

عنوان مقاله:

Development of Risedronate-Loaded Nano Capsules for Calvaria Healing in Rabbit

محل انتشار:

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خلاصه مقاله:

Objective- Bone regeneration is a multifactorial phenomenon which contributed to several factors. It is reported that risedronate is effective for musculoskeletal diseases. The current study was to determine effectiveness of the risedronate-loaded nano capsules for calvaria healing in rabbit. Design- Experimental study. Procedures- ۱۵ white adult male New Zealand rabbits were used. Four full-thickness skull defects were created in the calvarial bone. The first defect kept unfilled (control). The second was filled with nano risedronate capsules. The third hole was filled using an autogenous bone. The fourth hole was filled with nano risedronate capsules+ autogenous bone. At ۴, ۸ and ۱۲ weeks after surgery, inflammation level, bone vitality grade, bone type and foreign body were determined. Results- According to the results, the most inflammation was found in control and the lowest in the nano autograft ( $p < 0.05$ ). Bone formation in the nano autograft group was significantly faster after ۴ weeks ( $p < 0.05$ ). Typical bone type II was observed in all of the groups. After ۸ weeks, the grade II inflammation was detected in the control group ( $p < 0.05$ ). After ۸ weeks, The highest grade of inflammation rate were seen as I and ۰ in autograft and nano risedronate + autograft groups, respectively ( $p < 0.05$ ). After ۱۲ weeks, grade III bone viability was higher in nano risedronate + autograft group compared to the autograft group ( $p < 0.05$ ). After ۱۲ weeks, the positive foreign body was detected in control and nano groups. No foreign body was seen in nano risedronate + autograft and autograft groups. Conclusion and clinical relevance- The achieved results suggested have risedronate-loaded nano capsules have positive effects on bone formation and viability in calvaria healing in rabbit which be diminishing osteoclast activity improves bone formation.

کلمات کلیدی:

Nano-capsules, Risedronate, Calvaria healing, Rabbit

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