SHOULD WE GO BEYOND THE STANDARDIZED TREATMENT OF CHEMICAL BURNS? (158)

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Introduction: Chemical burns are rare among all the burn injuries and can be devastating because of their unpredictable and unique nature. First aid is paramount and involves early removal of the chemical from the skin by copious water irrigation. As the second step, the surgeon must observe the depth of the burn and choose the appropriate treatment modality (1,2,3). The aim of this study is to discuss whether we should go beyond the standardized treatment in chemical burns.

Method: Nineteen patients admitted to our burn unit with chemical burns between January 2002 and February 2015 were included in the study. Sixteen injuries (84.2%) were work-related, one injury (5.2%) had occurred due to a home accident, and two injuries were caused by assault (10.5%). The chemicals involved in the etiology were sulfuric acid in five patients, and sodium hydroxide, hydrochloric acid, hydrogen peroxide and phosphorus compounds in three patients. One patient retrospectively reported contact with aluminum hydroxide, while another one reported contact with nitric oxide.

Results: Patients with chemical burns comprised 0.6% of all burn admissions. Fifteen patients (78.9%) required early tangential excisions and split thickness skin grafting (STSG). In one-third of the grafted patients, acellular dermal substitutes (Integra, Matriderm, Pelnac) were used, while one third required the ReCell spray-on skin system, and the remaining one-third underwent only split-thickness skin grafting. The use of acellular dermal substitutes instead of STSG was observed to lead to enhanced skin elasticity and improved scar quality. With ReCell spray-on skin system, the total donor site was significantly smaller, while the STSG group complained of an additional painful donor site. In four patients (21%) secondary epithelialization was achieved. In two out of four patients, biosynthetic skin dressing (Biobrane) was used, while the remaining two were managed through local wound care using the appropriate dressing until epithelialization. Compared to conventional dressing materials, biosynthetic skin dressing was easy to apply and practical for in- or outpatient wound care, minimized the patients’ pain and discomfort, and allowed infrequent dressing changes.

Discussion: We believe that these tissue engineering approaches hold a lot of promise to modify and improve burn care during the next decade. These novel treatment modalities may pass beyond the standardized treatment methods and improve scarring and functionality as well as decreasing contractions at the wound site. Despite the potential benefits of dermal substitutes, further research is required not only to support the scientific evidence on their effects, but also to develop new technologies and products for the purposes of burn treatment(4,5).
References:

Figure Legends:
Figure 1: Nitric oxide burn, treated with Recell+STSG+Biobrane
Figure 2: Sodium hydroxide burn, treated with Biobrane

Figure 1

Figure 2