



ORAL

Mesenchymal stem cells for treatment of chronic wounds: A Study with autologous transplantation of adipose-derived stem cells

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Abstract

Objective: This study was to determine the effects of adipose-derived stem cells (ADSCs) on dermal fibroblasts responses to injury including migration and proliferation in vitro. We also evaluated the autologous transplantation of ADSCs on treatment of human chronic wounds.

Subjects and methods: The proliferation and migration of fibroblast was evaluated by co-culture ADSCs with allogenic dermal fibroblast and by the scratch assay. In clinical study, autologous ADSCs were transplanted on to chronic wounds of 25 patients, who were hospitalized into the Wound Healing Department of the National Institute of Burns from April, 2015 to June, 2016. The mean age was 56.88 ± 16.81 , male/female ratio was 2.12. The autologous adipose-derived stem cells at passages 5 were transplanted on surface of wound every 3÷5 days. The wound biopsies for H&E staining and for Transmission Electron Microscope were taken before transplantation and at day 7, day15 and day 20 of studied progress.

Results: ADSCs stimulated fibroblast proliferation and migration in wound healing assay. In clinical study, before transplantation, extracellular matrix (ECM) was destroyed. After transplantation, ADSCs strongly stimulated fibroblast proliferation and fibroblasts to produce collagen. ADSCs also promoted proliferations of epithelial cells and neovascularization at the chronic wound site.

Conclusion: Autologous ADSCs promoted the wound healing process by cell proliferation and improvement of ECM in chronic wound site.

Keywords

Fibroblast; Adipose-derived stem cells; chronic wound.

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References

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