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THERAPEUTIC ROLE OF MESENCHYMAL STEM CELLS SEEDED DERMAL MATRIX VERSUS ACELLULAR DERMAL MATRIX IN HEALING OF SKIN DEFECT**Sahar M.M. Omar***Armed Forces College of Medicine, Egypt*

Background & objectives: One of the major challenges facing the surgeons is replacing a full-thickness skin loss successfully. This study aimed at testing the efficacy of decellularized dermal matrix seeded with bone marrow-mesenchymal stem cells (BM-MSCs) as a scaffold for the repair of skin defects in rats comparison to using acellular dermal matrix (ADM) alone.

Methods: A 2x2 cm² size full thickness skin defect was created on the dorsum of thirty male Wister rats (200- 250g) under xylazine (5 mg/kg) and ketamine (50 mg/kg) anesthesia. The animals were then randomly divided into three equal groups: group I; The defect was left for spontaneous recovery, group II; The defect was repaired with ADM alone, and group III; The defect was repaired with ADM seeded with labeled BM-MSCs. The healing rate of the defect in all groups was assessed by measuring wound area and healing percentage twice weekly. The specimens from the wound site were obtained from all groups on day 14 and day 28 post-operative for histological analysis.

Results: Treatment of wound defect with BM-MSCs seeded dermal matrix resulted in complete wound recovery on gross examination. Moreover, histological analysis showed proper reepithelization, proper collagen rearrangement together with minimal inflammatory cells. Well developed hair follicles and sebaceous glands were noted as well. Statistically, 28 days post-operatively, significant increase in healing rate, healing area percentage and collagen area percentage was detected together with significant decrease in vascular density compared to group I&II.

Conclusion: Stem cells seeded ADM facilitated early and better healing of skin defect in rats than the non- seeded ADM and spontaneous healing.

Keywords: acellular dermal matrix (ADM), bone marrow mesenchymal stem cells (BM-MSCs), bio-scaffold, skin defect

Biography

Dr. Sahar M.M. Omar now is a professor doctor at Ain Shams University and Head of Histology Department at Armed Forces College of Medicine. has completed her Ph.D. in Histology & cell biology at Ain Shams University from 2000 to 2005. Dr. Sahar is a FAIMER fellow (foundation for advancement of international medical education and research) batch 2019. She is also a Certified International Professional Trainer CIPT MISSOURI State University. Dr. Sahar has recently written book chapter entitiled " Mesenchymal Stem Cells For Treating Ocular Surface Diseases: A Review" in the book named " Issues and Developments In medicine and Medical research". She contributed as a speaker at global webinar on stem cell during november 11-12-2021, she also attended the BIT's 10th World Congress of Regenerative Medicine & Stem Cells -2016 in China and gave a talk titled as "Bone Marrow Mesenchymal Stem Cell Transplantation in a Rabbit Corneal Alkali Burn Model.". she has published more than 15 papers in stem cells and tissue engineering and cellular therapy in reputed journals, and has been serving as an editorial board member of repute in Journal of Stem Cells and Genetics, Journal of Embryology & Stem Cell Research, Journal of dental and medical science & Journal of Genetics, Cellular and Molecular Biology. Associate editor in Journal of Stem Cell Research and therapeutics. Also serving as Board reviewer in Journal of Stem Cell Research and Medicine & Journal of nanomedicine and nanoscience research