

## Glycolic acid peeling in the treatment of acne

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### Abstract

**Background** Glycolic acid chemical peels have been widely accepted as a useful modality in many cutaneous conditions characterized by abnormalities of keratinization.

**Objective** The aim of this study is to evaluate the use of glycolic peels in the main clinical forms of acne.

**Methods** Between January 1995 and December 1996, 80 women, aged 13–40 years, were visited for acne and selected for the study at the Cagliari University Dermatology Department (Italy). The type and severity of acne in each patient was assessed following the Leeds technique. The chemical peels were performed with a 70% glycolic acid solution, for times that varied in a range between 2 and 8 minutes. The number and frequency of the applications depended on the intensity of the clinical response.

**Results** The main clinical forms were comedonic acne in 32 cases, papulo-pustular acne in 40 cases and nodule-cystic acne in the remaining eight cases. The most rapid improvement was observed in comedonic acne. In the papulo-pustular forms an average of six applications was necessary. Although nodular-cystic forms required eight to ten applications, a significant improvement of the coexisting post-acne superficial scarring was noted. The procedure was well tolerated and patient compliance was excellent.

**Conclusion** Glycolic acid chemical peels are an effective treatment for all types of acne, inducing rapid improvement and restoration to normal looking skin. © 1999 Elsevier Science B.V. All rights reserved.

*Keywords:* Glycolic acid; Acne; Peeling

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### 1. Introduction

Acne is a common disease, representing the most frequent dermatitis among teenagers [1,2]. Although diagnosis is simple, the choice of treatment is very critical due to the multifactorial aetiology and the chronic nature of the disease. An important objective is that of inducing rapid initial improvement, so that the patient may become confident in the therapy, that from time to time may need to be supplemented with

topical and systemic drugs [1,3]. To this purpose, we propose treatment with glycolic acid, an alpha hydroxy acid that is at present among the most commonly used high concentration (70%) chemical peeling agents [4]. This technique produces a partial, controlled cutaneous wound that induces first removal and then regeneration of part of the epidermis and/or dermis depending on the concentration of the acid and exposure time [5,6]. The advantages of glycolic acid over some of the other available peeling agents are its stability, the close correlation between application times and depth of peeling, and the fact that it is easily neutralized. Its therapeutic value in acne is mild epidermolysis, with dislodgement of comedones and

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unroofing of pustules that affect the follicular epithelium at the sebaceous gland level, while excess keratinization of the pilosebaceous duct is avoided [7,8].

## 2. Patients and methods

Between January 1995 and December 1996, 376 patients presented for acne at the Cagliari University Dermatology Department (Italy). Eighty females aged 13–40 years, were selected among these and fully informed about the aim of the study, the possible side-effects and the complications of the treatment. A formal written consent to the chemical peeling procedure was obtained from all the patients. The type and severity of acne in each patient was assessed following the Leeds technique [9]. The data on the patient's clinical history were collected during the first visit, with special attention to determine any contraindications to peeling. The patients were instructed to apply a topical antibiotic and cosmetic formulations containing glycolic acid in concentrations from 8 to 15% at home twice daily. This preparatory treatment was given for about 2 weeks and was continued during the whole study, except for 2 days before and after the peeling treatment with glycolic acid, during which period a specific moisturising cream and a cleansing agent for intolerant skins were suggested. The chemical peeling was performed with a 70% glycolic acid solution applied for times that varied from 2 to 8 min. The peel was kept very light in order to minimize postoperative crusting. The number and frequency of the applications depended on the intensity of the clinical response. Following peeling, the use of a moisturising cream and a cleanser specific for intolerant skins was recommended to minimize the risk of secondary sensibilization. All patients were strongly encouraged to use a sunscreen.

## 3. Results

Eighty women, mean age 22.7 years, affected by acne, were treated with repeated applications of glycolic acid at a high concentration (70%) at the Cagliari University Dermatology Department over a period of 2 years. The main clinical forms were comedonic acne in 32 cases, papulo-pustular acne in 40 cases and

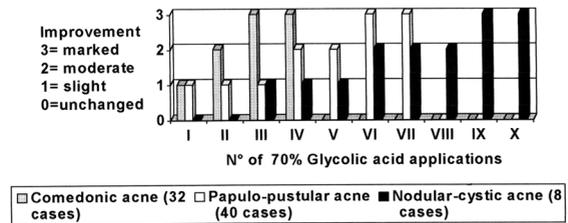


Fig. 1. Improvements of acne related to the number of 70% glycolic acid applications: dermatologist's assessment.

nodular-cystic acne in the remaining eight cases. The frequency of the glycolic acid applications was approximately modular one peeling every 10 days, while the overall number of applications changed depending on the clinical forms of acne (Fig. 1). The most rapid improvement was observed in comedonic acne, where good cleaning of the face was

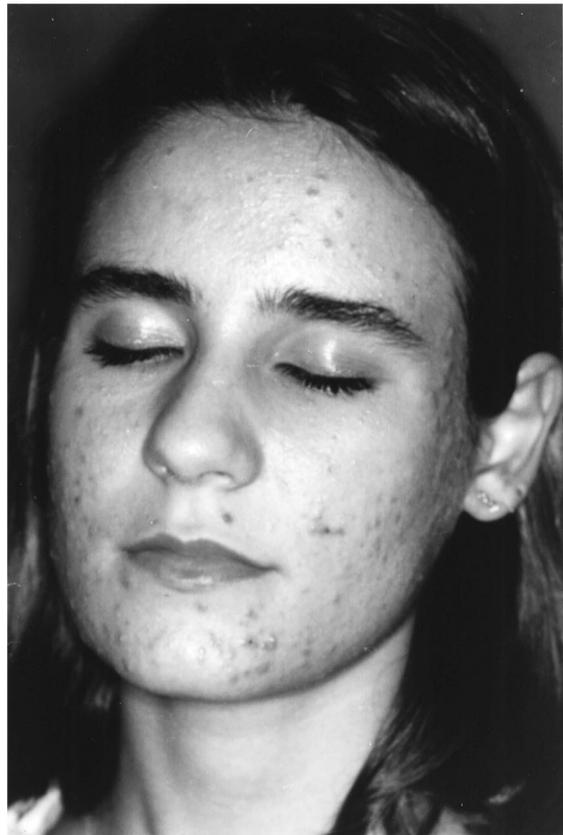


Fig. 2. Papulo-pustular acne: pre-treatment.



Fig. 3. Papulo-pustular acne: post-treatment.

obtained with an average of three applications. In the papulo-pustular forms 60% of the patients reported significant benefit from the very first application, while objective improvement was reached by the fourth application, with an average of six applications to reach remission (Figs. 2–5). Although nodular-cystic forms required eight to ten applications, a significant improvement of coexisting post-acne superficial scarring was noted. The procedure was well tolerated and patient compliance was excellent. When asked to evaluate their skin in terms of mild, moderate, and marked improvement or worsening, the majority of the patients (95%) reported marked improvement, while the rest reported a moderate effect, but with an overall improvement in their appearance (Fig. 6). As regards side effects and complications, only minimal initial worsening of the inflammatory lesions in 20% of the patients was observed, and in one case



Fig. 4. Papulo-pustular acne: pre-treatment.

persistent erythema (Fig. 7). Because of this adverse reaction the glycolic acid treatment was suspended and complete spontaneous recovery was obtained in about 2 weeks. After a more detailed interview, however, the patient admitted using a ‘night cream’ containing tretinoin between two peeling sessions.

#### 4. Discussion and conclusions

Acne is a very important disease in terms of its nearly universal occurrence and its considerable physical and emotional impact. This study confirms that glycolic acid peels seem to add a distinct benefit to



Fig. 5. Papulo-pustular acne: post-treatment.

standard treatment regimens in all types of acne patients. Moreover, the application of peeling agents can support conventional systemic therapies by quickening the clinical response and improving the patient's compliance [4–7,10,11]. The procedure is well tolerated and safe, and especially in patients affected by comedonal acne, which usually has a strong aesthetic impact and is refractory to other modes of therapy, it led to substantial improvement. Between two peeling applications, the daily use of low glycolic acid concentrations can help prevent re-occlusion of the follicles [6–8]. Since the majority of the patients who underwent the study had previously used several topical and systemic therapies, their positive evaluation of the treatment can be considered highly significant. Skin reactions to the application of high concentration glycolic acid [5,10,11] depend on a number of variables. These include the characteristics of the patient's skin and the methodological procedure followed by the medical staff. But most important of all is the correct behaviour of the patient before and after peeling. In the one case of persistent erythema observed in this study, the patient had used an anti-ageing face cream containing tretinoin between two peelings, disregarding medical recommendations. Tretinoin might have enhanced the peeling effect and caused the complication and consequent suspension of glycolic acid treatment. Besides a careful preliminary interview during the first visit, when the formal written consent of the patient is obtained [12], it would be useful to communicate with the patient at each peeling session to order check that the information provided has been adequately understood and to prevent the unauthorized use of other products.

#### Patients

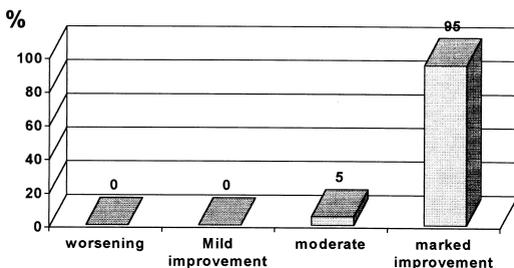


Fig. 6. Improvement of acne treated with 70% glycolic acid applications: patient's subjective (80 subjects).

#### Patients

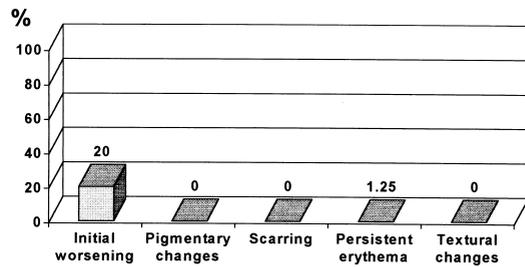


Fig. 7. Acne treated with 70% glycolic acid applications: side effects (80 subjects).

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