

Photodynamic therapy for actinic keratosis: A non-invasive solution.

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Introduction

Actinic keratosis (AK), a common precancerous skin condition caused by prolonged sun exposure, poses a risk of progression to squamous cell carcinoma (SCC). Traditional treatments include cryotherapy, surgical excision, and topical medications. However, Photodynamic Therapy (PDT) has emerged as a highly effective, non-invasive alternative with favorable cosmetic outcomes and patient satisfaction. This article explores the mechanism, efficacy, advantages, and patient experience of PDT in the management of actinic keratosis. [1].

Actinic keratosis (AK), also known as solar keratosis, is a rough, scaly patch on sun-damaged skin and is most commonly found on the face, scalp, ears, neck, forearms, and backs of hands. It predominantly affects fair-skinned individuals over 40 years of age who have had significant sun exposure. While not all AKs progress to squamous cell carcinoma, the potential for malignant transformation necessitates timely and effective treatment. Additionally, some patients may experience significant pain during treatment with cPDT. Pre-treatment analgesics or cold air devices may improve tolerability. [2].

Photodynamic Therapy (PDT) has gained increasing attention as a field-directed, non-invasive, and cosmetically superior option for treating AK, especially in patients with multiple lesions. Typically, 5-aminolevulinic acid (ALA) or methyl aminolevulinate (MAL) is applied topically to the affected area. These agents are selectively absorbed by abnormal cells and converted intracellularly into protoporphyrin IX (PpIX), a photosensitizer [3].

After an incubation period (usually 1–3 hours), the area is exposed to a specific wavelength of visible light, typically red or blue. The light activates the photosensitizer, leading to the production of reactive oxygen species (ROS) that destroy the abnormal cells through oxidative damage. Numerous clinical trials have demonstrated the efficacy of PDT in AK treatment. A randomized trial comparing MAL-PDT to cryotherapy found that PDT had significantly higher lesion clearance rates and superior cosmetic outcomes. In another study, complete clearance rates of 70% to 90% were reported after one to two PDT sessions, particularly in mild-to-moderate AK cases. Moreover, PDT is particularly effective in treating large areas with multiple AKs, such as the scalp and face, where traditional treatments might cause unacceptable cosmetic damage [4].

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Conclusion

Photodynamic Therapy has revolutionized the management of actinic keratosis by offering a non-invasive, field-directed, and cosmetically favorable treatment option. Its ability to treat both visible and subclinical lesions across large areas makes it an ideal choice for patients with multiple AKs. With high clearance rates, minimal downtime, and

excellent cosmetic outcomes, PDT stands as a leading therapy for actinic keratosis in clinical dermatology.

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