Expert Consensus-Based Recommendations on the Use of Photodynamic Therapy in Actinic Keratosis Patients

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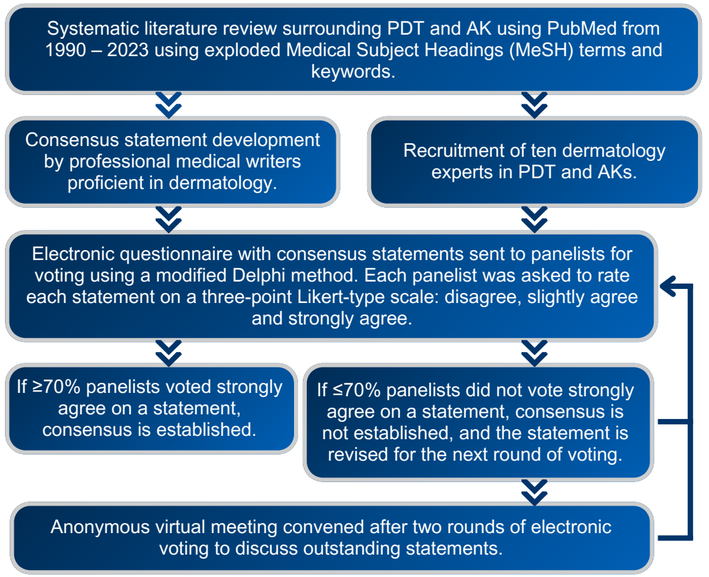
Introduction

Actinic keratoses (AKs) are common premalignant skin lesions that can progress to cutaneous squamous cell carcinomas, especially in individuals who have a history of prior AK diagnoses.[1–4] Photodynamic therapy (PDT) is an effective and safe treatment for AKs and can treat large areas of field cancerization.[5,6] While there are existing AAD guidelines published on the treatment of AKs, the authors wanted to further explore the treatment of AKs with PDT.

Objective

To create comprehensive, consensus-based recommendations for the use of PDT in AKs.

Methods



Results

- A total of 10 experts in dermatology were recruited and three modified Delphi rounds were completed, with one anonymous virtual meeting.
  - All 10 responded to all rounds but one panelist did not participate in a few statements in the second and third rounds of voting.
- A total of 55 statements reached consensus.
- A select number of consensus statements are presented.

Table 1. Select consensus statements on general aspects of PDT in AKs.

General PDT	Consensus n (%)
PDT should be considered a safe, efficacious, treatment modality for photodamaged fields and multiple AKs.[7-9]	10/10 (100%)
Cyclic PDT performed every 2 months may be considered to suppress the development of new cSCCs in solid state organ transplant recipients (sOTRs).[10]	10/10 (100%)
Lesion vs. Field-Directed Therapy	
Because we are uncertain which AK lesions will likely progress to cSCC, all lesions both clinical and subclinical need to be treated.[11,12]*	10/10 (100%)
Field directed PDT yields favorable outcomes (cancer prophylaxis and cosmetic) in patients with high levels as well as low levels of actinic damage.*	8/10 (80%)
Cosmetic Outcomes	
Field-directed PDT is associated with improvements in roughness, dryness and scaling and decreases in hypo- and hyperpigmentation of the treatment area with a lower potential of scarring.[5,13,14]	9/10 (90%)
Outside of contraindications, PDT should be part of a standard regimen to reduce skin cancer risks, especially where minimal downtime, aesthetic impact and economic impact are considerations.*	8/10 (80%)

Table 2. Select consensus statements on patient selection and preference for PDT in AKs.

Patient Selection	Consensus n (%)
Patients who may benefit the most from field therapy versus spot therapy are or have: - Multiple actinic keratoses (AKs), either on the face/scalp or extremities - Large areas of photodamage, either on the face/scalp or extremities - Patients who are on the spectrum of relative immunosuppression, including organ transplant recipients and those with diabetes, chronic lymphocytic leukemia and other iatrogenic sources. - A previous history of skin cancer - Refractory or non-compliant with other treatment options	10/10 (100%)
Patient Preference	
Because we are uncertain which AK lesions will likely progress to cSCC, all lesions both clinical and subclinical need to be treated.[11,12]*	10/10 (100%)
Field directed PDT yields favorable outcomes (cancer prophylaxis and cosmetic) in patients with high levels as well as low levels of actinic damage.*	8/10 (80%)
Cosmetic Outcomes	
Patients prefer treatments that do not cause scarring.[15]	10/10 (100%)
PDT has a high adherence rate amongst patients, possibly because it is administered in an office setting.[14,16,17]	9/10 (90%)

Table 3. Select consensus statements on other treatment options and sequential treatment for PDT in AKs.

Treatment Options	Consensus n (%)
Sequential treatment and/or pre-treatment options (5-FU, imiquimod, ablative lasers (ABL), microneedling) may yield better results than PDT alone.[18-21]	10/10 (100%)
At-home topical AK treatments may have poor persistence and adherence when long treatment times and cosmetic downtime is involved.[22]	8/10 (80%)
Warming the skin with a heating pad, alpha hydroxy acid or occlusion may improve AK reduction, but more clearly defined parameters should be outlined.[6,23]	8/10 (80%)

Table 4. Select consensus statements on PDT protocols for AKs.

Photosensitizer	Consensus n (%)
The ALA nanoemulsion formulation can enhance the penetration of ALA through the skin as well as epidermal PpIX formation.[24,25]	9/10 (90%)
Pain during ALA-PDT is not related to Fitzpatrick skin type but may be related to AK clinical grade, treatment location and incubation time if not using painless protocols.*	8/10 (80%)
Incubation Time	
Optimal incubation time is dependent on patient tolerance for pain and time commitment, ability for curettage on all hyperkeratotic AKs, and number, severity and location of evident lesions.*	8/10 (80%)
Outcomes may be enhanced when using shorter incubation times through the use of occlusion, higher temperatures in the room (e.g., blankets or space heaters), curettage and extra treatment sessions.[6,23]*	7/10 (70%)
Light Source	
Experts generally agree that red light penetrates deeper and may be better for chemoprevention but both red and blue light are effective for PDT treatment.[26]*	7/10 (70%)
Daylight PDT has been reported to be effective in some geographic locations and some providers have had success using it.[27,28]*	8/10 (80%)
Painless PDT Protocol	
Patients with low pain tolerance or time commitment can be treated effectively with PDT with the modified painless PDT protocol, but at least 2 treatment sessions are recommended.*	9/10 (90%)
Results from the painless PDT protocol consisting of 0 to 30-minute incubation times can be enhanced with at least two treatment sessions and the addition of vitamin D3 twice a week.[29,30]*	8/10 (80%)

Table 5. Select consensus statements on PDT in AKs for special populations.

Organ Transplant Recipients	Consensus n (%)
Two sessions of PDT are more effective than one for AK clearance in organ transplant recipients.[7]	10/10 (100%)
Pretreatment of AKs with curettage, keratolytics, lasers, microdermal abrasion, topical therapy or cryotherapy can improve photosensitization for PDT in organ transplant recipients.[31]	9/10 (90%)
Elderly	
PDT should be considered for older patients due to the low incidence of ulceration and infection.[32]	8/10 (80%)
PDT may be preferable in older patients due to difficulty in managing topical applications, side effects, wound and infection risk and dosing confusion. Furthermore, Medicare coverage may be better.[33-37]*	7/10 (70%)

**The consensus statement was based on the collective experience of the panelists.*

Conclusion

These recommendations aim to bridge gaps in current guidelines and offer additional guidance to clinicians when treating AKs with PDT.

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This study was funded by an unrestricted grant from Biofrontera, Inc.