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To cite this article: Ewa Chlebus, Monika Serafin & Marcin Chlebus (2018): Is maintenance treatment in adult acne important? Benefits from maintenance therapy with adapalene, and low doses of alpha and beta hydroxy acids, Journal of Dermatological Treatment, DOI: [10.1080/09546634.2018.1484874](https://doi.org/10.1080/09546634.2018.1484874)

To link to this article: <https://doi.org/10.1080/09546634.2018.1484874>



Accepted author version posted online: 06 Jun 2018.



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Is maintenance treatment in adult acne important? Benefits from maintenance therapy with adapalene, and low doses of alpha and beta hydroxy acids.

Running head: Is maintenance treatment in adult acne important?

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The main text consist of 1817 words and 2 figures.

Is maintenance treatment in adult acne important? Benefits from maintenance therapy with adapalene, and low doses of alpha and beta hydroxy acids.

ABSTRACT

Background: Adult acne is a chronic disease with uncontrolled exacerbations, associated with a psychological burden of the patient and medical expenses.

Aims: The aim of the study was to check the efficacy of maintenance therapy of adult acne. It is essential part of treatment as adult acne usually has a long-lasting and recurring course.

Methods: In the study the efficacy of maintenance therapy in patients with adult acne is evaluated. In this study, 100 patients (aged 25-39 years of age) with mild and moderate adult acne were enrolled.

Results: The maintenance therapy (adapalene 0.1% three times a week and low doses of alpha and beta hydroxy acids) led to a significant decrease in the number of acne lesions (from 31.3 to 12.25; $p < 0.001$) and severity of seborrhoea ($p < 0.001$).

Conclusions: Maintenance therapy brings significant improvements in the reduction of non-inflammatory and inflammatory lesions in patients with mild and moderate adult acne.

KEY WORDS: adult acne, maintenance therapy, retinoids, alfa and beta hydroxy acids

BACKGROUND

In 1999, it was shown that during the preceding decade the mean age of an acne patient rose from 20.5 to 26.5 years [1]. Since then, adult acne has been in the focus of interest of physicians all over the world. In 2013, the disease first began to be referred to as adult female acne [2], even though it also affects the male population. The age threshold for the onset of adult acne is 25 years [1, 3]. In women, however, the nature of the disease is different, and symptoms occur much more commonly over 40 years of age [4, 5, 6].

Recent years have seen a number of publications exploring the problem of adult acne. The literature contains reports of clinical symptoms and available treatment modalities, however they do not seem to be sufficiently systematized. Furthermore, daily clinical experience shows that additional difficulties involved in the management of adult acne patients are related mainly to a high therapeutic failure rate in acne sufferers over 25 years of age [7].

Adult acne is often resistant to treatment. Older skin (in people after the age of 25 years) is more sensitive to topical agents, which is why it is more easily irritated by medications intended for external use and cosmetics [8]. Furthermore, patients over 25 years of age may respond much more slowly to skin therapies [2].

Even though researchers share the view that long-term maintenance therapy is a must due to recurrences of the disease, periodic exacerbations and a cyclic nature of acne lesions (pre-menstrual flares) [9], there are as yet no uniform recommendations regarding the type of maintenance treatment which should be introduced after courses of oral medications and during periods of mild lesions. One of the follow-up treatment options found in the literature is topical retinoid therapy [10, 11]. It has also been noted that in order to improve the quality of life and ensure a better response to acne treatment, it is crucial to optimize the skin care routine [9]. In this context, it seems worthwhile to consider the combination of standard

maintenance treatment modalities with supportive therapy – including the application of dermocosmetics.

AIMS

The aim of the study was to verify the efficacy of maintenance treatment in adult acne (AA). It plays a significant role in the therapeutic process due to the chronic and recurrent nature of the condition. The study explored the efficacy of maintenance therapy based on topical retinoids and dermocosmetics which is analogous to the maintenance treatment prescribed in juvenile acne. The treatment was adjusted to the type of skin found in patients over 25 years of age by modifying the dosage regimen of retinoids and selecting appropriate dermocosmetics. The proposed treatment took into account the fact that many patients suffering from adult acne have sensitive skin types [12, 13, 14].

In order to assess the efficacy of the proposed maintenance therapy, a medical experiment was conducted to determine the efficacy and tolerance of topical retinoid use in combination with dermocosmetics that contain low doses of alpha and beta hydroxy acids during the maintenance treatment of mild and moderate adult acne. The proposed approach is consistent with indications found in the literature.

MATERIAL AND METHODS

The experiment involved a total of 100 Polish patients who, prior to their inclusion in the observation study, were in the process of maintenance treatment with adapalene 0.1% (three times a week). The maintenance therapy was introduced after the completion of the treatment of an active phase (isotretinoin, oral antibiotics, contraceptives or topical cream with retinoids). All patients for at least 2 weeks were not taking oral medications associated with acne. The group comprised patients aged between 25 and 39 years, with mild and moderate

adult acne based on the IGA (*Investigator's Global Assessment*) scale for the evaluation of acne severity [16]. Additionally, exclusion criteria were involved in the patients selection process (among others: pregnancy, breastfeeding, smoking, other dermatologic diseases or therapies etc.).

The experiment was conducted for 12 weeks in each of the study participants, over a period between May 2015 and February 2016. During that time all the patients used their standard treatment, i.e. adapalene 0.1% (three times a week), and a randomly selected set of dermocosmetics, either low doses of alpha and beta hydroxy acids (study group) or neutral moisturizing products (control group), as an add-on therapy.

The skin care routine in both groups was essentially the same, however different dermocosmetics were used. In the study group, the patients applied the following products with active substances: adapalene 0.1% (three times a day in the evening), active day cream (Lactic Acid 0,2%, Glycolic Acid 0,2%, Citric Acid 0,04%, Malic Acid 0,01% and Slicilic Acid 0,001%) and active night cream (Lactic Acid 0,3%, Glycolic Acid 0,3%, Citric Acid 0,06%, Malic Acid 0,015% and Slicilic Acid 0,0015%). In the control group, aforementioned dermocosmetics were replaced with moisturizing cosmetics.

For continuous and semi-continuous variables, the mean values were compared between the analyzed groups (study group and control group) and between individual medical visits (within each of the groups under analysis). Due to the nature of the data, which came from repeated experiments, an analysis of results of the mixed effects model was also included. On the one hand, the mixed effects model makes it possible to duly take into account the specific nature of collected data (e.g. non-sphericity of random error), which makes the results more reliable. On the other, it allows a multivariate analysis (concurrent analysis of the progress of treatment and the difference between the study group and the control group).

For ordered categorical variables, an analysis of their distribution was performed. Furthermore, an exact symmetry test and Stuart-Maxwell's test were performed to investigate similarity in variable distributions between consecutive medical visits for a given group (paired data), and Wilcoxon's test and Fisher's exact test – in order to examine the similarity in the distribution of variables from independent groups (unpaired data). The significance level adopted for the study was 5%. The statistical analysis was performed using STATA 14 software (StataCorp LP, College Station, Texas).

RESULTS

A total of 97 patients completed the study. Based on collected data it was concluded that both skin treatment and care regimens (in the study and control groups) led to a significant decrease in the severity of acne lesions (for both groups $p < 0.001$). In both cases, the mean number of acne lesions at the outset of the treatment was slightly higher than 30 and did not demonstrate statistical differences ($p = 0.63$). However, towards the end of the treatment the mean number of acne lesions in the study group was 12.25, and in the control group – 20.00. Both values are lower than the baseline values in a statistically significant manner (for both groups $p < 0.001$).

Even though both treatments cause a significant decrease in the mean number of acne lesions, they cannot be described as equally effective. The results show that the regimen applied in the study group (with low doses of alpha and beta hydroxyl acids) brings significantly better outcomes ($p < 0.001$). The difference can actually be noted much earlier than the end of the study, after about four weeks of treatment. Starting in the fourth week, the mean number of acne lesions was significantly smaller in the study group than in the control group ($p = 0.039$) (Fig. 1).

[Fig. 1]

Another aspect of the efficacy assessment of the treatment based on topical retinoids in combination with dermocosmetics with low doses of alpha and beta hydroxy acids was determining how effective the treatment was in reducing seborrhoea, and comparing its efficacy with an analogous treatment comprising standard moisturizing cosmetics. The severity of seborrhoea was graded on the 4-point Scaparro scale (0 – none; 1– mild; 2 – moderate; 3 – severe) (Fig. 2).

[Fig. 2]

It needs to be emphasized that a decrease in the severity of seborrhoea was achieved in over 57% of the patients undergoing the treatment involving dermocosmetics with low doses of alpha and beta hydroxy acids, and the severity of seborrhoea increased in only 4.25% of the study subjects. In the control group, the proportions are almost reversed. A reduction in the severity of seborrhoea was achieved in only about 9% of the patients, and over 35% of the patients experienced an increase in the severity of seborrhoea (distributions of severity of seborrhoea are significantly different $p < 0.001$).

Another important conclusion which can be drawn from the medical experiment reported above is that both treatments were very well tolerated by the patients.

DISCUSSION

The past six years have seen the publication of studies attempting to lay down recommendations for the treatment of adult acne. The recommendations have been prepared on the basis of arrangements adopted for the treatment of juvenile acne [17, 18, 2]. The recommendations are defined for a main treatment, but there is no consensus about a maintenance therapy in adult acne.

The results obtained in the medical experiment analyzing the efficacy of maintenance therapy consisting of 0.1% adapalene and dermocosmetics with low doses of alpha and beta hydroxy acids warrant the formulation of practical conclusions concerning chronic maintenance treatment in adult acne patients.

The topical maintenance treatment based on adapalene 0.1% (three times a week) brings a significant improvement determined on the basis of the scale of reduction of inflammatory and non-inflammatory lesions in patients with mild and moderate acne.

Complementing adapalene 0.1%, treatment with appropriate skin care routine containing low concentrations of alpha and beta hydroxy acids makes it possible to significantly improve the outcome in terms of the severity of acne and seborrhoea in adult patients with acne.

Since no side effects were reported for either of the two treatment and skin care regimens (study and control groups), it needs to be concluded that the active ingredients contained in considered dermocosmetics are well tolerated substances, which do not contribute to increasing the reactivity of adult skin to topical retinoids.

Another factor worth highlighting is that many female patients over the age of 25 years, in addition to skin treatment and improvement in its appearance (a reduction in acne lesions) also expect assistance in selecting skin care products with moisturizing and anti-aging properties which, at the same time, do not interfere with their therapy. The substances contained in considered dermocosmetics (AHA, BHA) are compounds with recognized exfoliating, skin smoothing and brightening properties. In addition to acne elimination, they provide good skin appearance.

There are no clear guidelines as to what maintenance treatment methods should be used after oral treatments or during periods with mild acne lesions. The idea of long-term maintenance

treatment seems to be justified due to the chronic recurrent nature of adult acne, marked by periods of exacerbations [9]. One of the follow-up treatment options is topical retinoid therapy [10, 19, 11]. Because of positive experiences with using topical exfoliating substances in the elimination of acne and post-acne lesions (skin discolourations, PIH, scars), combinations of standard therapies with supportive methods, including dermocosmetics formulated with appropriate ingredients, should be considered.

Declaration of interest statement

This investigator-initiated trial was supported by Sanofi.

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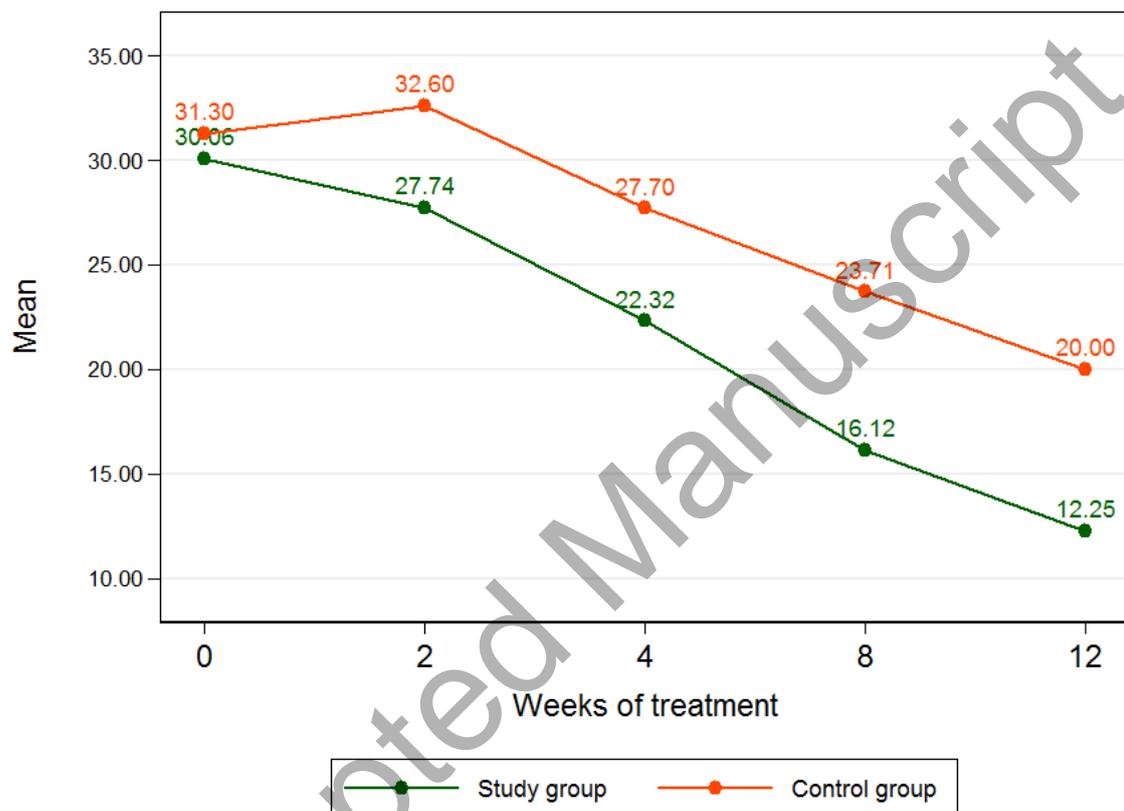
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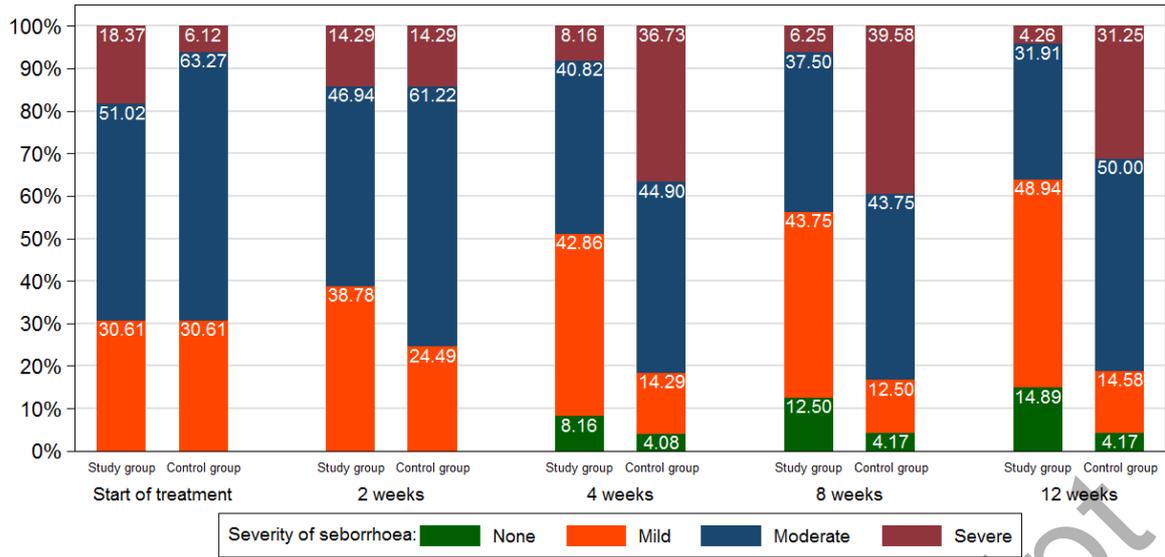
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FIGURES LEGEND

Figure 1. Mean number of inflammatory and non-inflammatory lesions during the treatment.

Figure 2. Severity of seborrhoea during the treatment.





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