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Review Article

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Clinical Cosmetology

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Abstract

Chemical peeling is a widely used procedure in the management of acne and acne scars. Acne vulgaris is the most common skin disorder in adolescents and young adults. It carries a significant psychological and economic burden to patients and society. Salicylic acid has been used to treat various skin disorders for more than 2,000 years. The ability of salicylic acid to exfoliate the stratum corneum makes it a good agent for peeling. This report entitles the young adult female with acne and was treated with Salicylic acid and glycolic acid peel and the desired outcome was assessed.

Keywords: Salicylic acid, Glycolic acid, Acne vulgaris, Combination peel

Introduction

Acne is a common chronic inflammatory skin disease experienced by most adolescents and young adults and the pathogenesis of acne vulgaris is a multifactorial. The major identified factors that are involved in pathogenesis of active acne lesion formation and scarring are: excess sebum production, follicular epidermal hyper keratinization, the proinflammatory effects of Propionibacterium acnes and other normal skin flora, and immunological reactions.

The estimated life-time prevalence is ~80%. Patients experience high levels of anxiety, depression, and low self-esteem which lead to impaired quality of life. Therefore, treatment should focus on early intervention & prevention to decrease the physical and esthetic burden of the disease. The treatment of acne is based on a combination of topical therapies, systemic treatments, chemical peels, dermabrasion, laser & oral medication.

Chemical peeling is one of the most common cosmetic procedures in medical practice and has been used for decades. It is defined as the application of chemical agents, of variable strength, on the skin that results in controlled destruction of the epidermis and dermis. The induced exfoliation is followed by dermal and epidermal regeneration from adjacent epithelium and skin adnexa, which results in improved surface texture and appearance of the skin.

A chemical peel can be done alone or in combination with other cosmetic procedures and results are enhanced if the correct pre-treatment and post treatment products are used Chemical peels can be done at different depths-from light or superficial to deep-depending on desired results. Each peel uses a different chemical solution. Deeper chemical peels produce more-dramatic results and deeper skin rejuvenation but also involve longer recovery times.

In current case report acne vulgaris was treated with combination of peel treatment and antibiotic therapy to achieve the good outcome result.

Materials and Methods

The case was conducted in private clinic setup. A 25 year, female patient reported with complains of acne and desired treatment for the same. The treatment plan explained to patient and a formal consent was taken from patient before starting the therapy, after full explanation about the nature of the disease, course, the procedure of treatment, follow up, prognosis and the need for pre and post treatment photographs. The severity of acne was graded using the following score.

1. Mild acne in which the count of pustules is less than 20 and the count of papules is less than 10.
2. Moderate acne in which the count of pustules is ranging between 20-40 and the count of papules is ranging between 10- 30.
3. Severe acne in which the count of pustules is more than 40 and the count of papules is more than 30.

The skin type was assessed according to The Fitzpatrick scale:

Skin Type Skin Color Tanning History

1. White always burns, never tans
2. White Usually burns, tan with difficulty
3. White Sometimes mild burn, tan average
4. Moderate Rarely burns, tan with ease
5. brown Very rarely burn, tan very easily
6. Dark brown No burn, tan very easy
7. Black

***Note:** Reproduced from Roberts W.E. Skin type, classification systems old and new. Dermatol Clin. 2009; 27: 529-553

Technique

Superficial peel i.e. salicylic acid peel 30% with combination of oral antibiotics has been started for the patient. Patient was prepared by cleansing and degreasing the whole face by using acetone or 70% alcohol soaked-gauze. Peak results are visible after a series of 3–6 chemical peels depending on the severity of the condition being treated and skin type. Then the whole face was coated with salicylic acid 30% by using cotton-tipped applicator and number of coating ranged from 2-3 application in one sitting, until fine frosting occurred. One easy method is to apply the peel first to the medial cheeks and working laterally, followed by the perioral area, then chin, and lastly the forehead. The peel is then left on for 3–5 minutes. During the procedure, mild burning and a stinging sensation may experience by the patient. The sensation of burning and stinging can be reduced using a portable handheld fan or ice packs. Within 30 seconds to 1 minute of peeling, a white precipitate is formed, which is result of crystallization of the SA. It must be remembered that the frost seen in a SA peel represents precipitated SA. Once frosting has occurred, it means that the patient will observe some crusting and peeling after the procedure. The SA peel has an advantage over the αhydroxy acid peel in that the former does not need to be neutralized and the frost is visible once the peel is complete. Once the peel has had sufficient contact time, the face is rinsed thoroughly with tap water. A bland cleanser can be used to remove any residual SA precipitate. After rinsing, a bland moisturizer is applied to the skin.

At every 2-4 weeks interval, session of peel was done to the patient for around 5 months with 2 sessions of glycolic acid peel are also given in combination for resurfacing of the skin and maintain good texture of skin.

Post-Operative Instructions and Follow Up

The skin of the treated area was washed with cold water immediately after the procedure, and then cold wet compresses were applied immediately after the peel. 4% hydroquinone is applied twice daily for 2–4 weeks prior to the peel and is resumed 2 days post-peel. The combination of pre-peel application of 4% hydroquinone twice daily with peeling produces substantial decreases in the intensity of hyperpigmentation in both post-inflammatory hyperpigmentation. Patients were told that stinging will crescendo for 2 minutes and then will subside. Post session patient was advised to take Azithromycin 500mg once daily for 7 days. Topical benzoyl peroxide and other topical antibiotic formulations can be used daily and was discontinued 1 or 2 days prior to peeling. Broad-spectrum sunscreen formulations (ultraviolet A and ultraviolet B) should be applied frequently.

Result

Salicylic acid peeling used 8 times 2 weeks apart in patient with acne vulgaris and in combination with 2 times 2 weeks apart session of glycolic acid peeling used for resurfacing of skin. Active acne vulgaris included papules and pustules showed significant reduction within 1 month of therapy. After 5 months, remarkable reduction in acne vulgaris and acne scar seen with tightening and whitening of the skin of whole face. Patient was fully satisfied regarding response to therapy. Follow up for three months after peeling showed no relapse in active acne vulgaris and the reduction in scarring was permanent. For maintenance therapy patient was allowed to visit at least once in every 6 months.

Discussion

Chemical peeling is the process of causing controlled chemical injury to the skin (partial or complete epidermis with or without dermis) by application of a chemical peeling agent that causes exfoliation of the superficial layers of the skin, leading to removal of superficial lesions followed by regeneration of new epidermal and dermal tissues.4 Superficial and medium depth peels have gained popularity in the treatment of acne vulgaris as it is a relatively low cost and safe procedure. Chemical peels break down corneosomes with subsequent exfoliation, induce keratolysis, and have comedolytic effects. They decrease sebum production and pore size, and have anti-inflammatory and anti-bacterial properties. Furthermore, chemical peels promote the penetration and absorption of other topical therapies by reducing the barrier effect of the stratum corneum. All these properties and the fact that superficial peels are safe and can be used in combination with other acne medication, make them very popular procedures. The most commonly used superficial and medium depth peeling agents in acne are SA, GA, LA, (α-hydroxyl acids), JS, and TCA etc.

Laser sessions are effective for acne scars treatment but give controversial results in treatment of active acne vulgaris in addition its high cost therapy. The present work using salicylic acid peel showed significant improvement of active acne vulgaris including papules and pustules after each session of peeling in patients with active acne lesion and the associated scarring was effectively reduced with this glycolic peel added extra adjuvant to the therapy to maintain the skin surface for long term.

SA is a 2-hydroxybenzoic acid (from willow tree) used for superficial peeling due to its strong keratolytic and comedolytic properties. It promotes shedding of epidermal cells and due to its lipophilic properties can penetrate comedones and pores to prevent clogging and neutralize bacteria. It promotes desquamation of the upper lipophilic layers of the stratum corneum. These chemical properties explain its popularity and success in acne patients.

GA belongs to the group of α-hydroxy acids and is used as a superficial or medium depth peel in acne treatment. GA is an exfoliative agent that causes epidermolysis with desquamation of the skin by reducing corneocyte adhesion and keratinocyte plugging at the stratum granulosum. Similar to other αhydroxy acids, it leads to a thickened epidermis and dermis with increased collagen and mucopolysaccharide synthesis, and dispersion of melanin. It has also been shown to decrease inflammation through bactericidal effects on Propionibacterium acnes, partially explaining its benefits in both inflammatory and non-inflammatoryw acne.

Hamideh Moravvejet al., designed a study to compare the efficacy and safety of azithromycin and doxycycline in treating inflammatory acne vulgaris during a 12-week treatment period. The study demonstrated that azithromycin is a safe and effective choice in treating acne, which is as effective as doxycycline. Thus, azithromycin can be considered as a proper alternative for the treatment of acne vulgaris.6 Azithromycin is an orally administered macrolide that has a wide spectrum of activity. It is characterized by rapid and extensive uptake from the circulation into intracellular compartments and by a long half-life of 68 hrs. The drug remains in the tissues for prolonged periods from 2 to 4 days at levels higher than the minimum inhibitory concentration for many common pathogens, making azithromycin a betoken alternative to conventional antibiotics.

Conclusion

SA peel is a safe peeling agent and can be used in different cases of

cosmetology procedure e.g. acne vulgaris, melasma, photodamage, freckles, and lentigines. It can be safely used on dark skin type. Equally glycolic acid has also shown to be safe in the treatment of acne even in darker skin types as well as adjunctive therapy for the treatment of acne scars. With this SA also has the added advantage of having a whitening effect, which is favorable darker skin types, as well as those with co-existing hyper pigmentation. Compared to newer technologies for acne and acne scars removal, chemical peeling is affordable and with minimal downtime, and can be performed easily [1-7].

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