SciTechnol
International Publisher of Science, Technology and Medicine

Journal of Genetics and Gene Therapy

Micrograft tissue solution accelerates epidermal healing by inducing favorable tissue reactions on cutaneous wound in mice: A histopathological study

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Abstract

We previously showed that cutaneous wound healing in normal mice is accelerated by a micrograft (MG) technique using the Rigenera protocol. Presently, clinical trials have been performed for utilizing this protocol; however, the driving mechanisms behind the beneficial effects of this approach remain unclear. In the present investigation, we focused on five major tissue reactions in wound healing in mice, namely, regeneration, migration, granulation, neovascularization and contraction. Histological data were obtained from the wounds 13 days after back skin excision and morphometrical analysis was performed. All reactions were greater in the MG group than in the control group. The wound area correlated well with granulation sizes and neovascularization densities in the granulation tissue. Vascular distribution analysis in the granulation tissue indicated that neovessels extended and reached the subepidermal area in the MG group, but was only halfway developed in the control group. Moreover, epithelialization with regeneration and migration was augmented by MG. Myofibroblast is a known machinery for wound contraction that uses α-smooth muscle actin filaments. In this regard, myofibroblast were distributed beneath/top of the regenerated epithelium and was more than 3-times greater in the MG group than in the control group. These findings indicated that MG accelerated a series of wound healing reactions and could have a great advantage in treating intractable wounds in clinical practice.

Biography

Shiro Jimi is Central Lab for Pathology and Morphology, Faculty of Medicine, Fukuoka University, Fukuoka, Japan. He published 127 research papers around the globe.

Publications

- Acceleration Mechanisms of Skin Wound Healing by Autologous Micrograft in Mice
- Inhibitory effects of polysorbate 80 on MRSA biofilm formed on different substrates including dermal tissue
- Biofilm-Forming Methicillin-Resistant Staphylococcus aureus Survive in Kupffer Cells and Exhibit High Virulence in Mice
- Mechanisms of cell death induced by cadmium and arsenic
- RARalpha is a regulatory factor for Am-80-induced cell growth inhibition of hematologic malignant cells

4th International Conference on Wound Care, Nursing and Tissue Science, Amsterdam, Netherlands, July 15-16, 2020

Citation: Shiro Jimi: *Micrograft tissue solution accelerates epidermal healing by inducing favorable tissue reactions on cutaneous wound in mice: A histopathological study*: Wound Care Congress 2020: 4th International Conference on Wound Care, Nursing and Tissue Science, Amsterdam, Netherlands, July 15-16, 2020