FEATURES OF BONE MINERALIZATION AFTER PLASTICS OF METADIAPHYSEAL DEFECTS WITH CERAMIC OSTEOAPATITE

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Key words: rats, bone defects, bone mineralization, biological hydroxyapatite

Introduction, aim of the study
The data on actual mineral and organic contents in the bones other than injured are practically unavailable in the modern sources. Our study therefore is aimed at investigation of bone minerals in hipbone and parietal bone after experimental operations for plastics of bone defects with ceramic hydroxyapatite (OC015).
Materials, methods
126 non-linear rats with the initial mass of 135-145 grams were operated on for through perforation of both tibiae thus modeling a routine bone tissue removal. The 2.2-mm. defects in

half of the total number of the animals were filled with osteoapatite granules of the respective diameter while in the rest the defects remained unfilled. The observation terms were 7, 15, 30, 60, 90 and 180 days. Upon expiration of each term the required bones were excised for further analysis.

Results and discussion

The first group showed increase of water contents in the hipbone beginning from the 7th day of observation; the values exceeded those of controls by 5.75%, 7.59%, 9.76%, 12.12%, 20.14% and 7,07% ($p<0,05$) respective to observation terms. The minerals were on the contrary lower than in control group in the period from the 7th to the 90th day and organic substances decreased only by the 90th day – by 12.55%. Parietal bone featured the same changes yet beginning from the 15th day of observation.

The second group exhibited actually the similar dynamics as the first group yet in the period from the 7th to the 90th days deviations amplitude was somewhat higher. In the period from the 60th to the 90th day deviations amplitude smoothed and finally by the 180th day no significant differences between two groups were observed.

Conclusions

Regeneration processes in tibiae lead to minerals and organic substances loss vs. water share increase in hipbone and parietal bone. Promoted regeneration still features similar changes yet more expressed in early terms but finally leveling to baseline in later terms.