

Hyperpigmented Skin Following a Thermal Burn Injury

SUMMARY: Thermal burns, though preventable, are a common domestic incident worldwide that may result in morbidity and even death. Scarring and hyperpigmented skin, although not life-threatening, may have serious psychosocial consequences and it is therefore important to seek medical advice. This case study demonstrates the successful treatment of hyperpigmented skin with PCCA Formula 6829.

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Introduction:

A burn is an injury to the skin or other organic tissues primarily caused by heat (thermal burns). Although preventable, burns are a global public health issue accounting for an estimated 180,000 deaths annually¹. In 2016, there were 486,000 burn injuries in the USA requiring medical treatment². The majority of the incidents occur in the home and workplace; children and women are usually burned in domestic kitchens¹. Burns are classified as first-degree (superficial), second-degree (partial thickness), or third-degree (full thickness), depending on how deep and severely they penetrate the surface of the skin³ (Fig. 1). Postinflammatory hyperpigmentation of the skin (melanosis) may occur following a thermal burn, mainly in darker skin types, which is commonly resolved with a combination of topical treatments⁴.

The purpose of this case study is to discuss the management of hyperpigmented skin following a thermal burn injury that resulted from a domestic incident.

Case Report:

A 44-year-old black female was severely burned on the right arm while cooking a meal in the oven (Fig. 2). The patient visited the local pharmacy to seek advice on how to manage her second-degree thermal burn injury. The pharmacist recommended a topical scar product to be applied in a thin layer, twice daily. Following one month of treatment the wound was fully closed but the patient's skin was still darkened. The patient was then recommended to see a dermatologist who prescribed a compounded medication including a combination of skin lightening drugs incorporated in the proprietary base Vanishing Cream Light™, as displayed in Table 1 (PCCA Formula 6829). Hydroquinone, glycolic acid and tretinoin are dermatological drugs commonly used in hyperpigmentation conditions. Hydrocortisone, on the other hand, is a corticosteroid with multiple topical applications commonly applied from 0.1 to 2.5%⁵. PCCA Vanishing Cream Light™ is an elegant, medium-thickness cream that is paraben-free and petrolatum-free; it is also non-comedogenic and may be used for a variety of actives. The patient applied a thin layer of the compounded medication, at bedtime, for 4 months; a total of 60 g (30 g + 30 g) was dispensed.

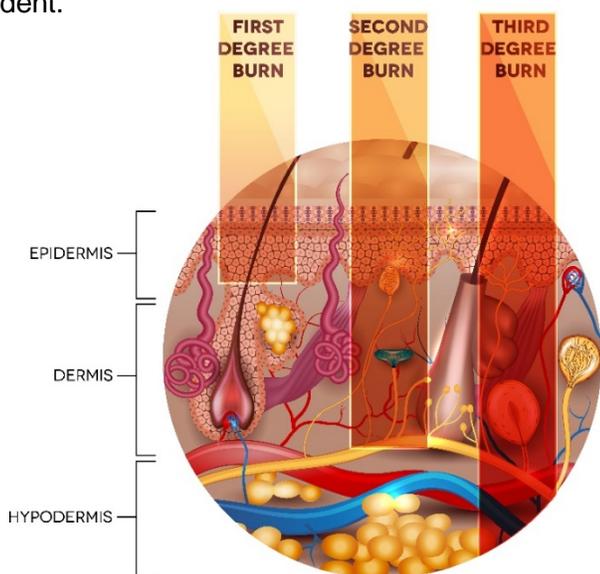


Figure 1. Schematic representation of the skin burn degrees (adapted from Tefi/Shutterstock.com).

Rx
Hydroquinone 8%
Glycolic Acid 8% (w/w)
Tretinoin 0.05%
Hydrocortisone 0.5%
Base, PCCA Vanishing Cream Light™

Table 1. PCCA Formula 6829: Hydroquinone 8%, Glycolic Acid 8% (w/w), Tretinoin 0.05% and Hydrocortisone 0.5% Topical Cream (PCCA Vanishing Cream Light™).

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Methodology:

The Treatment Satisfaction Questionnaire for Medication (TSQM) was the research instrument used to evaluate 4 domains: perceived effectiveness, side effects, convenience and global satisfaction with regards to the use of the skin lightening compounded medication over the course of treatment. The TSQM Version II comprises 11 questions which rate the patient's level of satisfaction or dissatisfaction with the medication. The effectiveness and global satisfaction domains comprise 2 questions each whereas the convenience and side effects domains comprise 3 and 4 questions, respectively. The TSQM is a generic measure, as opposed to the disease-specific questionnaires, and it is psychometric sound and valid⁶.

Results and Discussion:

The patient answered all questions of the TSQM following 4 months of treatment with the compounded medication. All questions were rated with the maximum score, meaning that the patient perceived the compounded medication as 100% effective and convenient, with no side effects, and an overall global satisfaction of 100%. For instance, with regards to effectiveness, the patient was 'extremely satisfied' with the ability of the medication to treat the condition and also with the way the medication relieves symptoms. The patient reported outcomes are consistent with visual improvements observed in Figure 3, which shows a complete recovery of the hyperpigmented skin.



Figures 2 and 3. Digital images of the patient's thermal burn injury: before treatment (left) and 4 months post-treatment (right) with a skin lightening compounded medication (PCCA Formula 6829).

Conclusions:

Thermal burns, though preventable, are a common domestic incident worldwide that may result in morbidity and even death. Scarring and hyperpigmented skin, although not life-threatening, may have serious psychosocial consequences and it is therefore important to seek medical advice. Compounded medications offer the possibility to combine multiple drugs in a topical base developed for specific skin conditions, such as PCCA Vanishing Cream Light™. This case study demonstrates the successful treatment of hyperpigmented skin following a thermal burn injury. The patient rated the 4 primary domains of the medication as 100%, indicating that the PCCA Formula 6829 was effective, convenient and with no side-effects.

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