The Effect of FGF2 in Chronic Wound Healing

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Chronic wounds represent important problem for individual patients as well as for the human society. One of the possible choices to improve this problem could be Fibroblast growth factor 2. FGF2 wild type has been proven to demonstrate significant positive effects in wound healing. We propose that stable form of FGF2 (FGF2-STAB) will enable us to improve efficiency of wound healing. The research was focused on histopathological analyses of skin wounds treated by these two forms of FGF2. Rat skin was wounded twice and collected after 14 or 28 days of wound healing. Basic histological staining Haematoxylin-Eosin to analyze general effect of this protein in wounded tissue was used. Collagen fibers maturation was detected by special staining using Sirius Red. Immunohistochemical techniques labeling Ki67 and PCNA proteins were used as well as alpha SMA analysis, MPO labeling and pan-cytokeratin staining. TUNEL assay determined us the distribution of apoptotic cells in treated tissues. Interestingly, histopathological analyses uncovered reduced panniculitis in FGF2-STAB rats after 14 days. Immunohistochemical analyses revealed decreased amount of myofibroblasts in FGF2-STAB treated samples. Moreover, increased cell proliferation in tissues treated by both forms of FGF2 proteins was found. The number of inflammatory cells was reduced in the animals treated by FGF2-STAB compared to untreated animals. The study revealed that the speed and even the quality of skin wound healing were enhanced by FGF2-STAB treatment in comparison to controls. Based on these results, it is possible to predict FGF2-STAB as possible future treatment for wound healing. However, more analyses confirming its harmlessness in experimental animals will be necessary to conduct.

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