Wound Growth Factors Meta-Analysis- Do They Work?

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Abstract Text:

Purpose:
Topical Growth Factors are important future pillars in wound healing but have limited evidence based literature. Meta-analysis and systematic review on all growth factors was performed.

Methods:
All human randomised control trials (RCTs) involving wound and growth factor on Pubmed, Ovid, and Cochrane register and non-randomised comparative retrospective analyses with large patient numbers were included for their statistical weight (n=51). Forest plots were done.

Results:
Five main groups were identified: Platelet derived Growth factor (PDGF), platelet releasate/gel (PR), Fibroblast Growth factor (FGF), Epidermal Growth Factor (EGF) and Granulocyte Colony Stimulating Factor (GCSF). The combined RCTs patient number in each group was: PDGF (n=3520), PR (n=6441), FGF (n=1683), EGF (n=517) and GCSF (n=452). Wounds (diabetic, neuropathic pressure, hypertensive and venous ulcers, burns and skin graft) and trial length for healing to occur were heterogenous. The relative risk of complete healing compared to placebo is 2.26-4.7 (EGF), 1.41-7.68 (PDGF), 1.33-1.68 (FGF), 1.37-3.21 (GCSF) and 1.32 (PR). The ratio of mean/median days to complete healing compared to placebo is 0.68 (PDGF), 0.60 (EGF), 0.58-0.91 (FGF), 0.55-0.72 (GCSF). The ratio of mean/median percentage area of wound healed compared to placebo is 1.2-3.5 (PDGF), 3.4 (PR), 1.04-1.20 (FGF), 1.49-1.93 (GCSF).

All ratios were statistically significant ($p<0.05$). EGF and FGF had better Vancouver scar scale ratings compared to placebo. No significant differences in adverse events were noted.

Discussion/Conclusion:
Clinical use of topical PDGF, PR, FGF, EGF and GCSF have statistically significant faster rates of healing (especially higher in first 2 weeks), higher chances of complete healing and possible better scar profiles. Cochrane reviews, economic cost analyses, larger trials that overcome insufficiently powered RCTs, standardized outcome definitions and trial length are needed for further widespread clinical adoption. New growth factors (e.g: Vascular Endothelial Growth Factor (VEGF) and Keratinocyte Growth Factor (KGF)) are also being tested