

Comparative effects of silver sulfadiazin ointment and stimulated mesenchymal stem cell with lipopolysaccharide on skin burn healing in male mice

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Back ground and Aims: Bone marrow mesenchymal stem cells have been recently investigated as important source of regenerative undifferentiated cells. In these study effects of stimulated mesenchymal stem cells (SMSC) by lipopolysaccharide were assessed on burn healing and compared with Silver sulfadiazin(SSD).

Methods: 27 male mice divided to 3 major groups: control, treatment1(SSD) and treatment2 (SMSC). A full thickness skin burn was done by contacting a brass bar heated in boiling water for 9 seconds. Animals in control group were repaired without any interference. In treatment1 group, SSD ointment was applied daily up to final period of study. In treatment2 group, after induction of injury, single dose of SMSC were subcutaneously injected in the burn site. Animals in each group were euthanized at days 14, 21, 28 (subgroups), tissue samples were collected, fixed, prepared by routine laboratory protocols, sectioned in 5 µm thickness, stained with Hematoxylin-Eosin and Masson-Trichrome methods and examined by pathologist.

Results: SMSC group showed wound counteraction with 50%, whereas SSD group showed 22/6% and control group 15% wound contractility. The result of Masson-Trichrom staining showed more collagen was deposited in SMSC group in compare with two other groups. This results has been compared with (Ruth etal,2010) Who suggest the TLR4 in stimulated mesenchymal stem cells by LPS, increase expression of TGFB and enhancement of collagen production.

Conclusion: As the collagen is basic factor in wound contraction, the SMSC group showed better contraction and thus better healing in this study.