Tolerance and safety of superficial chemical peeling with salicylic acid in various facial dermatoses

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ABSTRACT

Background: Chemical peeling is a skin-wounding procedure that may have some potentially undesirable side-effects. Aims: The present study is directed towards safety concerns associated with superficial chemical peeling with salicylic acid in various facial dermatoses. Methods: The study was a non-comparative and a prospective one. Two hundred and sixty-eight patients of either sex, aged between 10 to 60 years, undergoing superficial chemical peeling for various facial dermatoses (melasma, acne vulgaris, freckles, post-inflammatory scars/pigmentation, actinic keratoses, plane facial warts, etc.) were included in the study. Eight weekly peeling sessions were carried out in each patient. Tolerance to the procedure and any undesirable effects noted during these sessions were recorded. Results: Almost all the patients tolerated the procedure well. Mild discomfort, burning, irritation and erythema were quite common but the incidence of major side-effects was very low and these too, were easily manageable. There was no significant difference in the incidence of side-effects between facial dermatoses (melasma, acne and other pigmentary disorders). Conclusion: Chemical peeling with salicylic acid is a well tolerated and safe treatment modality in many superficial facial dermatoses.

Key Words: Superficial chemical peeling, Salicylic acid, Facial dermatoses

INTRODUCTION

The chemical peel produces a controlled partial thickness injury to the skin. Following the insult to the skin, a wound healing process ensues that can regenerate the epidermis from the surrounding epithelium and adnexal structures, decrease solar elastosis, and replace and reorient the new dermal connective tissue.[1-3] This procedure thus can restore sun-damaged, wrinkled, blemished, acne-scarred or blotchy skin to its original youthful appearance. The results are normally a smoother, more even toned textured skin. The skin will look younger, tighter and fresher than before although it cannot remove all facial flaws. Deeper lines, wrinkles and other flaws may require additional treatments or techniques.[4,5] The chemicals normally used for this are glycolic acid (GA) and salicylic acid (SA) for more superficial lines, blemishes, acne, etc. and trichloroacetic acid (TCA) or phenol in various concentrations for medium depth and deep peeling.[1,48] Depending upon the type of peel, there may be a mild to severe sun burning sensation. Persistent redness may also occur and can last for months. There is a chance of reactivation of herpes
simplex infection in patients with a history of fever blisters.\textsuperscript{9-11} Prior to a chemical peel, it is important for the dermatologist to inquire about any past history of keloids, unusual scarring tendencies, extensive X-rays or radiation to the face, or recurring cold sores, for proper precautions to be taken. It is important to avoid overexposure to the sun immediately after a chemical peel since the new skin is fragile and more susceptible to injury.\textsuperscript{12-15} Although salicylic acid appears to be the miracle cosmetic ingredient of the 1990s, there are genuine safety concerns associated with its extended use.\textsuperscript{14}

Our study was aimed to evaluate the tolerance of superficial chemical peeling with salicylic acid in terms of the acceptability of this procedure by patients having various facial dermatoses, and safety in terms of incidence of side-effects produced by the procedure.

METHODS

Two hundred and sixty-eight patients of either sex, aged between 10 to 60 years, undergoing superficial chemical peeling for various facial dermatoses (melasma, acne vulgaris, freckles, post-inflammatory hyperpigmentation, actinic keratoses, fine lines and wrinkles, post-acne scars, plane facial warts, etc.) were included in the study. Pregnant and lactating ladies, patients having known sensitivity to salicylic acid, and those with a known keloidal tendency or having active or past herpes simplex infection were excluded. Eight peeling sessions (one session after every week) were carried out in each patient. Thirty per cent salicylic acid solution (30 grams salicylic acid powder in absolute alcohol to make 100 ml solution) was used for weekly chemical peeling sessions. Prior consent was taken from each patient after explanation of the procedure and a test peel was performed with 15% solution of salicylic acid to detect any adverse reaction and to make the patient familiar with sequelae. Before peeling, the face was washed with soap and water to remove any make-up, dust and debris and was scrubbed with spirit gauze. Peeling was done with cotton wool applicator dipped in required solution with smooth strokes to the affected areas with patient lying supine at an angle of 45° with closed eyes and plugged ears. Application was completed within 30 seconds and termination was done by cleaning the face with cold water but avoiding rubbing. Patients were made to sit in front of a fan, if required, immediately after peeling. The contact time of 5 minutes was enhanced sequentially with one minute increment on each subsequent visit. Avoidance of the use of soaps and sun exposure at least for one following day was strongly advised. Patients were prescribed daily use of physical block sunscreens during daytime and 10% salicylic acid lotion (Therasalic\textsuperscript{©} lotion) at night. On each weekly visit, tolerance to the procedure and any undesirable effects during or just after peeling were noted. Any untoward happenings experienced by the patients in between these sessions were also recorded. All patients were followed up one month after the last peeling session and any adverse effects related to chemical peeling experienced by the patients during this period were recorded. Tolerance of the treatment was assessed subjectively from Grade 0 to 4: (Grade 0 = extremely painful and intolerable, Grade 1 = painful and barely tolerable, Grade 2 = tolerable with significant discomfort, Grade 3 = tolerable with mild discomfort, Grade 4 = acceptable without any discomfort at all). Safety was assessed at each weekly visit by the incidence of side-effects (e.g. irritation, burning, erythema, crusting, post-inflammatory hyperpigmentation, herpes simplex) during the treatment as well as after one month follow-up. For data analysis and statistical results, software program “SPSS version 8” was used and results were expressed as simple frequencies and percentages.

RESULTS

A total of 268 patients were included in the trial. Eighteen patients dropped out of the study. Of the 250 patients who completed the study 175 were females (70%) and 75 were males (30%). The age group ranged from 10 to 60 years with mean age of 23.80 years. Most of the patients were in the third or fourth decade (75%) of life. Sixty-three patients (25%) had skin of Fitzpatrick photo type IV and the remaining 187 (75%) had skin of Fitzpatrick photo type V. The procedure was well tolerated by almost all the patients (Figure 1). All except 7 patients experienced mild burning, irritation and occasional stinging immediately after application of the peeling agents that lasted for a few minutes and gradually settled down within half an hour after washing the face. Forty-three patients had additional erythema and dryness that persisted for a few hours...
after application. Moderate degree of burning, stinging and erythema was efficiently controlled with application of betamethasone valerate cream twice a day for two days and dryness was managed with local application of emulsifying ointment. Seven patients never experienced any such effect throughout the treatment period. Milia were seen in five patients. Three developed herpes zoster and seven had herpes labialis. Both the conditions responded adequately to appropriate treatment along with avoidance of application of peeling agents over the active lesions of herpes. Five patients who developed herpes labialis also had a previous history of similar lesions, while the development of herpes zoster in three patients was unexpected. Peeling was withheld in herpes zoster cases and appropriate antiviral as well as conservative medicines were given to these patients. Allergic sensitization, hypochromia, persistent erythema or secondary bacterial infections were not observed in any patient. Similarly post-inflammatory hyperpigmentation or scarring was not encountered in any patient. No systemic side-effects occurred either. None of the side-effects (except herpes infections) forced stoppage of the peeling process at any stage. The frequency of adverse reaction has been shown in Figure 2.

DISCUSSION

Chemical peeling is a skin-wounding procedure that can have some potentially undesirable side-effects and tolerance to this procedure may vary from person to person. This superficial peeling procedure is usually well tolerated in skin photo types III to VI. All our patients belonged to skin type IV and V and tolerated the procedure very well. None of the patients found it unacceptable or painful. Very few experienced it as an uncomfortable procedure but the vast majority graded it as a well-tolerated and acceptable experience. These results were comparable to earlier studies with superficial peeling agents. Complications related to salicylic acid chemical peeling that have been reported in the literature include infections (herpes, bacterial), milia, premature peeling, persistent erythema, allergic reactions, post-inflammatory hyper or hypopigmentation, lines of demarcation, lines created by tears dripping on to the face and neck, and scarring (hypertrophic, atrophic or keloidal). Most of the adverse reactions (burning, irritation, stinging, erythema, dryness and crusting) that occurred in our study were already expected of such treatment. These were easily manageable and did not affect the compliance of the patients. Development of herpes simplex and herpes zoster in 10 patients was a little alarming but this happened in only 4% of total patients. Skin wounding during chemical peeling could possibly be the cause of reactivation with herpes virus, however this could also be a chance occurrence. None of the patients developed post-inflammatory hyper or hypopigmentation of the affected or surrounding unaffected skin. This was quite encouraging because post-inflammatory dyspigmentation (hyper or hypopigmentation) was initially considered as a risk factor in the dark-skinned population.
significantly, no serious side-effects like laryngeal edema, persistent erythema and swelling of the face occurred.\textsuperscript{10,24} None of the side-effects, except herpes infection, required omission of the peeling process at any stage. We conclude that salicylic acid chemical peeling is a well tolerated and reasonably safe procedure that can be used as an additional treatment modality in a number of facial dermatoses.

REFERENCES


Announcement

The 10th World Congress on Cancers of the Skin (WCCS) May 13th - 16th, 2005, Vienna, Austria at the Department of Dermatology, Medical University of Vienna, from May 13-16, 2005 For further details, online registration, submission of abstracts please visit http://www.wccs.at/ Hubert Pehamberger, Klaus Wolff, Congress Presidents Michael Binder, Harald Kittler, Alan Halpern, Rainer Kunstfeld, Congress Secretaries m:con Congress Organization, Rosengartenplatz 2, D-68161 Mannheim Austria Tel. +49 621 4106 137. Fax +49 621 4106 207. E-mail: www.mcon-mannheim.de