Pengaruh kekurangan kalsium terhadap daya reversibilitas kalsifikasi tulang sebagai faktor penunjang keberhasilan perawatan ortodontik

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Abstrak

The growth and development of bone play an important role in orthodontics, were bone calcification can be used the estimate bone maturity for diagnosis and treatment planning. Nutritional status during pregnancy and infant period will influence the growth and development stages. The purpose of this study was to investigate the possibility to restore calcium and phosphorus in bone after pre- and postnatal calcium deficiency. Three groups of Rattus norvegicus rats were used in the experiments. The first group was the control group with standard diet, the second was infant group with pre- and postnatal calcium deficiency, and the third group consisted of young rats at weaning age with pre- and postnatal calcium deficiency but supplemented with enough calcium in the diet. Bone calcification stages were analyzed 1) histologically by measuring epiphyseal width on right femur, 2) by measuring calcium and phosphorus concentration on left femur with spectropometry, atomic absorbtion and UV spectroscopy. The data were analyzed by one way Anova and t testing. The results showed that there were significant differences in the epiphyseal width and in calcium and phosphorus concentrations between all three groups ($p<0.01$). It was concluded that bone calcification damage because of pre- and postnatal calcium deficiency was an irreversible process. Calcium supplement after bone calcification could not restore the condition.