ABSTRACT

Background. Hydroxyapatite bone graft is one that is often used because it has biocompatible, osteokonduktif, and bioactive properties. Chitosan is a natural biopolyamino sugars obtained by deacetylation of natural chitin made from shrimp shell waste and have minimal body reactions, antibacterial, biocompatible, biodegradability, and osteokonduction. Angiogenesis is the process of forming new blood vessels that have a very important role in the process of bone regeneration. The blood vessels are formed will provide critical components for osteogenesis.

Purpose. The aims of this study is to compare the effect of hydroxyapatite and hydroxyapatite-chitosan powders to the process of angiogenesis in rat's tibia.

Methods. Defect was made with a diameter of 1.5 mm and a depth of 1 mm in 24 wistar rats. Rats were divided into 2 groups according to the time that is 7 and 14 days. Each group was divided into 2. Defects in group 1) were received hydroxyapatite 2) hydroxyapatite-chitosan. Rats were sacrificed according to the time. The number of proliferation blood vessels that form can be evaluated using observations histology preparations. This preparation is formed by cutting longitudinal tibia then done with Hematoxylin eosin staining under light microscope. And outcome data were analyzed using statistical T-tests.

Results. Application of hydroxyapatite-chitosan influence in the process of angiogenesis during bone healing process.

Conclusion. Application of hydroxyapatite-chitosan influence in the process of angiogenesis during bone healing process and still needed further investigation regarding the appropriate concentration of chitosan to improve the process of angiogenesis in the process of bone defect healing in the area.

Keywords: hydroxyapatite, hydroxyapatite-chitosan, angiogenesis