

عنوان مقاله:

Effects of rabbit pinna-derived blastema cells on tendon healing

محل انتشار:

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خلاصه مقاله:

Objective(s): Tendon healing is substantially slow and often associated with suboptimal repair. Cell therapy is one of the promising methods to improve tendon repair. Blastema, a population of undifferentiated cells, represents characteristics of pluripotent mesenchymal stem cells and has the potentials to be used in regenerative medicine. The aim of this study was to investigate the use of blastema allotransplantation in rabbit tendon healing. **Materials and Methods:** In this study, one rabbit was used as a blastema donor, and twenty-four rabbits were divided into control and treatment groups. Blastema cells were obtained from ear pinna upon punch hole injury in the donor rabbit. Under general anesthesia, a complete transverse tenotomy was performed on the midsubstance of deep digital flexor tendon followed by suture-repair. In the treatment group, 1×10^6 blastema cells suspended in buffer saline were injected intratendinously at the repair site, while the control group received only the buffer saline. Cast coaptation was maintained for two weeks. Eight weeks after the operation, tendons were harvested, and histopathological, biomechanical, and biochemical assays were performed on samples. **Results:** Mechanical testing showed a significant increase in ultimate load, energy absorption, stiffness, yield load, stress, and strain in blastema-treated tendons compared to controls. Also, higher hydroxyproline content and improved collagen alignment along with lower inflammatory cell infiltration and decreased angiogenesis were observed in blastema-treated tendons. **Conclusion:** Increased levels of hydroxyproline and improved histopathological and biomechanical parameters in the treatment group suggest that blastema cells could be considered an adjunct to tendon repair in rabbits.

کلمات کلیدی:

Cell- and Tissue-based therapy, Collagen, Ear Auricle, Hydroxyproline, Regenerative medicine, Tendons

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