

PERSONAL EXPERIENCE IN THE USE OF DEXPANTHENOL FOR SKIN CARE AFTER CHEMICAL PEELING AND PHOTO-REJUVENATION PROCEDURES

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Summary

The importance of skin care after skin rejuvenation procedures, including chemical peels, cannot be overestimated. It is aimed at lessening irritation and possible inflammation reactions, as well as enhancement of healing and photo protection.

Topical dexpantenol has been traditionally used to improve healing properties of the skin. We have chosen this pharmaceutical agent for skin care of our patients, undergoing various skin rejuvenation procedures. Our personal experience demonstrates definite advantages of such post-procedure therapy.

Riassunto

L'importanza dei trattamenti cosmetici da effettuarsi dopo le procedure adottate per ringiovanire la cute non possono essere sovrastimate. E' pertanto importante controllare e ridurre quanto più possibile i fenomeni irritativi provocati da tali trattamenti nei confronti della cute, oltre che incrementarne l'attività fotoprotettiva e le relative capacità autoriparative.

Il trattamento topico con il dipantenolo viene utilizzato da diversi anni per stimolare le proprietà riparative della cute.

L'uso di questo ingrediente farmaceutico, utilizzato su nostri pazienti dopo diverse procedure di ringiovanimento quali la fototerapia e l'uso dei peeling chimici sembra dare buoni risultati e vantaggi terapeutici evidenti.

INTRODUCTION

Aesthetic medicine of today offers a number of techniques for skin rejuvenation and prevention of skin aging. The majority of such methods are based on removal (ablation) of superficial layers of the skin. Among those, laser therapy, including photo-rejuvenation as well as chemical peelings, are most widely used [1; 3].

Chemical skin peeling procedures are also very popular among patients and are highly demanded at aesthetic dermatological clinics. Use of peelings allows to treat quite a number of cosmetic skin problems due to removal of superficial skin layers. However, by doing so, we also destroy the natural skin protection system. Therefore, providing adequate UV protection and post-procedure rehabilitation must be the mainstay of patients' care at cosmetic dermatology unit.

Aging of skin is an inevitable process, which is accelerated by certain genetic factors, life style and a number of extrinsic factors. Among environmental factors, UV radiation has been proven to produce the most damaging effect on the skin structures. The stratospheric ozone layer partly prevents the UVB (280-320 nm) spectrum from damaging the skin. Epidermis blocks approximately 70% of UVB radiation that reaches the earth, with eventually 10% of it penetrating the skin to the level of basal keratinocytes and triggering negative biochemical reactions as well as sun burns. UVA radiation spectrum (320-380 nm) is not blocked by ozone layer and up to 30% of those rays are able to penetrate the skin and cause free radicals formation, damage of collagen and elastin fibres, alteration of their synthesis, with consequent increase of skin photoaging signs, such as early wrinkles, pigmentation, skin reddening, elastosis, etc.

By removing during peeling procedures superficial skin layers, which naturally play the role of cutaneous mechanical barrier, we increase the

risk of adverse effects of UV radiation. Appropriate dealing with such complications of cosmetic procedures is of utmost importance. On the other hand, we should not forget that there are certain intrinsic mechanisms of self-protection and regeneration, which start immediately after the acute skin damage, as it happens in wound healing process. As a result of this process we observe stimulation of collagen synthesis with subsequent clinical improvement of skin texture and wrinkles decrease.

In general, consequences of skin damage depend considerably on its depth. Use of acids for superficial and medium peeling usually results in skin dehydration due to its massive evaporation. Procedures, causing the damage of basal layer of the epidermis, usually produce postinflammatory pigmentation (most commonly in predisposed individuals) due to pigment incontinence and/or increased melanogenesis.

Here we summarize the well-known consequences of skin ablative techniques, widely used in cosmetic dermatology:

- skin reddening and prolonged healing process
- increased risk of dyschromia
- possibility of infection and/or scarring at the site of wound surface
- pain

Therefore, patients' care after such procedures must be aimed at minimizing all such consequences, leading to patients' discomfort [4].

Needless to say that development in 2000 of non-invasive skin rejuvenation methods, such as photo-rejuvenation with IPL apparatus (ESC Medical, USA) [2] offered new perspectives for both medical practitioners and patients. This and similar laser equipment generate beams of 500-1200 nm spectrum (i.e. yellow-green and infrared), which are maximally absorbed by hemoglobin, melanin and water (both in extracellular dermal matrix and within skin vessels). Skin "warming" effect stimulates inflammation, simi-

lar to that of wound healing and, consequently, activates skin fibroblasts which produce endogenic procollagen type I in increased quantities. Even with this relatively safe medical procedure skin inflammation causes discomfort to the patient.

DEXPANTHENOL IN SKIN CARE

Post-procedure skin care in these settings can become either rewarding or frustrating. A lot depends on the clinical picture and topical therapeutic agent selected for skin care. We would like to share our experience in using dexpanthenol for skin care after chemical peeling and photo-rejuvenation therapy. Topical use of dexpanthenol for skin disorders is well known: it has been recommended for scar or skin transplants treatment, as therapeutic option for burn injuries and different dermatoses [5; 6]. We personally observed good results prescribing topical preparations containing dexpanthenol after extensive laser depilation and laser therapy of hyperpigmentation.

Topical dexpanthenol acts like a moisturizer and reduces transepidermal water loss. Activation of fibroblast proliferation, such as caused by dexpanthenol, accelerates skin regeneration. Improvement of skin re-epithelization in wound healing has also been demonstrated for dexpanthenol. Dexpanthenol has been shown to have an anti-inflammatory effect on experimental ultraviolet-induced erythema [6].

In the current study we evaluated the effect of topical dexpanthenol on the following clinically observed consequences and/or complaints in 50 patients after chemical peelings and another 50 patients, who underwent photorejuvenation procedures:

- local skin irritation and erythema
- mild burning (rarely – pain, pruritus) sensations

We applied 2,5% dexpanthenol-containing skin lotion immediately after procedure and for 3 consecutive days at 3-4 h intervals several times per day. The results are summarized in figures 1-3.

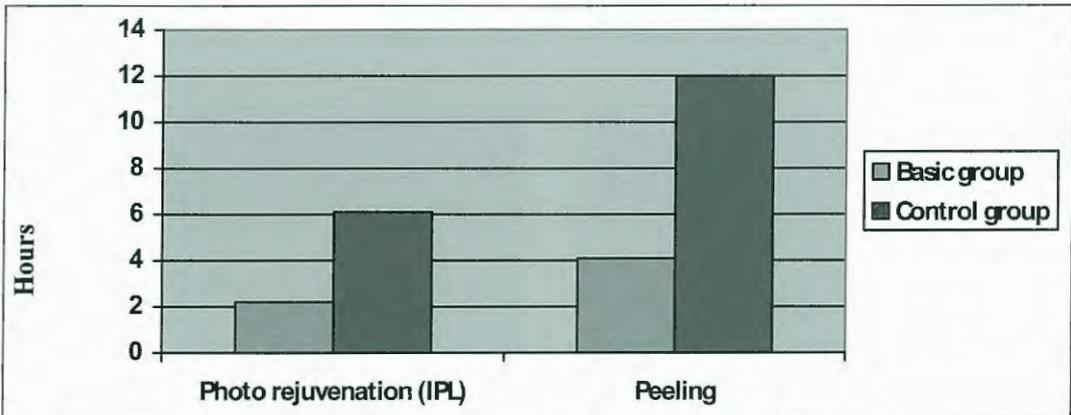


Fig. 1 Persistence of skin irritation and erythema in dexpanthenol treated skin (group I, n=50) and controls (group II, n=10), ($P < 0,001$).

We did not observe any pigmentary changes in patients using dexpanthenol lotion after aforementioned procedures. However, 4 out of 20 patients (10%) in both control groups developed local hyperpigmentation that persisted for two months following the procedures and required medical correction. Below, we present the SIAscopic images of regenerating skin after fractional photothermolysis in patients who applied topical dexpanthenol and those who did not. Even if pigmentary changes are more readily visualized on colored photographs, we can clearly see the better preserved skin structure following regeneration in treated skin.

As can be readily assessed, topical application of

2, 5% dexpanthenol lotion after skin rejuvenation cosmetic procedures results in better skin regeneration and provides additional protection against UV radiation, thus decreasing risk of post-procedural hyperpigmentation. Persistence of local erythema and skin irritation (itch/pain) can be considerably reduced by prescribing this topical preparation. It is usually well tolerated and there is minimal risk of skin sensitization. Therefore, we strongly recommend dexpanthenol-containing formulations for topical use in post-procedural skin care in patients undergoing chemical peeling or other skin rejuvenation procedure.

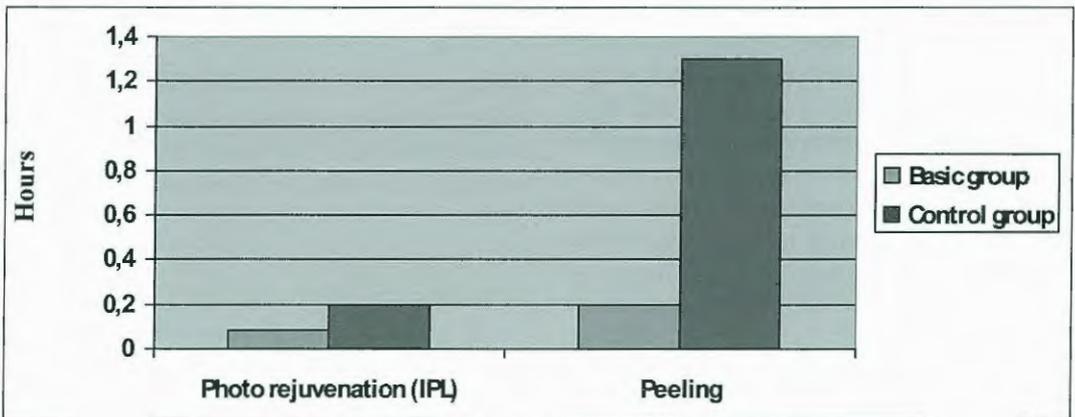


Fig. 2 Persistence of burning sensation in dexpanthenol treated skin (group I, n=50) and controls (group II, n=10). ($P<0,001$).

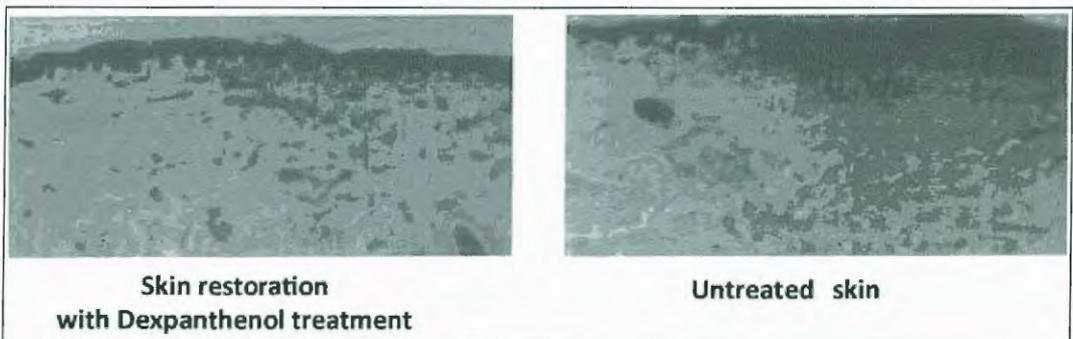


Fig. 3 SIAscopic images of dexpanthenol-treated and untreated skin.

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