

THE USE OF COMBINATION THERAPY WITH 20% GLYCOLIC ACID AND FRACTIONAL MESOTHERAPY TO REDUCE ACNE SCARS: A CASE REPORT

KAROLINA CHILICKA^{A-C,E,F}

• ORCID: 0000-0002-6435-0179

KAROLINA PAGACZ^{A,B,E}

• ORCID: 0000-0002-2683-747X

Faculty of Health Sciences, Opole Medical School, Poland

A – study design, B – data collection, C – statistical analysis, D – interpretation of data, E – manuscript preparation, F – literature review, G – sourcing of funding

ABSTRACT

Background: Acne scars are a common problem for those suffering from acne vulgaris. They may result in low self-esteem, especially if located in visible places such as the face. They may even impede normal societal functioning and withdrawal from the environment.

Aim of the study: To investigate the effects of 20% glycolic acid and fractional mesotherapy on the reduction of acne scars.

Material and methods: We used interviews, case analysis and assessment of the effects of glycolic acid treatment and fractional mesotherapy on a 33-year-old female patient who experienced severe phlegmonosa acne.

Case report: This 33-year-old female patient was struggling with acne at age 29. Purulent cysts were located on the cheeks and jaws on both sides of her face, leaving deep scars that disturbed everyday functioning. She was alternately given four 20% glycolic acid treatments and four fractional mesotherapy treatments.

Conclusions: The combination of fractional mesotherapy treatments and exfoliation with 20% glycolic acid resulted in significant improvement. Reduced inflammation contributed to decreased acne scars as well as improvement in life quality.

KEYWORDS: scars, AHA, fractional mesotherapy

BACKGROUND

Acne is a dermatological disease most frequently seen in 11–30 year-olds [1]. The underlying causes of acne have been proposed in the literature to include:

- excessive production of sebum
- increased keratosis of the sebaceous glands
- inappropriate bacterial flora
- hormones
- a diet rich in simple sugars, fat and spice
- psychological factors [2,3]

Interestingly, intestinal dysbiosis, namely, inappropriate intestinal bacterial flora composition and leakage of the intestinal walls, has been posited to contribute to acne [4]. The last two factors, diet and psychological factors such as chronic stress have been speculated to play a significant role. The Polish Dermatological Society therefore recommends patients undergoing skin treatment have a diet with low gly-

cemic index. Measurement of the following is also recommended:

- testosterone
- dehydroepiandrosteronesulphate (DHEAS)
- LH/FSH ratio

In addition, acne lesions such as pustules, tumors, fistulas and cysts can lead to decreased quality of life and make normal functioning in society more difficult. Chronic stress can be a causative or exacerbating factor and may relate to the presence of neuropeptide receptors on cells of the immune system, as well as the production of cytokines affecting brain function [5–7].

Of great importance in acne treatment is the selection of the appropriate dermatological treatment, which in acute cases is usually 13-cis-retinoic acid otherwise known as isotretinoin, and which reduces sebum secretion, inflammation, colonization of the pilosebaceous

unit and blackhead formation. It has been shown to result in less severe disease relapses. Until recently, it was thought that supportive treatment was unnecessary. However, local application of retinoids for 6 months 2-5 weeks after the initial treatment course is recommended [8,9].

After finishing an isotretinoin treatment, patients must wait at least half a year if they wish to undergo exfoliation, laser or microfracture surgery, as well as aesthetic medicine or plastic surgery treatments.

AIM OF THE STUDY

This work's aim is to demonstrate that the cosmetology treatment exfoliation with glycolic acid can synergize with fractional mesotherapy to reduce deep acne scars.

MATERIAL AND METHODS

We used interviews, case analysis and assessment of the effects of glycolic acid treatment and fractional mesotherapy on a 33-year-old female patient who experienced severe phlegmonosa acne.

CASE REPORT

This 29 year-old female patient exhibited severe acne thought to have been caused by severe long-lasting stress. Pustules on the temples, cheeks, and lower jaws evolved into cysts and fistulas and were associated with great pain. They further hindered normal functioning in everyday life (including work). The patient manually removed them, as acne sufferers often do. In addition, the desire to cover the changes forced the patient to apply a double layer of primer, further hindering skin breathing and clogging skin pores. In 2014, isotretinoin treatment was begun for 8 months, resulting in elimination of acne lesions. However, on the temples, cheeks and jaws scars resulting from cysts, as well as fistulas, remained. After 4 months of taking isotretinoin, the patient's skin condition improved significantly. At age 33, the patient decided to use combination therapy, consisting of exfoliation with 20% glycolic acid and fractional mesotherapy.

RESULTS

The patient underwent a series of treatments using 20% glycolic acid (pH 2.8) as well as fractional mesotherapy combined with organic silica. Written approval for the procedure, photos and consent of the Bioethical Commission of Public Higher Medical Professional School in Opole were obtained (consent number 14/2018). All contraindications (including pregnancy, lactation, keloid tendencies, anticoagulants, active viral, fungal, bacterial infections, oral steroid therapy, oral isotretinoin, active form of acne) were excluded, minimizing the risk of post-procedural complications. The

depth of scars was assessed using the Goodman and Baron scales. The patient was diagnosed with 3rd grade acne according to the above-mentioned scale, meaning that the changes were difficult to cover using makeup (tab. 1). The series included 8 treatments alternating every two weeks for skin regeneration. The first treatment of glycolic acid was applied for 40 seconds, with subsequent skin acid exposures lasting 30 seconds. Glycolic acid 20% pH 2.8 is a strong irritant and sometimes causes bleeding. The acid was always neutralized with a neutralizer to prevent deeper penetration into the skin. After the treatment, a strong regenerating cream was applied, allowing for quicker epidermal reconstruction. After the surgery, the appearance of serous fluid was visible on the treatment day, and scabs and epidermal exfoliation appeared on the second day after treatment, lasting for up to a week. Fractional mesotherapy with organic silica was given alternately with acids every two weeks, and resulted in shallower scars. The treatment consisted of a special device, into which a disposable cartridge with 9 sterile needles was inserted, and a skinprick. Before the facial treatment, an anesthetic preparation was applied while the patient lay for 30-40 minutes (under the occlusion - food foil), which reduced pain. During treatment, bleeding occurred, probably due to growth factor release resulting in collagen remodeling and subsequent improvement of the patient's skin structure.

The scars were reassessed after the treatment series. According to the Goodman-Baron scale, the scars were shallower up to the 2nd grade, implying that the glycolic acid treatments had synergized with fractional mesotherapy to the patient's benefit.

Tab. 1. Assessment of atrophic scars in the Goodman-Baron scale.

Grade 1	Macular edema or discoloration.
Grade 2	Mild atrophy is not visible at distances >50 cm, easy to cover with face makeup or with the help of a beard.
Grade 3	Moderate atrophy visible at distances >50 cm; it is not easy to cover with makeup or with the help of a beard, changes flatten when manually stretched.
Grade 4	Severe atrophy, changes do not flatten when manually extended.

DISCUSSION

Glycolic acid treatments are widely used and often performed by cosmetologists to reduce acne scars. However, fractional mesotherapy has recently gained in popularity due to its effect on growth factor release by the skin, stimulating and increasing collagen and elastin synthesis, supporting cell health, and stimulating cell growth and division. Combination treatment results in very good shallowing of acne scars. The synergy gives much better results than the performance of the treatments individually. Sharad conducted research

on a group of 30 patients with acne scars divided into two groups. The first group was subjected to microcutting for 6 weeks, and the second one to treatments with 35% glycolic acid. They found that both microcutting and exfoliation with acids gave excellent results for the acne scars. Skin structure improved, and acne lesions (scars) were shallower. However, microcutting alone gave better results in making the scars less shallow than a separate acid procedure [10].

Rana et al. investigated the effect of microcutting in combination with 70% glycolic acid and microcutting on a group of 60 patients with acne scars. They

showed that the combination of acids and microcutting gave better results than microcutting on its own [11].

CONCLUSIONS

The use of combination therapies, in this case, exfoliation with 20% glycolic acid and fractional mesotherapy, resulted in very good and positive therapeutic effects. The decreased inflammation resulted in better and faster regeneration of the skin, flattened acne scars, and improved skin structure, as quantified by the Goodman-Baron scale.

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Correspondence address:

dr Karolina Chilicka

Państwowa Medyczna Wyższa Szkoła Zawodowa w Opolu

Wydział Nauk o Zdrowiu

ul. Katowicka 68, 45-060 Opole

E-mail: karolina.chilicka@poczta.onet.pl

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