THE ROLE OF BIOLOGICAL SKIN COVERS/SUBSTITUTES IN BURNS TREATMENT (270)

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Recent proactive approaches to the management of burn patients may involve a combination of “surgical” and “non-surgical” procedures. In very deep- and full-thickness burns, early necrectomy and skin-grafting has become (predominantly surgical) the gold standard for treatment, while in partial-thickness dermal burns, and some other situations after necrectomies, “non-surgical” procedures can be used successfully. Temporary skin-covers and/or biological skin-substitutes represent important tools within a physician’s arsenal that can be used during a particular phase of treatment. The main advantages of this approach are fast adhesion of biological skin-covers to the wound bed and stimulation of healing (i.e. enhancing re-epithelization in superficial wounds and/or preparation of the excised wound bed for autografting). In addition, evaporative water-loss is decreased and desiccation of the wound bed is prevented. There are also obvious pain-relief benefits, especially when using viable biological covers, which prevent microbial proliferation in burn wounds. In addition, epidermal as well as dermal reparative processes are stimulated while delaying growth of granulation tissue. In the Czech Republic (CR), (formerly part of Czechoslovakia), viable dermoepidermal pig skin xenografts have been used in Prague and Košice Burn Centres, since the early 1970. In 1985, we introduced their use at the Charles University Teaching Hospital in Hradec Králové. In addition to fresh xenografts, which are stored hypothermically, cryopreserved grafts have been frequently used, as well. In particular cases, we have also used split-skin allografts and cultured epithelial sheets (autologous human epidermal keratinocytes). Changes in Czech legislation (2008) which reflected legislative development relative to the European Union, brought new requirements for safety and quality of skin-banking practices. In 2013, we reviewed the availability of different types of biological skin-covers in the CR. Skin allografts can be obtained from tissue- and/or skin banks licensed by the national competent authority - CR State Institute for Drug Control. Non-viable xenografts have been commercially available in the form of a CE certified medical device (Xe-Derma®), since 2007. Clinical experience has demonstrated that it has good efficacy as a biological temporary cover/substitute; however, there remains one significant disadvantage -- the absence of an epidermal layer. Moreover, there are documented cases indicating that, when applied to an infected burn wound, there is a tendency for the cover to dissolve. Cultured epidermal keratinocytes are currently classified as advanced investigational products, and can only be used within approved clinical trials. Presently, viable skin xenograft are not available as skin covers. Needless to say, this situation causes consternation among burn surgeons. Moreover, it is obvious that the potential risk of using viable xenografts must be compared with the rising threats of mass burns-casualties and the resulting need for management of scarce resources. Therefore, we consider re-introduction of viable xenografts (now classified as a drug) to the routine practice of burn centres, to be an urgent issue.