coronoid process to the condylar process (0.00001), Width of mandibular ramus (0.0392), Height of mandibular corpus (0.00001), Height of mandibular corpus in the 2nd premolar (p=0.00001), Height of the mandibular corpus in the 1st molar (0.00109).

Conclusions

In mandible of Sapajus apella monkeys, the greatest shape variation between the sides was in the premolar 2nd premolar and 1stmolar region.

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