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POSTER

Establishing an early-stage femoral head necrosis model of rabbit using methylprednisolone and Complete Freund's Adjuvant

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Abstract

Background: Pathological animal models provide the foundation for developing new methods for treating. This research aims to establish a rabbit model of femoral head necrosis. Osteonecrosis of the femoral head (ONFH) was induced in rabbits by using methylpresnisolone combined with Complete Freund's Adjuvant (CFA). New Zealand White rabbits were divided into two groups. Group A (n=10) was given an intramuscular injection of 0.5 mg/kg (CFA) and 40mg/kg methylprednisolone (MPS). Group B (n=6) was received normal saline at the same location and same volume as those in Group A. The efficiency of ONFH rabbit model was assessed at 7 weeks after the last injection. Body weight was weighed. The histological structure of head femoral and bone were deteded by H&E staining. The empty lacuna was counted. Cartilage degeneration was evaluated using image analysis software. Blood vessel density was assessed after ink artery infusion. The cell cycle of bone marrow-derived mononuclear cells was analyzed by flow cytometry. The results showed that there was no difference in body weight change of rabbits between two groups. However, the bone morphology and cartilage surface of femoral head were abnormalities at group A. The percentage of empty osteocyte lacunae were significantly higher in Group A than Group B. Chondrocyte degeneration and fibrocartilage expression were observed at Group A. Compare to group B, Group A had less ink-stained blood vessels. Moreover, the fraction of bone marrow-derived mononuclear at S phase and G2/M phase of the cell cycle was significantly decreased in group A. Thus, CFA combined with MPS can be used to establishing an early-stage femoral head necrosis model of rabbit.

Keywords

Complete Freund's Adjuvant, CFA, methylprednisolone, osteonecrosis of the femoral head, rabbit model

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References