

# Treatment of acne vulgaris african american skin

## Treatment of acne vulgaris using blue light photodynamic therapy in an African-American patient.(Case study)

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### ABSTRACT

*Background: Studies indicate photodynamic therapy is an effective treatment of inflammatory acne lesions on patients with Fitzpatrick skin types 1-3. There is a lack of evidence in the literature regarding the use of photodynamic therapy to treat acne vulgaris in African American patients. This article reports the first case of blue light photodynamic therapy to treat moderate inflammatory facial acne on an African American patient with type 5 skin.*

*Observations: This article describes a 26-year-old African American woman with moderate inflammatory facial acne vulgaris. On examination, she had over 15 inflammatory papules on her face and post-inflammatory hyperpigmentation. The patient had a history of treatment failure with the following therapies: topical benzoyl peroxide, topical antibiotics, topical retinoids and oral antibiotics. At presentation, the patient was using a combination topical benzoyl peroxide/clindamycin product in the morning and tazoratene gel in the evening without success. The patient was treated with 20% aminolevulinic acid/blue-light photodynamic therapy spaced monthly for a total of four treatments, a once-daily application of hydroquinone 4% cream and her existing topical regimen. The patient reported significant improvement of inflammatory acne lesions and post-inflammatory hyperpigmentation following two treatments with photodynamic therapy and was virtually clear of all acne lesions after the third treatment.*

*Conclusion: Photodynamic therapy is an emerging remedy for patients with acne vulgaris resistant to standard treatment, particularly in patients with skin of color who are more sensitive to post-inflammatory hyperpigmentation. In this African-American patient, 20% aminolevulinic acid/blue-light photodynamic therapy was effective in treating facial acne vulgaris.*

### INTRODUCTION

Acne vulgaris is a prevalent skin disease that affects the majority of teenagers and many adults. (1) Often an inflammatory condition, acne is characterized by impaction of the pilosebaceous unit, keratinocyte hyperproliferation and Propionibacterium acnes (P. acnes) colonization. Acne frequently leads to social, psychological and emotional distress, particularly for patients who continue to suffer from the condition throughout adulthood.

Standard treatments for acne vulgaris include topical antimicrobials, topical retinoids, oral antibiotics and hormonal therapy. Oral isotretinoin therapy is commonly used for severe cases of acne. Emerging problems with conventional acne treatments include development of antibiotic resistant strains of P. acnes and difficulty in treating moderate-to-severe cases. Furthermore,

adverse and teratogenic effects of isotretinoin have led to the investigation of novel acne treatment modalities, including photodynamic therapy (PDT). (2), (3) The treatment of acne with PDT involves the use of a photosensitizer and a light source to induce increased porphyrin synthesis, in turn producing reactive oxygen species that eradicate *P. acnes* and sebaceous glands. (4), (5) Presently, 20% 5-aminolevulinic acid is the only dermatologic photosensitizer that is concurrently available in the United States (U.S.) and approved by the U.S. Food and Drug Administration (FDA) for treatment of actinic keratoses. (4) Recent evidence indicates that 5-aminolevulinic acid-photodynamic therapy is an effective therapeutic option, significantly improving acne and reducing inflammatory lesions in patients of Asian descent. (8), (11) To the authors' knowledge, there are no documented case reports or studies involving photodynamic therapy in African-American patients. This article describes the first case report of blue light photodynamic therapy to treat acne vulgaris in an African-American patient with type 5 skin.

## **CASE REPORT**

A 26-year-old African American woman with Fitzpatrick skin type 5 skin presented with acne vulgaris. The patient reported a history of facial acne for the past several years that was ineffectively managed with topical benzoyl peroxide, topical antibiotics, topical retinoids and oral antibiotics. She expressed frustration with the failure of previous therapies and was concerned with the residual dark spots that remained for months following acne lesion resolution.

At presentation, the patient was being treated with a combination topical benzoyl peroxide/clindamycin product in the morning and tazarotene gel in the evening. The regimen had been utilized for several months without relief.

On physical examination, the patient had over 15 inflammatory papules on her face, as well as many areas of post-inflammatory hyperpigmentation. Photodynamic therapy was initiated. The patient's existing topical regimen was continued throughout photodynamic therapy. Additionally, a once-daily application of hydroquinone 4% cream was started two weeks prior to the first photodynamic therapy and continued throughout the entire course of treatment.

The patient received a total of four photodynamic therapy treatments, each spaced monthly. An acetone scrub preceded application of 20% aminolevulinic acid (Kerastie[R], DUSA) which was incubated for 60 minutes. Subsequently, the patient's face was irradiated with blue light (BLU-U[R], DUSA). She received 6 minutes of irradiation during the initial treatment and 9 minutes of irradiation during the three succeeding visits. The patient tolerated the therapy well, although she reported moderate warmth during the procedure. Following therapy, the patient applied sunscreen (SPF 30) on her face and was advised to avoid the sun for 48 hours.

The patient reported peeling 5-7 days after treatment and darkening of the skin up to two weeks following each treatment. Subsequent to the second treatment, the patient reported significant improvement of inflammatory acne lesions and postinflammatory hyperpigmentation.

Following three treatments, the patient was almost completely clear of all acne lesions. She remained virtually free of acne up to the final follow-up visit, which was one month after the fourth photodynamic treatment.

## **DISCUSSION**

Acne vulgaris is a common skin condition that affects people of all ages and skin colors. Inflammation is often a component of acne. indeed, inflammatory papules in patients with darker skin tones can lead to such sequelae as hyperpigmentation and scarring. (6) Many African-American patients, including this patient, present with concomitant acne vulgaris and acne-induced post-inflammatory hyperpigmentation. In fact, hyperpigmentation and scarring associated with acne vulgaris is more prevalent in dark-complected skin than light-complected skin. Hyper-pigmented macules are often more distressing to the patient than the acne itself. Therefore, early and effective treatment of acne in patients with dark-complected skin is important in preventing hyperpigmentation and scarring. (7)

Recently, photodynamic therapy has emerged as an effective treatment option for patients with acne refractory to conventional therapies and those who are poor candidates for oral retinoids. To the authors' knowledge, there have been no reported cases of photodynamic therapy utilized in African-American patients, although there are four reported studies of photodynamic therapy used to treat acne vulgaris in patients of Asian descent.

Photodynamic therapy with 20% aminolevulinic acid and intense pulsed light (IPL) produced an 87.7% reduction (p

This article reports the first case of successful blue-light photo-dynamic therapy in the treatment of moderate acne in an African-American woman with type 5 skin. This patient presented with inflammatory acne and significant post-inflammatory hyperpigmentation recalcitrant to topical antimicrobials, topical and oral antibiotics, and topical retinoids. Following three treatments with aminolevulinic acid phototherapy, the patient was almost completely clear of all acne lesions. While this patient experienced peeling 5-7 days after treatment and skin darkening up to 2 weeks following therapy, neither pustular eruptions nor other adverse effects reported in previous photodynamic therapy studies (12) occurred. Indeed, this patient tolerated the treatments well and was extremely satisfied with the results.

## **CONCLUSION**

In summary, the positive therapeutic outcome in our patient suggests that blue light photodynamic therapy may be a safe and effective treatment option for acne vulgaris in African-American patients. Further investigation is warranted to confirm these results. Moreover, additional study is needed to determine optimal photosensitizer incubator times, light sources and treatment frequency in all patient populations.

## **DISCLOSURE**

Shaundre Terrell has no financial interests to report.

Dr. Aires has received honoraria from Galderma, Novartis, Connetics, Steifel and Warner-Chilcott.

Dr. Schweiger serves as a consultant to Cutera, Inc. and has been a clinical investigator for DUSA pharmaceuticals.

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