

Daylight Photodynamic Therapy in Private Practice in Switzerland: Gain Without Pain

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Accepted May 2, 2012.

Photodynamic therapy (PDT) is a well-documented therapy for non-melanoma skin cancer, which has excellent therapeutic effect and cosmetic outcome combined with minimal invasiveness (1). PDT is easy to use in treatment of large areas, and thus is particularly suitable for use in areas of field cancerization with several to many actinic keratoses (AK) (1). However, a major disadvantage of PDT is the occurrence of severe pain in some patients, which necessitates effective pain management, sometimes by injection to effect nerve-block. A further disadvantage of PDT is the complexity and length of the procedure, which involves lesion preparation and initial application of drug under occlusion, followed by a 3-h wait prior to illumination with a lamp. In Europe high-intensity red light is usually used.

With the introduction of daylight-PDT (D-PDT) these disadvantages are reduced (2–4).

The aim of this study was to review the feasibility, patient compliance, and satisfaction with D-PDT in a private dermatology practice.

MATERIALS AND METHODS

A retrospective study was performed, using data obtained from D-PDT and subsequent follow-up consultations in a private dermatology practice in the Canton of Bern, Switzerland, for the period from the end of April to the end of September 2011.

The 18 patients included (6 women and 12 men, age range 60–85, mean age 72 years) were all treated with D-PDT for AK in one private general dermatology practice, in the Canton of Bern, Switzerland in the period from end of April till end of September 2011. They were all of Caucasian origin. Subjects had 1–10 AK each; clinical grade I (thin lesions, slightly palpable) and/or II (intermediate lesions, moderately thick, easily felt). Most lesions were in areas of field cancerization, especially in those patients with several/many lesions. The lesions were distributed on the bald scalp and face, except for one patient who also had an AK on the ear, another one who had AK on the dorsum of the hand, and a third patient who also had 1 AK on the upper chest.

Patients were informed about the treatment procedure and effects. The study is not a formal prospective trial, but a compilation of data from the routine medical records in the practice, put together retrospectively a long time after the treatment. A trial registration or ethical committee was therefore not necessary. Treatments, one for each lesion, were performed in the Canton of Bern in Switzerland, as follows.

The AK lesions to be treated were recorded before scales were scraped off with a curette. Thereafter, sunscreen (Louis Widmer F15 Gel[®], SPF 15; Louis Widmer, Zürich, Switzerland)¹ was

applied to all sun-exposed areas, including the lesions, and 5–15 min later 16% methylester of 5-aminolevulinic acid (MAL) in a cream base (Metvix[®], Galderma, Paris France) was applied in a layer approximately 0.5–1 mm thick over the lesion area without occlusion.

The patients were instructed to remain indoors for 30 min before going outdoors to expose their lesions and the adjacent area to daylight continuously for at least 90 min (if it was a sunny day) or 120 min (if it was an overcast or partially sunny day). But the whole exposed area was protected with sun-screen against UV irradiation. On treatment days the patients exposed themselves to daylight between 11.00 h and 16.00 h in locations approximately 500–1250 m above sea level during the period between the end of April and the end of September 2011. Treatment was not performed on rainy days. The temperature was never below 12°C.

The majority of the patients were seen after 4–6 weeks (range 3 weeks to 4 months) after the treatment. The therapeutic response was recorded as the presence or absence of complete clinical response (CCR) for each lesion. Furthermore, the patients were asked to describe the local skin reaction, its severity and duration, and the pain intensity on a scale from 0 to 10; where 0 is no pain and 10 is the worst imaginable pain. The final cosmetic outcome was recorded by asking the patients and by clinical evaluation.

RESULTS

The mean overall lesional CCR rate for the AK in the 18 patients was 77%, range 0–100%. One patient with a single AK on the forehead demonstrated a considerable reduction in size of the lesion, but not CCR, and this was therefore recorded as 0% CCR. Another patient with 3 AD lesions showed CCR of one lesion, i.e. 33% CCR. The mean overall lesional CCR of the AKs in the other patients ranged from 60% to 100%.

The patients described their local skin reactions as erythema with light-to-moderate swelling decreasing over time and, in some cases, development of crusts. No pustular reactions occurred. The local skin reaction in general subsided within approximately 10 days. Apart from mild erythema in some patients there were no other sequelae of the treatment at the time of the follow-up visits. The cosmetic outcome was good-to-excellent; in particular, no scars occurred in any of the patients.

Most patients reported no pain. They described the local sensation in the skin during daylight exposure as tickling or light pruritus. Even patients with many AK in field cancerization areas on the forehead and bald scalp reported no pain. Only one patient reported pain; with a severity of 5 on a 0–10 scale during daylight exposure. This patient later admitted that he had not adhered to instructions, but gone out in sunny weather 2.5 h after drug application instead of after only 30 min.

¹Contains the ultraviolet B (UVB) filters Parsol 340 (octocrylene), phenylbenzimidazole derivate (phenylbenzimidazole sulphonic acid) and Parsol SLX (polysilicone-15) and the ultraviolet A (UVA) filter dibenzoylmethane derivate (butylmethoxydibenzoylmethane), but does not contain any reflective agents such as zinc oxide or titanium dioxide.

Seven patients had previously had conventional PDT therapy with a lamp and had experienced various degrees of pain during illumination. They were very satisfied with the lack of pain and expressed a preference for D-PDT compared with conventional PDT.

All patients, except the one mentioned above, demonstrated good treatment compliance, and all were satisfied with the treatment.

DISCUSSION

The CCR of AK lesions treated with D-PDT in the present study is similar to that obtained in controlled studies with conventional PDT (1) and to the previously published results of controlled studies of D-PDT (2–4).

The recommended treatment procedure for conventional PDT is time-consuming and requires good organizational management. However, an advantage of this procedure is that it is physician controlled, which ensures good compliance.

Pain is a significant problem in conventional PDT; in some cases illumination has to be stopped due to unbearable pain. A great deal of effort has therefore been put into treating and controlling pain, including the use of nerve blocks (5, 6). For many clinicians pain is the major reason for their reluctance to use PDT.

D-PDT, in contrast, does not cause pain in most cases; thus there is no need for local anaesthetic procedures, such as cold water spray or cold air analgesia, nerve blocks or systemic pain-killers (2). This is probably the most important advantage of D-PDT over conventional PDT.

One of the patients in the present study reported a pain score of 5 on a 0–10 scale during daylight exposure. However, he had exposed himself to sunshine 2.5 h after application of MAL, instead of after only 30 min. It is likely that he accumulated a substantial amount of protoporphyrin IX, which was then photobleached in a burst, in a similar way to conventional PDT using a lamp, resulting in pain.

In the present study the D-PDT was carried out in Switzerland in the period from late April to late September 2011. The first published studies on D-PDT were performed in Scandinavia (2, 3) during the summer months. D-PDT cannot be performed in northern or southern latitudes

during winter due to lack of sufficient daylight intensity and low outside temperatures, as is the case in Switzerland from late October to early March. Closer to the equator it may be possible to perform D-PDT throughout the year. Extensive measurements of daylight intensity at different latitudes have been made by Wiegell et al. (4), in order to determine the dose and exposure time.

Our experience with D-PDT is excellent. Patient compliance and satisfaction is high and the procedure is easy to carry out.

ACKNOWLEDGEMENTS

Conflicts of interest: The author has received speaker and consultant honoraria and travel support from Photocure and Galderma. The department he led received financial support from Photocure for performing clinical trials.

Funding: This article was supported by an educational grant from Galderma.

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