Focus On Year-Round Acne Management with a Hydrating Clindamycin 1%/Benzoyl Peroxide 5% Topical Gel

Patients and physicians harbor misconceptions about the hydration levels of “oily skin” that may negatively influence therapeutic efficacy and prompt unnecessary regimen changes.

By Joseph Bikowski, MD

Duac® Topical Gel is one of two prescription clindamycin 1% /benzoyl peroxide (BPO) 5% fixed-combination products available for the treatment of acne. These agents have identical active ingredients, but only one is a premixed, once-daily product formulated with dimethicone and glycerin. Some clinicians alternate prescriptions of these agents seasonally based on the rationale that patients benefit from additional hydration in the winter months but need to “dry out” during the summer, a regimen that is not supported by skin biomechanics. This article describes the biology of skin hydration and sebum production of the stratum corneum in relation to the acne patient and reviews two case reports of patients treated at various times of the year with the hydrating gel formulation of clindamycin 1%/BPO 5%.

Background
Patients with acne are plagued by fluctuations, perceived or real, in the moisture content and/or oil (sebum) levels of their skin. As a result, patients and clinicians may make treatment decisions based on misconceptions about the biology of the stratum corneum and how seasonal changes and acne medications actually impact transepidermal water loss (TEWL) and sebum levels of the skin. I believe that sharing some of my private practice photographic and patient assessments with you will clarify the reality that the moisture content of the skin does not dictate sebum production or vice versa; hydration of the skin, whether oily or dry, is good for maintaining a healthy stratum corneum and may improve treatment outcomes.
What We Know About the Biology of Dry and Oily Skin

Dry skin (xerosis) and oily skin arise from different mechanisms in the skin. Xerosis results from functional changes in interdependent skin components, including lack of water in corneocytes, epidermal hyperproliferation, alteration of lipid synthesis and the deterioration of skin barrier function. Oily skin results from the overactivity of sebaceous glands and the overflow of excess sebum onto the skin. Although many patients classify themselves as either dry or oily skinned, the two conditions are not mutually exclusive, and most people have a combination of both skin types.

Acne pathogenesis depends on sebum, which is a nutrient source for Propionibacterium acnes. Sebum is produced at a fairly constant rate, but rates vary by individual and tend to peak during the teenage years. Although sebum accumulates throughout the day, production does not change in response to the time of day or even the season of the year. Furthermore, the rate of sebum production does not correlate with the level of hydration of the stratum corneum. Acne patients with “oily” skin still experience xerosis. Therefore, the use of non-comedogenic moisturizing agents can benefit a wide range of acne patients including those with oily skin. In addition, increased skin hydration serves to normalize the stratum corneum, which may enhance the penetration of topical therapies, regardless of sebum levels in the skin.

Moisturizing the Skin

The primary function of a moisturizer is to act as an artificial barrier to evaporation—i.e., T E W L—and the appropriate use of moisturizers and hydrating facial products is an integral part of a skin-care regimen for acne patients. Humectants and emollients/occlusives are classes of ingredients used in moisturizers and other topical products that have a direct effect on skin biomechanics. Humectants, such as glycerin and propylene glycol, are hydroscopic, which means they increase hydration by attracting moisture up through the stratum corneum. Emollients/occlusives are lipid-based substances that increase hydration and make the skin softer and more pliable.
agents function by forming a lipid barrier on the skin that allows humectants to absorb water from the deeper epidermis while at the same time preventing the evaporation of water from the stratum corneum.

**Clindamycin 1%/BPO 5% Topical Gel**
The hydrating formulation of clindamycin 1%/BPO 5% contains 1% dimethicone and 4% glycerin in an aqueous gel that moisturizes and softens the skin. Dimethicone is an occlusive moisturizer, which conditions the skin by impairing evaporation of water into the atmosphere. Glycerin is a humectant moisturizer, which means it attracts water from the viable skin layers to the stratum corneum. An ideal formulation combines occlusive and humectant ingredients to provide optimal rehydration and healing of the stratum corneum, because products that contain only humectants actually increase TEWL when applied to skin with a defective skin barrier.

The following are summaries of patient case reports treated with this clindamycin 1%/BPO 5% hydrating gel throughout the various seasons of the year.

**Case Reports**
Patient 1 was 15 years old at her initial visit and presented with dry skin and a three-month history of acne vulgaris. She was using her brother’s prescription for adapalene gel, but she had never been seen by a dermatologist or other physician for acne. An examination revealed that the patient had multiple open and closed comedones and inflammatory papules located primarily on the forehead (Fig. 1A) and scattered lesions on the cheeks bilaterally, with more on the right than the left. The patient was prescribed clindamycin 1%/BPO 5% hydrating gel to be applied in the morning to the entire face and to cleanse with a non-irritating, non-comedogenic cleanser twice daily. She was instructed to use a non-comedogenic moisturizer as needed.

The forehead of Patient 1 was entirely clear at one-month follow up after using clindamycin 1%/BPO 5% hydrating gel once daily, with only one or two comedones and slight post-inflammatory erythema remaining (Fig. 1B). The patient was instructed to continue to use clindamycin 1%/BPO 5% hydrating gel and to maintain the same cleansing and moisturizing regimen.

At 16-month follow up, the patient remained clear on her nose, cheeks, chin and forehead (Fig. 1C) using clindamycin 1%/BPO 5% hydrating gel once daily in the evening, and she was instructed to continue using the same regimen. One year later, the patient remained entirely clear using clindamycin 1%/BPO 5% hydrating gel once daily (Fig. 1D). The patient was instructed to continue using the hydrating gel once daily in the evening to maintain clearance.

Patient 2 was a 14-year-old female presenting with acne flare since a visit 14 months earlier (Fig. 2A). The patient was...
using once-daily tazarotene 0.1% gel in the evening and reported that she followed this regimen faithfully. Upon examination, the patient had oily skin and persistent, multiple inflammatory lesions on the forehead, nose, cheeks, and chin, as well as pustules and minute nodular-like papules. She also had open and closed comedones on the forehead, cheeks, and chin as well as obvious pityrosporum folliculitis and seborrheic dermatitis on the forehead, cheeks, and chin. The patient was instructed to stop tazarotene and to apply clindamycin 1%/BPO 5% hydrating gel in the evening to her entire face. She also was told to continue using the ciclopirox 1% shampoo (prescribed previously) on her face and scalp daily, allowing it to stay on the skin for three minutes. In addition, she was instructed to cleanse with a non-irritating, non-comedogenic cleanser and a non-comedogenic moisturizer twice daily.

At one-month follow up, the patient experienced dramatic improvement and was nearly 100 percent clear with only minor post-inflammatory erythema on the forehead and bitemporal areas (Fig. 2B). She complained of itching, which she rated as 5 on a scale of 1 to 10, but no eruption was evident. The patient was instructed to continue treatment with clindamycin 1%/BPO 5% hydrating gel, to stop using the moisturizer and ciclopirox 1% shampoo, and to add a gentle, moisturizing cleanser to her regimen.

Discussion

Dryness and/or oiliness of the skin are additional burdens to the patient with acne, but skin biology necessitates the use of products and medications that hydrate the stratum corneum and maintain a healthy skin barrier. In a study comparing the moisturizing potential of two acne gels containing clindamycin 1%/BPO 5%, the gel containing glycerin and dimethicone was significantly more hydrating four hours post-treatment, with a significant decrease in skin surface hydration observed after eight days of treatment in skin treated with the non-hydrating formulation. In the current cases, the hydrating gel not only worked quickly and effectively, but did so at all times of the year without any negative impact on skin hydration or sebum production. In fact, Patient 1 had consistently excellent results using the hydrating gel over 30 months with no seasonal differences in response or tolerability. The synergistic moisturizing properties of dimethicone and glycerin maximized the therapeutic benefits of the hydrating gel for both patients. Furthermore, Patient 2 did not need additional moisturizing after one month of treatment, which suggests that use of the hydrating gel may preclude the need for supplemental moisturizing, a benefit that could simplify treatment and enhance patient adherence to therapy.

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