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Moisturisers in scar management following burn: A survey report

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ABSTRACT

Scar management is a recognised key component of rehabilitation following burn. Moisturising often combined with massage is commenced once healing tissue has gained sufficient strength to tolerate surface friction, with the aim being to hydrate the dry scar. The studies on various moisturisers and creams provide some guidance on moisturiser selection, but many are inconclusive.

Objective: This survey aimed to determine the current expert opinion regarding moisturiser recommendations, including the basis for these recommendations, across the burns community.

Methods: A brief web-based survey was distributed to burn therapists via mailing lists of the Australian and New Zealand Burn Association (ANZBA), and American Burn Association (ABA) 'Occupational and Physical Therapist Burn Special Interest Group'.

Results: The fifty three respondents indicated that there were 29 different moisturisers commonly recommended in practice. Three main themes were indicated as influencing recommendations for moisturiser: the perceived effects on the scar/skin (48%); the general properties of the moisturiser (38%); the ingredients (14%). Therapists reported that the principle stimuli determining their recommendations were patient feedback and the choice of the previous burn therapist in their service. Many were also guided by medical staff, pharmacists and sales representatives. Only three respondents were able to provide citations for published evidence supporting their recommendations.

Conclusions: There is a paucity of evidence currently to support optimal moisturiser choice. This survey demonstrates that conflicting opinions are held on the ideal moisturiser brand, properties and ingredients. The recommendations made are based on low level evidence. Further research is required to inform clinicians which moisturiser to recommend to their clients. An ideal moisturiser should be one that is conducive to scar maturation, non- or minimally irritant, prevent skin drying, minimise transepidermal water loss and have no negative effect on barrier function.

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1. Introduction

Scar management is recognised as a key component of rehabilitation for burn survivors. This task is predominantly the responsibility of the burn therapist. The most commonly utilised and accepted conservative treatments of scars are pressure therapy [1], contact media [2], massage and skin care (moisturising, sun protection and management of folliculitis) [3]. There is evidence that massage has a positive effect on scars but it is less supportive than the evidence for pressure and contact media [4]. In particular, “moisturise and massage” is recommended to almost every patient who leaves the burn unit. A survey of burn rehabilitation therapy practices indicated that 81% of responding units routinely employ scar massage as part of their patients’ treatment regimen [5].

Formation of a hypertrophic scar indicates damage to the dermal structures of the skin such as the sweat glands, hair follicles and oil glands [6]. This is supported by the common observation of the failure of hypertrophic burn scars to produce sweat or oils [3]. An additional characteristic of scars is that they have a higher rate of transepidermal water loss (TEWL) in comparison with normal skin [7,8], particularly those that have healed by secondary intention [7]. The combination of these factors, loss of moisturising structures and a high rate of TEWL, results in hypertrophic scars appearing dry and it is for these reasons that moisturiser is recommended to burn patients.

The belief that hydration of the scar will result in better scar outcomes is based on studies that investigate the mechanism of contact media action. Hydration of the epidermal keratinocytes was shown in an *in vitro* model to inhibit collagen and glycosaminoglycan production of dermal fibroblasts, that is, the production of scar tissue [9]. Moisturiser increases the water content of the stratum corneum, filling the spaces between partially desquamated skin flakes and the skin appears smoother [10]. It is unknown whether the moisturiser has an effect on the keratinocytes located just below the stratum corneum. In a comparison between the moisturiser, Eucerin[®] and the hydrocolloid dressing, DuoDerm Extra Thin[®] there was a reduction in itch and pain and an increase in pliability by both products which was proposed to be due to increased hydration [11]. The moisturiser Alhydram[®] was compared to liquid silicones and was shown to have as much of an effect on the hydration, and TEWL of the scars, as the silicones [12]. This study demonstrates that a moisturiser can have an effect on TEWL and potentially the scar outcome.

Itch is a common side effect of hypertrophic burn scars. Its management with moisturisers has been examined by Lewis et al. who compared aqueous cream to Medilixir[®] (a beeswax and herbal oil cream) [13]. The findings suggested that Medilixir[®] was more effective in reducing itch and there was an anecdotal observation reporting the skin was moist and supple in comparison to the aqueous group, which appeared dry [13]. Provase[®] has also been found to be an effective moisturiser to reduce post burn pruritus [14].

Massage is often commenced once the healed tissue has gained sufficient strength to tolerate surface friction, and is facilitated by lubricants (such as moisturisers) [15]. Cho et al. compared their standard rehabilitation treatment to standard

rehabilitation treatment with scar massage (with moisturisers) [16]. The massage group had improvements in pain, itch, scar thickness, melanin, erythema, TEWL and skin elasticity [16]. The combination of lubricants used with the massage group included Rosakalm[®] cream, Emu oil, Oil and Physiogel[®] lotion [16]. However, due to the study design it is not possible to attribute if improvements were a result of the additional massage or moisturiser alone [16]. TEWL was one of the outcome measures taken and it may well be that the moisturisers used contributed towards this positive outcome as massage has not been demonstrated to have an effect on TEWL.

Perez et al. attempted to measure the effect of a moisturiser, Mederma[®] (with the active ingredient onion extract gel), on morphological features of the scar, specifically scar volume [17]. However, their subject numbers were low and apart from the scar volume measurements the results were subjective. Jenkins et al. attempted to determine if topical steroids or Vitamin E had an effect on range of motion, scar thickness, graft size and cosmetic appearance [18]. They concluded that neither was effective in altering the scar.

A recent systematic review conducted on the effectiveness of moisturisers specifically for burn scar outcomes identified only one citation with quantitative data to guide specific moisturiser choice [19]. This highlights the current lack of evidence supporting the burn therapists common practice of prescribing moisturiser as part of a scar management programme [19]. There is however, a range of readily available moisturisers available over the counter, with some making claims to reduce the appearance of scars.

Clients with scars view their health provider (therapist or other) as providing expert knowledge. It would therefore be expected that the health care provider would also be knowledgeable of any adverse effects from various over the counter preparations. Aqueous cream, for example, has been found to increase TEWL in healthy skin and decrease the thickness of the stratum corneum [20,21]. Propylene glycol is a known allergen in the dermatological literature and was found in 20% of moisturisers [22]. Fragrances are found in almost 70% of moisturisers, and parabens, which are preservatives, are found in 60% of moisturisers [22]. Yet these are the main sensitisers to adverse reactions that are attributable to moisturiser use [10]. It is likely that based on the above evidence, Serghiou et al. suggested the ideal choice of lubricant for burn scar massage is fragrance- and skin irritant-free and ideally has a minimum sun protection factor (SPF) of 15 incorporated [15].

In the absence of definitive evidence or a clinical guideline, particularly in the burns literature, this survey aimed to discover what are the currently recommended moisturisers, and the basis for these recommendations, amongst Australian and American Burns Association therapists in order to develop a consensus recommendation for burn scar management moisturiser selection.

2. Methods

A brief web based survey was developed by the authors of this study utilising SurveyMonkey[®] software (www.surveymonkey.com), and distributed to burn therapists via the Australian and

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