

Platelet gel for healing cutaneous chronic wounds

Giovanni Crovetti ^{a,*}, Giovanna Martinelli ^a, Marwan Issi ^a, Marilde Barone ^a,
Marco Guizzardi ^b, Barbara Campanati ^c, Marco Moroni ^d, Angelo Carabelli ^b

^a *Servizio di Immunoematologia e Medicina Trasfusionale, Azienda Ospedaliera “Ospedale di Circolo di Busto Arsizio” Ple Solaro 3, 21052 Busto Arsizio (Varese), Italy*

^b *UO di Dermatologia, Azienda Ospedaliera di Gallarate, Lgo Boito 2, 21013 Gallarate (Varese), Italy*

^c *UO Chirurgia Vascolare, Azienda Ospedaliera “Ospedale di Circolo di Busto Arsizio” Ple Solaro 3, 21052 Busto Arsizio (Varese), Italy*

^d *UO Malattie Infettive, Azienda Ospedaliera “Ospedale di Circolo di Busto Arsizio” Ple Solaro 3, 21052 Busto Arsizio (Varese), Italy*

Abstract

Wound healing is a specific host immune response for restoration of tissue integrity. Experimental studies demonstrated an alteration of growth factors activity due to their reduced synthesis, increased degradation and inactivation. In wound healing platelets play an essential role since they are rich of α -granules growth factors (platelet derived growth factor—PDGF; transforming growth factor- β —TGF- β ; vascular endothelial growth factor—VEGF). Topical use of platelet gel (PG), hemocomponent obtained from mix of activated platelets and cryoprecipitate, gives the exogenous and in situ adding of growth factors (GF). The hemocomponents are of autologous or homologous origin. We performed a technique based on: multicomponent apheretic procedure to obtain plasma rich platelet and cryoprecipitate; manual processing in an open system, in sterile environment, for gel activation. Every step of the gel synthesis was checked by a quality control programme. The therapeutic protocol consists of the once-weekly application of PG. Progressive reduction of the wound size, granulation tissue forming, wound bed detersion, regression and absence of infective processes were considered for evaluating clinical response to hemotherapy. 24 patients were enrolled. They had single or multiple cutaneous ulcers with different ethiopathogenesis. Only 3 patients could perform autologous withdrawal; in the others homologous hemocomponent were used, always considering suitability and traceability criteria for transfusional use of blood. Complete response was observed in 9 patients, 2 were subjected to cutaneous graft, 4 stopped treatment, 9 had partial response and are still receiving the treatment. In each case granulation tissue forming increased following to the first PG applications, while complete re-epithelization was obtained later. Pain was reduced in every treated patient.

Topical haemotherapy with PG may be considered as an adjuvant treatment of a multidisciplinary process, useful to enhance therapy of cutaneous ulcers.

© 2004 Elsevier Ltd. All rights reserved.

Keywords: Wound healing; Growth factors; Platelet gel