INTRODUCTION

Despite the presence of skeletal malformation in fetuses of rats treated with caffeine, its effects on bone formation and growth have not yet been elucidated. The objective of this study was to evaluate the effects of caffeine on the formation and endochondral bone growth in rats.

MATERIAL AND METHODS

36 Wistar rats were divided into four groups, control group and others three of which were treated with caffeine at doses of 25, 50 and 100 mg/kg daily throughout pregnancy and lactation. Both the formation and endochondral bone growth of offspring aging three and 21 days were assessed through histomorphometry.

RESULTS AND DISCUSSION

Both the formation and endochondral bone growth of offspring aging three and 21 days were assessed through histomorphometry, revealing malformations, including syndactyly and ectrodactyly. Among the progeny of rats treated with higher doses of caffeine. A significant reduction in limb length and vertebral bodies as well as in the thickness of the epiphyseal plate and in the percentage of trabecular bone tissue of the primary spongiosa (Figure 2) has been found. In all groups treated with caffeine, the cartilaginous epiphysis of some long bones presented chondrocytes with pyknotic nuclei and empty lacunae of chondrocytes, characteristic of cell death (Figure 4), and glycosaminoglycans deficiency in the matrix as well. The 21-day-old offspring mothers with caffeine remained significantly smaller (Figure 1). Articular cartilage and epiphyseal plate of the vertebrae and long bones showed an impairment of differentiation of chondroblasts without distinction of growth plate zone (Figure 3). In the group treated with caffeine, there was degeneration and necrosis of chondrocytes (Figure 4, 5), mainly in offsprings of mothers treated with 100mg/kg of caffeine.

CONCLUSION

It was concluded that offsprings of mothers treated with caffeine have reduced bone formation and endochondral bone growth at all doses studied.

REFERENCES


Reported:


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