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Study of human acellular amniotic membrane loading bone marrow mesenchymal stem cells in repair of articular cartilage defect in rabbits

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ABSTRACT. The aim of this study was to investigate the repair effect of human acellular amniotic membrane (HAAM) loading bone marrow mesenchymal stem cells (BMSCs) on articular cartilage defect in rabbits. Rabbit BMSCs were isolated and cultured, and they were then inoculated on HAAM to prepare the complex of HAAM and BMSCs. Twenty-four rabbits were randomly divided into groups A and B, with 12 animals in each group. The left and right sides were used as the experimental and control sides, respectively. The models of bilateral articular cartilage defect were established. The defect areas on the experimental side in groups A and B were implanted with the complex of HAAM and BMSCs and HAAM alone, respectively. The control sides of the two groups were not implanted with any material. In the 8th and 12th week after surgery, gross observation, histological examination and cartilage defect scoring were performed. In the 8th and 12th postoperative week, gross observation and histological observation showed that dense cartilage-like cells appeared in group A but not in group B, indicating preferable cartilage repair. The cartilage defect score

on the experimental side in group A was 5.31 ± 0.68 in the 8th week and 3.23 ± 0.52 in the 12th week, and that in group A was significantly lower than in group B ($P < 0.05$). HAAM loading BMSCs has a good repair effect on articular cartilage defect under an *in vitro* environment.

Key words: Human acellular amniotic membrane; Cartilage defect; Bone marrow mesenchymal stem cells; Cartilage repair

