Cyclic Photodynamic Therapy: Promising Findings for SCC in Organ Transplant Recipients

Repeated PDT treatments may reduce the incidence of SCCs in this high-risk population.

By Jonathan Wolfe, MD

Photodynamic therapy with 5-aminolevulinic acid (ALA, Levulan, DUSA Pharmaceuticals) has become established as a safe and effective option for the management of AKs (see the January edition, available at PracticalDermatology.com). The drug is indicated, along with blue light application, for the treatment of minimally to moderately thick actinic keratoses of the face or scalp. However, there has been increasing interest in the role of PDT to manage other types of skin cancers. A recent study shows that the procedure may be effective for reducing the incidence of squamous cell carcinoma (SCC) in solid organ transplant recipients (SOTR).

Skin Cancer and SOTRs

Compared to the general population, solid organ transplant recipients are at higher risk of skin cancer, with up to a 100-fold estimated increase in the relative risk of squamous cell carcinoma (SCC) compared to the non-transplanted population. The risk for basal cell carcinoma is increased about 10- to 16-fold in SOTRs.1 A recent retrospective cohort study of 1,476 renal transplant and 458 heart transplant recipients found that 200 patients developed a first non-melanoma skin cancer (MNSC) after a median follow-up of 6.8 years after transplantation (three-year risk of primary NMSC was 2.1 percent). Of the patients with a primary NMSC, 91 (45.5 percent) had a second NMSC after a median follow-up of 1.4 years. The three-year risk of a second NMSC was 32.2 percent—49 times higher than for patients with no previous NMSC.2

In light of this known increased risk for NMSC, SOTRs typically undergo chemoprophylaxis with systemic retinoids, although there have been few randomized controlled trials to quantify their benefit. Acitretin is probably the most frequently used agent,3 but isotretinoin and etretinate are also used, and there is anecdotal evidence to support the use of bexarotene.4 Of note, rebound flares have been associated with discontinuation of retinoids, leading some to advocate chemoprevention as a lifelong therapy.3

An Emerging Option

Given the concerns about high rates of NMSCs in transplant recipients, there is interest in identifying optimal treatment and prevention strategies. While retinoid chemoprophylaxis is an important and effective option, additional interventions are welcome. Recent findings suggest a role for cyclic 5-ALA PDT therapy.5 Twelve high-risk SOTRs received cyclic PDT treatments at four- to eight-week intervals for two years. New SCCs were counted during the year before initiation of therapy and again at 12 and 24 months following the first PDT treatment. Researchers calculated median reductions in SCCs of 79 percent and 95 percent, respectively, from the pre-treatment counts. PDT treatments were well tolerated. The authors of the current study urge larger studies of PDT for prevention of SCCs in SOTRs.

An earlier study had shown promise for ALA PDT for the treatment of AKs and Bowen’s disease in transplant recipients.6 That study compared the response to either one or two courses of ALA PDT in 20 transplant recipients and 20 controls. Cure rates in both groups...
Table 1. SOTR Risk Factors for Developing Primary NMSC

- Older age at the time of transplantation
- Male sex
- Longer post-transplant time
- Tacrolimus treatment

*Occurrence of the subsequent NMSC was not related to any risk factor considered*

were comparable at week four, but they were significantly lower for transplant recipients at weeks 12 and 48. Cyclic delivery of treatment, as was used in the most recent study, may overcome this apparent decline in response in the earlier study.

**Worth Investigating**

According to reports, a total of 153,245 patients in the US are living with a solid organ transplant, and five-year survival rates after transplantation are high. With changes in healthcare legislation, some analysts believe these numbers will continue to rise (though access to donor organs remains a potentially limiting factor). Given these realities, dermatologists may increasingly find themselves faced with the challenge of managing a SOTR. While systemic retinoid therapy is the current standard of care, cyclic ALA-PDT may represent a worthwhile adjunctive or alternative therapy in this population. Further study of early initial findings seems to be warranted.

**Dr. Wolfe has no relevant disclosures.**