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Treatment of post-menopausal acne with tretinoin lotion 0.05% delivers rapid results and concomitant benefits

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Abstract

We describe a case of comedonal acne in a post-menopausal female treated with a novel tretinoin lotion 0.05%. The patient also had some actinic keratoses, which are hyperkeratotic, scaly lesions caused by prolonged exposure to ultraviolet radiation. These lesions have the ability to progress into squamous cell carcinoma. Actinic keratoses can occur in patients as young as 20 years, but are more common in patients aged 50 years and older. Topical retinoids are recommended as monotherapy in comedonal acne but despite their documented clinical efficacy are underutilized due to concerns about cutaneous tolerability. Topical tretinoin is currently not recommended as first-line therapy in the treatment of actinic keratosis as its efficacy is not comparable to that of other modalities. In this patient, a novel tretinoin lotion 0.05% resulted in rapid in and sustained improvement of acne. The investigator also observed improvement in actinic keratoses and photodamage. If these results can be confirmed in a larger patient population this may be an attractive area of investigation for the treatment of patients with adult acne and photodamaged skin.

Keywords

Acne vulgaris, comedonal acne, actinic keratosis, photoaging, tretinoin lotion 0.05%

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Introduction

Acne vulgaris (AV) is a common chronic skin disease that causes both inflammatory (papules, pustules, nodules, and cysts) and non-inflammatory lesions (open and closed comedones).[1] Although most cases occur during adolescence, it can either persist or arise in adulthood.[2] Female patients account for two-thirds of the acne visits to dermatologists and one-third of all such visits are by women 25 years and older.[3] Acne is associated with poor self-image, depression, and anxiety, all of which negatively affect quality of life.[4–6]

Actinic keratosis (AK) is a common precancerous skin condition caused by long-term exposure to ultraviolet radiation that may progress to non-melanoma skin cancer. AK has a tendency to manifest on areas such as the face, head, and hands and because such lesions are highly visible and cosmetically unappealing, they may also negatively impact quality of life.[7] Although most AK does not progress to squamous cell carcinoma (SCC), patients are usually treated as the growths that progress to SCC cannot be distinguished from those that spontaneously resolve.[8] Numerous different treatment options exist, including topical medications, procedural modalities such as cryotherapy, dermabrasion, chemical peels, and laser resurfacing and photodynamic therapy. The choice of therapy is influenced by factors such as the number and distribution of lesions, lesion characteristics, patient preference for the mode of treatment, patient tolerance for side-effects (e.g. pain, inflammation, hypopigmentation, scarring), treatment availability, and cost. Two recent studies have suggested that 0.05% tretinoin cream may be a good choice to intercalate with classic treatments such as imiquimod and ingenol mebutate in the treatments of AKs[9] and in the improvement of photoaging and stabilization of field cancerization,[10] although another large randomized study of a topical 0.1% tretinoin versus matching vehicle demonstrated that high-dose topical tretinoin was ineffective at reducing the risk of keratinocyte carcinoma.[11]

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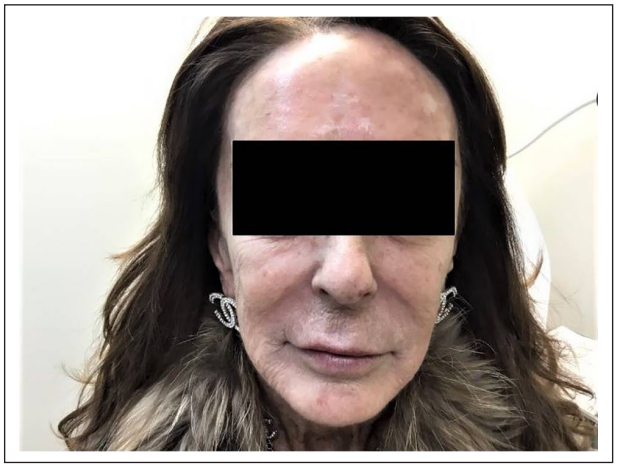

Figure 1. Baseline: pre-treatment with tretinoin lotion 0.05% (full face).

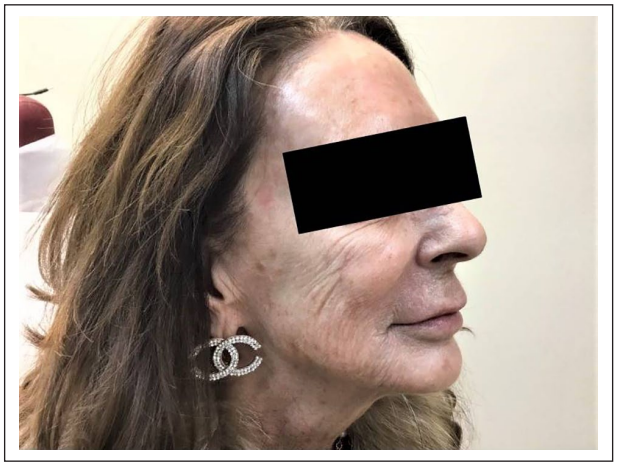

Figure 2. Baseline: pre-treatment with tretinoin lotion 0.05% (side view).

Case report

A 64-year-old Caucasian female presented to our office with facial comedonal AV, AK of the face and neck, and self-reported complaints of dull complexion and dissatisfaction with her overall facial appearance (Figures 1 and 2).

She had been previously treated for comedonal acne, several years prior, with tretinoin 0.05% cream, but had discontinued use due to lack of any significant improvement and bothersome cutaneous side-effects, most notably erythema and peeling. Other past dermatological history included basal cell carcinoma of the right temple and left nasal tip. At the time of her initial visit, cryotherapy with liquid nitrogen was used to treat 15 facial AK. Having ruled out fish protein allergies, she was prescribed tretinoin lotion, 0.05% (Altreno™, Bausch Health US, LLC) for comedonal acne. She was advised to apply a thin layer topically to her face at bedtime and minimize unprotected exposure to ultraviolet light including sunlight and sunlamps during treatment with tretinoin lotion. At 1-month follow-up, her complexion was visibly improved and she had fewer acne lesions (Figure 3). At her 3-month visit, there was significant improvement in her comedonal acne and a decrease in the number of new AKs. We also observed improvement in the appearance of her photoaged skin. Of note, there was improvement in skin tone and overall appearance of photodamage (Figures 4 and 5). The patient reported satisfaction with her response to

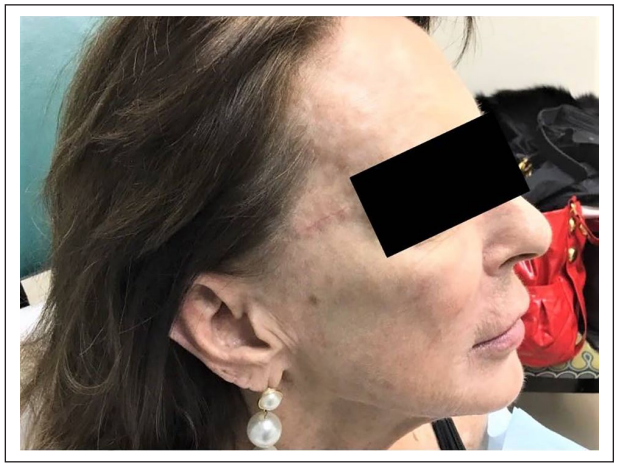

Figure 3. 1-Month follow-up (side view).

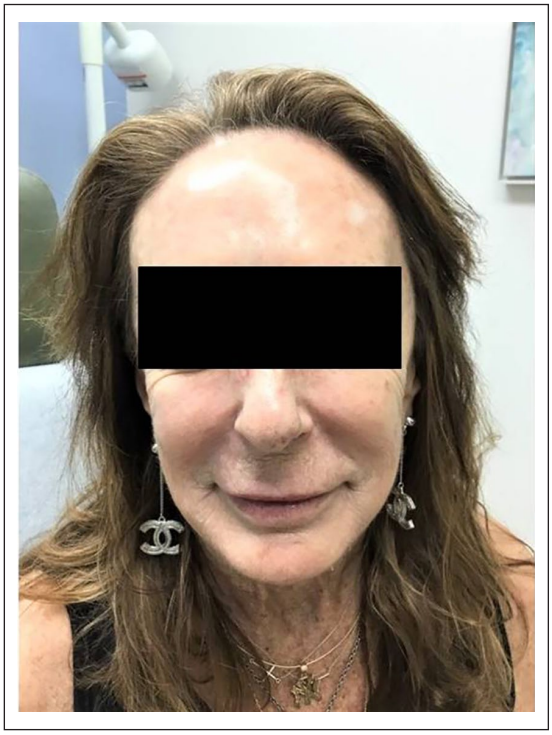

Figure 4. 3-Month follow-up (full face).

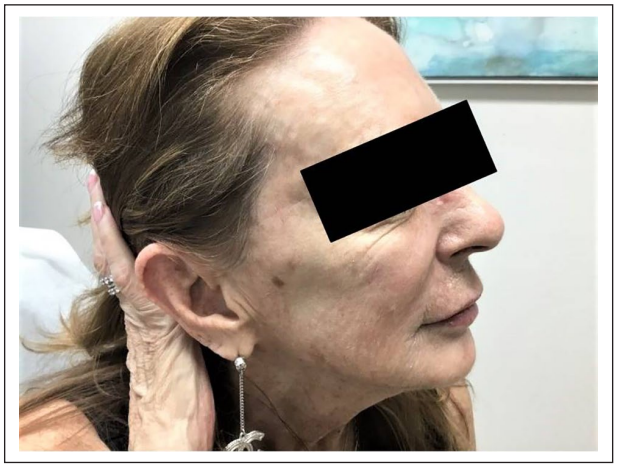

Figure 5. 3-Month follow-up (side view).

treatment, in particular the reduction of acne and resolution of the perceived skin dullness. This was associated with improved self-confidence, to the extent that she no longer felt she had to "hide" under make-up. No treatment-related side-effects were experienced. She will continue treatment with tretinoin lotion 0.05% and the progress will continue to be monitored. The patient was instructed to continue avoiding unprotected exposure to ultraviolet light and advised to contact me if she developed pruritus or urticaria as the product contains soluble fish proteins.

Discussion

Tretinoin lotion 0.05% contains micronized tretinoin particles together with skin hydrating ingredients: sodium hyaluronate, soluble collagen, and glycerin in a polymeric mesh matrix. Micronization is a valuable technique for products like tretinoin that have very low water solubility as it increases the dissolution rate by increasing the surface area. The micronization process results in reduced tretinoin particle size (~10 µm versus 200–300 µm in other tretinoin formulations) allowing for easier penetration into skin follicles, which are typically 11–66 µm in diameter, with resultant direct uptake into sebum and greater deposition in the epidermis and dermis. These micronized particles are delivered using a polymeric honeycomb matrix, which helps to both structure and provide uniform distribution of the active drug along with the moisturizing and hydrating ingredients and small amounts of mineral oil. The combination of moisturizers and humectants in the lotion vehicle enhances efficacy and improves tolerability. Sodium hyaluronate and collagen are powerful hydrating ingredients, while glycerin is a humectant, keratolytic that protects the skin against irritation and accelerates healing. Together, the polymeric mesh structure and vehicle lotion formulation help to improve skin barrier function, retain moisture, and decrease transepidermal water loss.[12]

It is the only tretinoin available in a lotion formulation in the United States and was developed for women with adult acne. Although the exact mode of action of tretinoin in acne treatment is unknown, evidence suggests that topical tretinoin decreases cohesiveness of follicular epithelial cells with decreased microcomedone formation. In addition, tretinoin stimulates mitotic activity and increased turnover of follicular epithelial cells causing extrusion of the comedones.[12]

Several studies have demonstrated significant success of this new formulation in reducing inflammatory and non-inflammatory lesions in moderate and severe female acne.[13–15]

In our patient, 3 months of therapy with tretinoin lotion resulted in vastly improved comedonal acne. While this is consistent with the clinical studies, there are several notable and previously unreported observations about this case.

First, clinical trials of tretinoin lotion 0.05% did not include subjects aged 65 years or older.[16] Our patient was 64 years of age when she started treatment and is now >65 years and appears to have achieved results consistent with those of younger age groups.

Second, tretinoin lotion appears to have resulted in regression of this patient's AK, although this was not the primary goal of the therapy.

Although this phenomena has previously been observed in several studies[17–19] as its efficacy is not comparable to that of other modalities, topical tretinoin is currently not recommended as first-line therapy in the treatment of AK.

Third, the tretinoin lotion, used for treatment of acne, appeared to also improve skin tone and photodamage. While this has not previously been reported, it is known that photoaging can be treated by retinoid formulations.[20,21] Tretinoin binds to and activates retinoic acid receptors, inducing changes in gene expression that leads to cell differentiation, decreased cell proliferation, and inhibition of tumor formation.[21] In addition, pre-treatment of human skin with tretinoin blocks dermal matrix degradation followed by sun exposure, inhibiting the induction of the activated protein-1 (AP-1) transcription factor and AP-1-regulated matrix-degrading metalloproteinases.[21]

Conclusion

Tretinoin lotion 0.05% appeared to be effective and well-tolerated in the treatment of comedonal acne in this postmenopausal patient. None of the commonly perceived barriers to the use of retinoids such as skin irritation, dryness, peeling, and sensitivity were observed in this patient. Conversely, the patient appears to have derived additional benefits from the use of tretinoin lotion, specifically improved skin tone, reduced photodamage, and improvement of her AK. The results observed in this single-patient case report should be confirmed in a larger patient population and controlled clinical setting.

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Declaration of conflicting interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: The author is a paid consultant for Ortho Dermatologics. Ortho Dermatologics is a division of Bausch Health US, LLC.

Ethical approval

Our institution does not require ethical approval for reporting individual cases or case series.

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Informed consent

Written informed consent was obtained from the patient(s) for their anonymized information to be published in this article.

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