

Treatment of hypertrophic scar in human with autologous transplantation of cultured keratinocytes and fibroblasts along with fibrin glue.

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Abstract:

Objective: Hypertrophic scar involves excessive amounts of collagen in dermal layer and may be painful. Nowadays, we can't be sure about effectiveness of procedure for hypertrophic scar management. The application of stem cells with natural scaffold has been the best option for treatment of burn wounds and skin defect, in recent decades. Fibrin glue (FG) was among the first of the natural biomaterials applied to enhance skin deformity in burn patients. This study aimed to identify an efficient, minimally invasive and economical transplantation procedure using novel FG from human cord blood for treatment of hypertrophic scar and regulation collagen synthesis.

Materials and Methods: In this case series study, eight patients were selected with hypertrophic scar due to full-thickness burns. Human keratinocytes and fibroblasts derived from adult skin donors were isolated and cultured. They were tested for the expression of cytokeratin 14 and vimentin using immunocytochemistry. FG was prepared from pooled cord blood. Hypertrophic scars were extensively excised then grafted by simply placing the sheet of FG containing autologous fibroblast and keratinocytes. Histological analyses were performed using Hematoxylin and eosin (H&E) and Masson's Trichrome (MT) staining of the biopsies after 8 weeks.

Results: Cultured keratinocytes showed a high level of cytokeratin 14 expression and also fibroblasts showed a high level of vimentin. Histological analyses of skin biopsies after 8 weeks of transplantation revealed re-epithelialization with reduction of hypertrophic scars in 2 patients.

Conclusion: These results suggest may be the use of FG from cord blood, which is not more efficient than previous biological

transporters and increasing hypertrophic scar relapse, but could lead to decrease pain rate.