EFFECT OF GLYCOLIC ACID GEL PHONOPHORESIS IN TREATMENT OF ACNE VULGARIS

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Introduction

Acne vulgaris is a common human skin disease, characterized by areas of skin with seborrhea (scaly red skin), comedones (blackheads and whiteheads), papules (pinheads), pustules (pimples), Nodules (large papules) and possibly scarring

- **This is a follicular disorder that affects susceptible pilosebaceous follicles, primarily of the face, neck, and upper trunk, and is characterized by both non-inflammatory and inflammatory lesions. Abnormal keratin production with obstruction of the follicular opening, increased production of sebum (lipids secreted by the androgen-sensitive sebaceous glands (SG)), and proliferation of Propionibacterium acnes (P. acnes) leading to up regulation of pro-inflammatory cytokines like TNF-α and IL-1α without propionibacteria even being present**

Phonophoresis is the use of ultrasound to enhance the delivery of topically applied drugs. Effectively, medicines contained within or under the ultrasound gel are pushed by the sound waves of the ultrasound and driven deep below the skin. Phonophoretically administered medications can penetrate the body much deeper than those massaged by hand over the surface of the skin

- Glycolic acid is an alpha-hydroxy acid, soluble in alcohol, derived from fruit and milk sugars, which acts by thinning the stratum corneum, promoting epidermolysis and dispersing basal layer melanin. It increases dermal hyaluronic acid and collagen gene expression by increasing secretion of IL-6. The procedure is well tolerated and patient compliance is excellent. Controidications include: contact dermatitis, pregnancy, and glycolate hypersensitivity. Side effects, such as temporary hyperpigmentation or irritation, are not very significant. Some studies showed that the level of skin damage with glycolic acid peel increases is time related

Purpose of the study

Purposes of this study were the

To evaluate the therapeutic efficacy of glycolic acid gel phonophoresis on the treatment of acne vulgaris in the form of decreasing lesion number.

To evaluate the therapeutic efficacy of topical glycolic acid on the acne vulgaris.

MATRIALS AND METHODS

Subjects

This study was carried out on thirty patients who are receiving medical treatment and suffering from acne vulgaris . Fifteen patients received glycolic acid gel phonophoresis program in addition to the routine medical care intervention (study group) and the other fifteen received glycolic acid gel plus their routine medical care (control group). The age of each participant ranged from 18 to 30 years, they were free from any disease that can influence the results and they were selected from KASR ELEANY hospitals

Patients groups.

Patients were randomly divided into 2 equal groups:

Group (A): (study group)

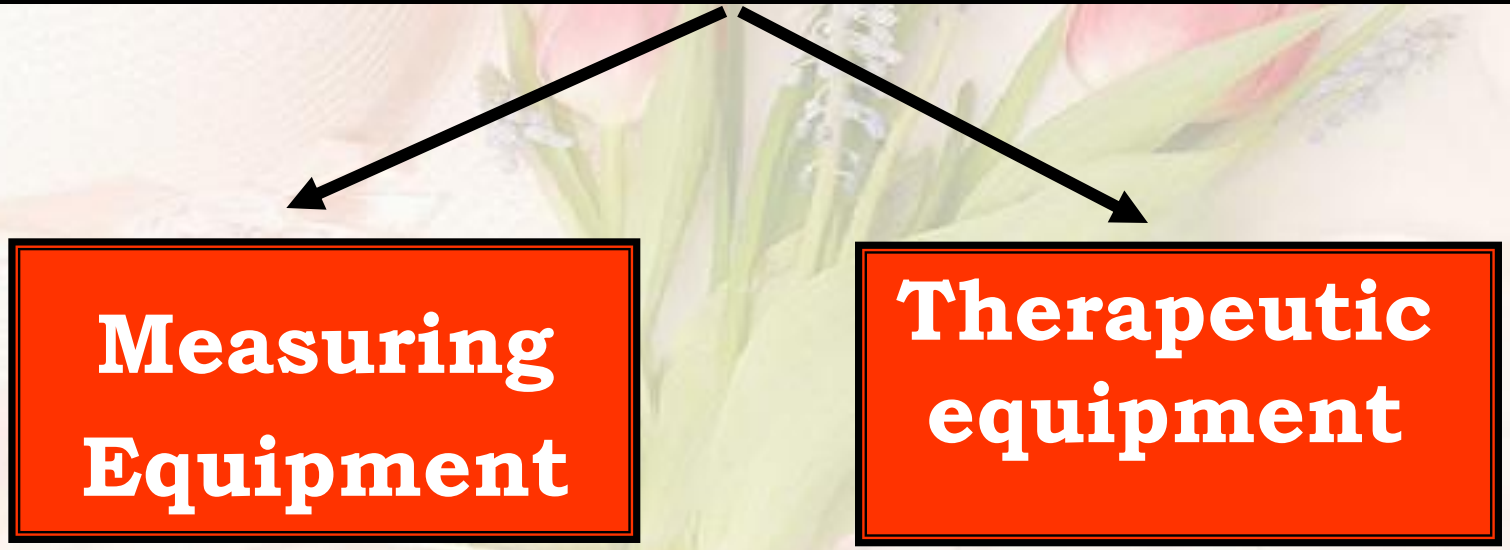
This group included fifteen patients with acne vulgaris. They received a glycolic acid gel phonophoresis program for five minutes, three days per week (day after day) for six weeks in addition to the routine medical care intervention.

Group (B): (Control group)

This group included fifteen patients with acne vulgaris. They received glycolic acid gel plus their routine medical care of acne vulgaris for three days per week (day after day) for six weeks in addition to the routine medical care intervention.

Equipment Used

Equipment Used



Comprehensive acne severity scale (CASS):

Clear (0): No lesions to barely noticeable lesions. Very few scattered comedones and papules

Almost clear (1): Hardly visible from 2.5 meters away. A few scattered comedones, and few small papules and very few pustules

Mild (2): Easily recognizable, less than half affected area involved. Many comedones, papules, and pustules

Moderate (3): More than half affected area involved. Numerous comedones, papules, and pustules

Severe (4): Entire area involved. Covered with comedones, numerous papules, and pustules and few nodule and cysts.

Very severe (5): Highly inflammatory acne covering the affected area; with nodules and cysts present .

Therapeutic equipment

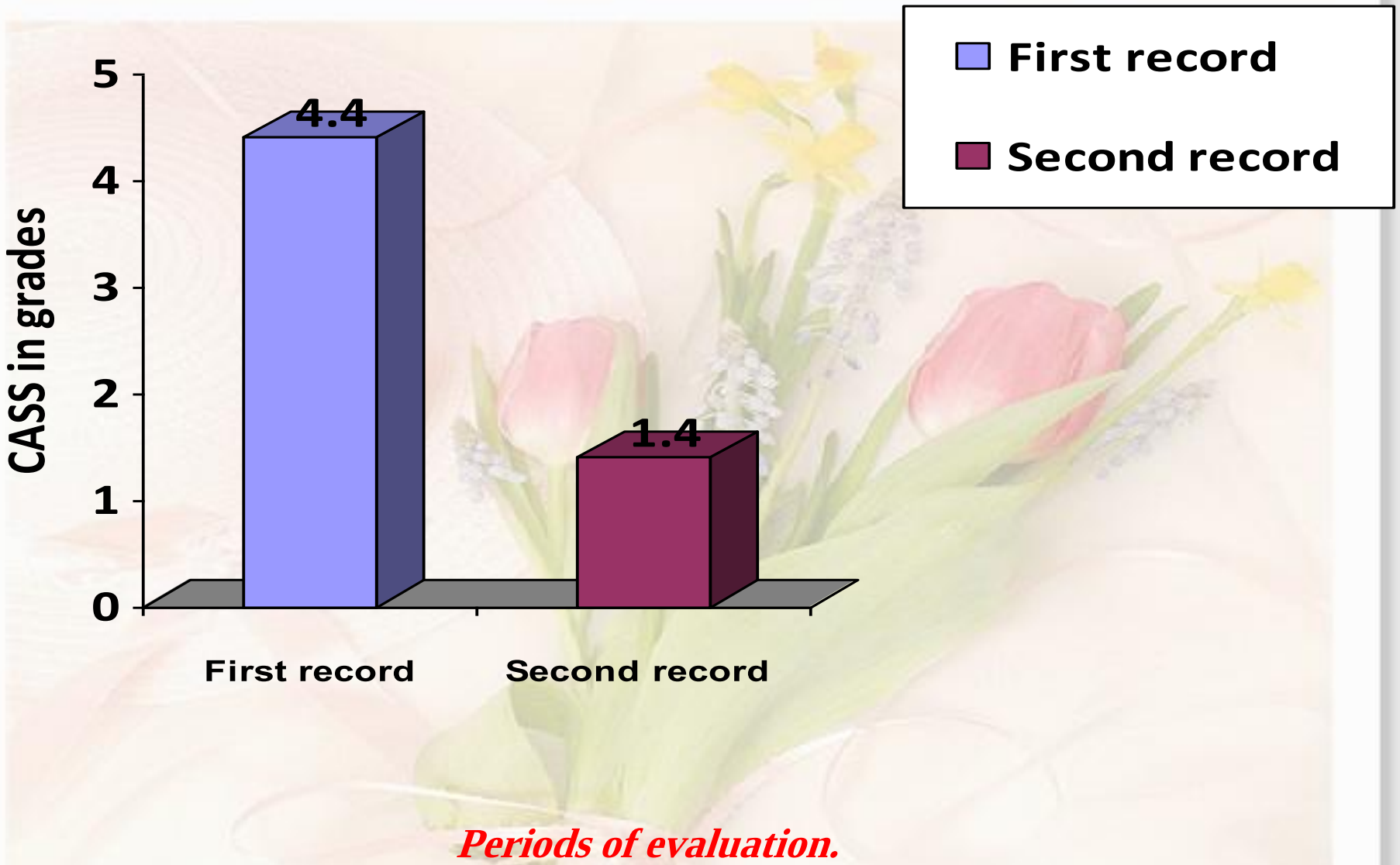
Ultrasound unit.

Glycolic acid gel.

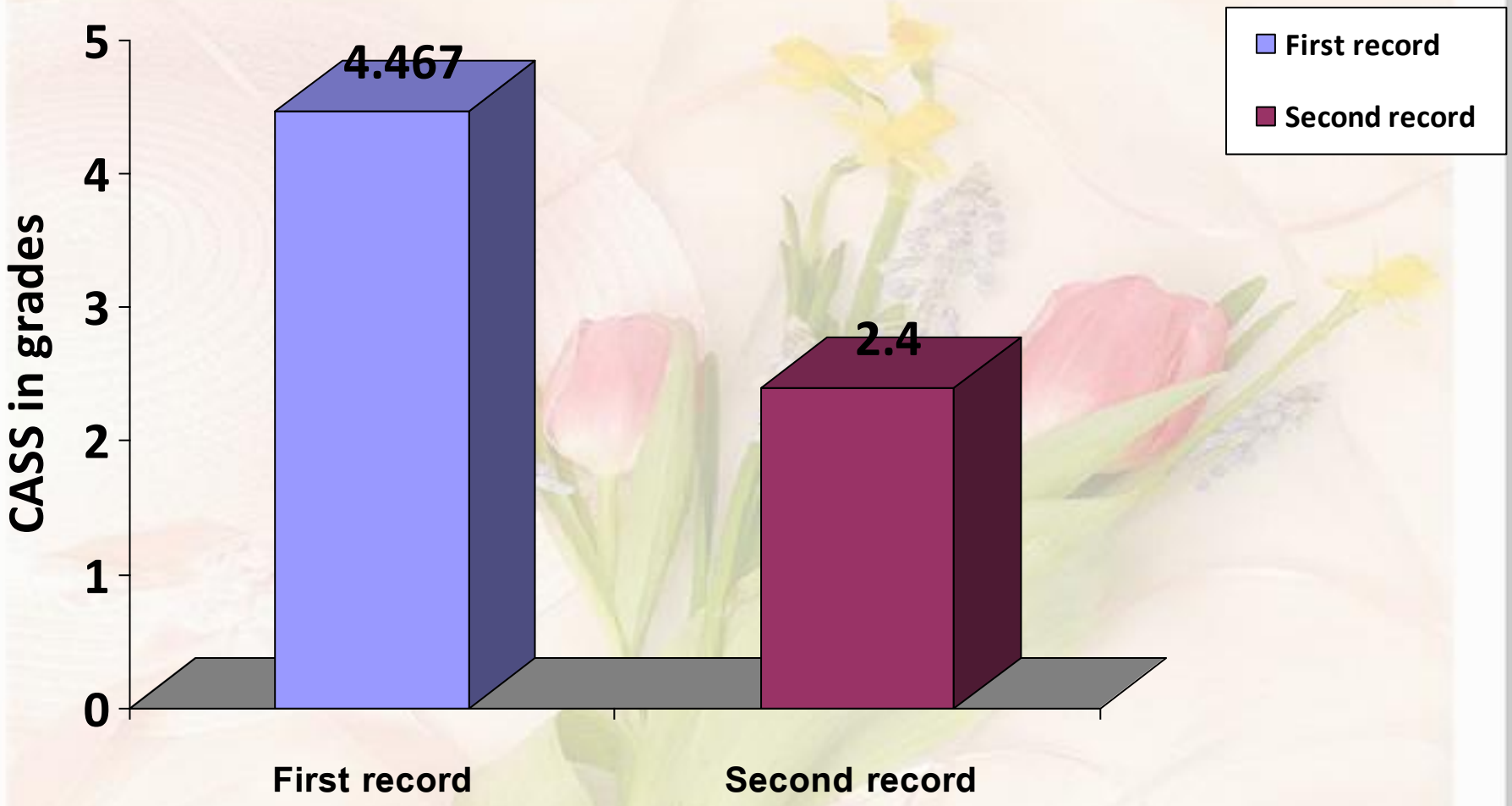
Treatment procedures

Procedures of the glycolic acid gel Phonophoresis

Results

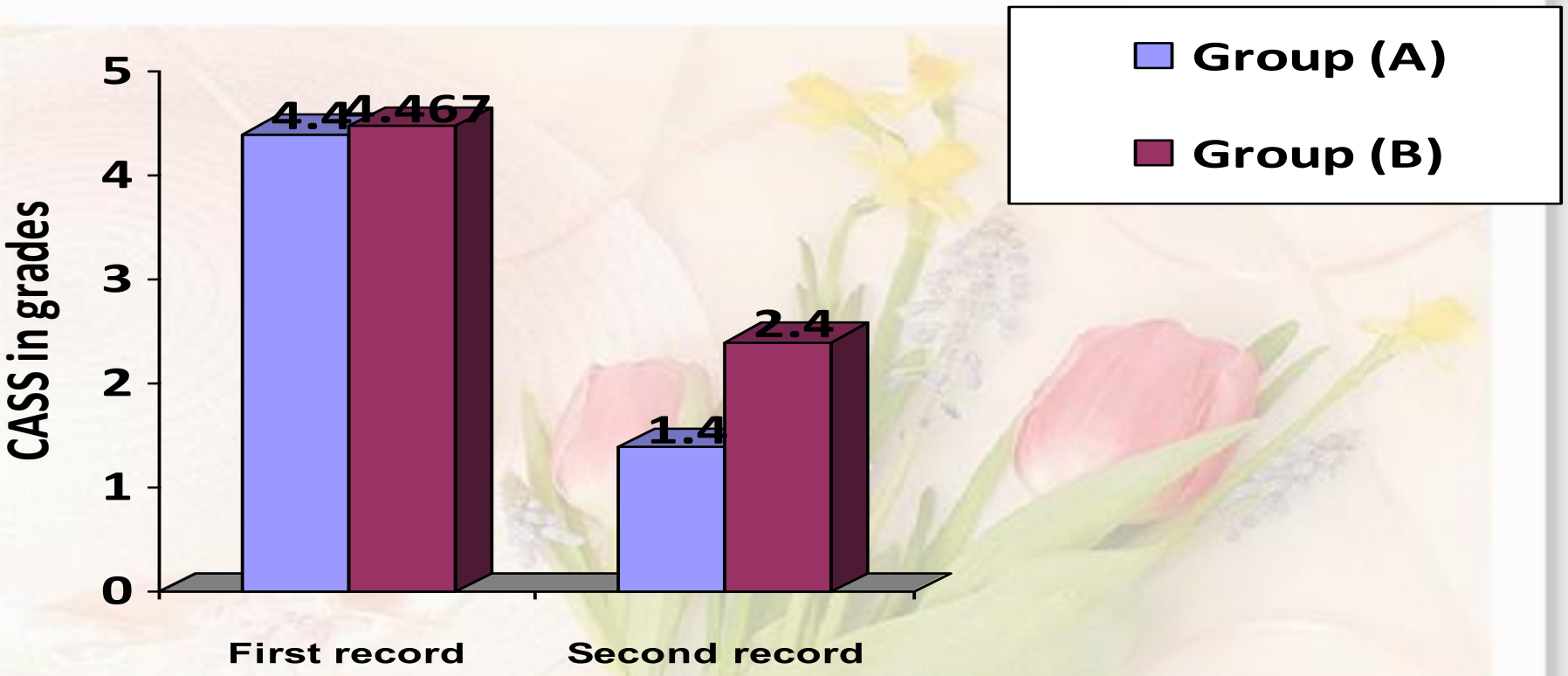


Bars representing the mean values of the Comprehensive acne severity scale (CASS) in grades of the 2 records of the group (A) (Glycolic acid gel phonophoresis).



Periods of Evaluation.

Bars representing the mean values of the Comprehensive acne severity scale (CASS) in grades of the 2 records of the group (B) (Glycolic acid gel topical application).



Bars representing the mean values of the Comprehensive acne severity scale (CASS) in grades of the 2 records of the two groups (A) and (B).


DISCUSSION

Significant differences *between group (A) (Glycolic acid gel phonophoresis) and group (B) (Glycolic acid gel topical application), which were in the form of a highly significant decrease in the CASS, were consistent with those observed and recorded by* Alam and Dover*, 2006; Asbill et al., 2000; Barbara, 2003; Bassit, 2000; Benson et al., 1999; Bomana, 2009; Byl, 1995; Casarotto and Adamowski, 2004; Chan and Rohr, 2004; Chi-Chen et al., 2004; Dmochowski et al., 2006; Dominguez, 2002; Goodman, 2003; Grover and Reddy, 2003 and Kessler et al., 2008.*

Eventually, ***after the discussion of the results and according to reports of the previous investigators in fields related to this study, it can be claimed that application of both the glycolic acid gel phonophoresis and the glycolic acid gel topical application were effective and had a valuable effects in improving signs and symptoms of acne vulgaris as evidenced by the highly significant decrease in CASS. But the glycolic acid gel phonophoresis was more fruitful than the glycolic acid gel topical application, that could be attributed to the enhancement effect of phonophoresis in the transdermal drug delivery as evidenced by the highly significant decrease in CASS.***


Summary
&
Conclusion

The results of this study supports the expectation that application of both the glycolic acid gel phonophoresis and the glycolic acid gel topical application were effective and had a valuable effects in improving signs and symptoms of acne vulgaris as evidenced by the highly significant decrease in CASS. But the glycolic acid gel phonophoresis was more fruitful than the glycolic acid gel topical application, that could be attributed to the enhancement effect of phonophoresis in the transdermal drug delivery as evidenced by the highly significant decrease in CASS.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