Photodynamic Therapy (PDT)

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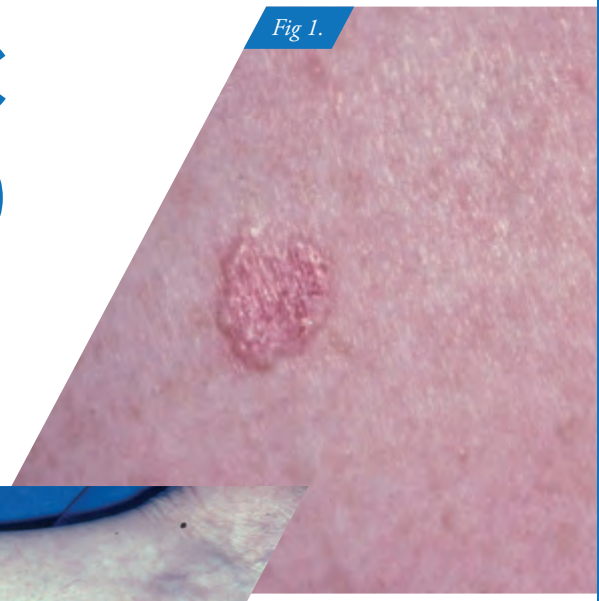
Photodynamic therapy is a non-invasive treatment for non-pigmented superficial basal cell carcinomas (BCCs) *(Fig 1)*, Bowen's disease (squamous cell carcinoma in situ) *(Fig 2)* and actinic keratoses *(Fig 3)*.

A photosensitiser (Methyl aminolevulinate) is applied to the lesion where it is selectively localised in the rapidly proliferating tumour cells. The lesion is then illuminated with visible light, resulting in photodamage and subsequent cell death. There is minimal damage to surrounding normal tissue and the cosmetic results are usually excellent.

I helped to set up the PDT service at the Cancer Centre London (CCL) in 2006 and over 170 patients have been treated so far. Patients are referred directly into the service mainly by Dermatologists but also some Plastic Surgeons. Treatment is delivered by trained therapy radiographers in the Cancer Centre London. We have recently acquired an Aktilite lamp which provides an improved treatment area of 16x6cm.



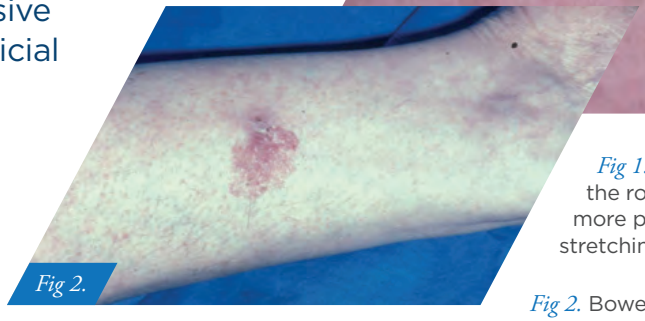
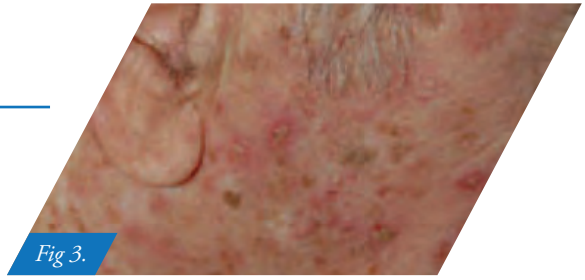


Fig 1. Superficial BCC, the rolled edge is made more prominent by stretching the skin.

Fig 2. Bowen's disease, a red scaly lesion on the lower leg, most common in elderly women.

Fig 3. Actinic keratoses.

There is minimal damage to surrounding normal tissue.



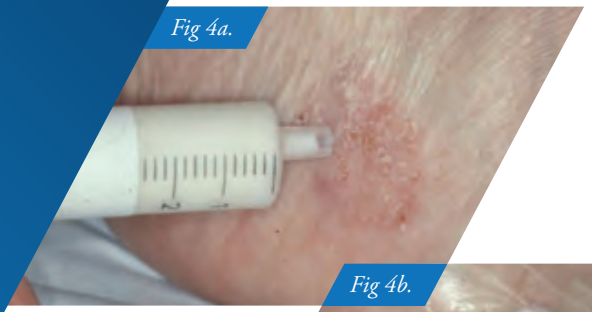
TREATMENT DETAILS

The area to be treated is prepared by gently removing any adherent scale or crust. Methyl aminolevulinate is applied and a dressing is used to cover the area *(Fig 4a and b)* and the patient is asked to return in 3 hours.

The light is then shone on the treatment area for around 8 minutes. This may result in a burning sensation in some patients. Occasionally the treatment has to be paused and the radiographer may spray cool water on the area or use a fan. Following the treatment a dressing is applied and left for 2 days to prevent further light exposure. Patients may experience some inflammation of the area following the treatment but usually this is not too severe. Superficial BCCs need 2 treatments one week apart, whilst Bowen's disease and actinic keratoses only require one treatment.

The patient is then usually reviewed by the referring dermatologist or plastic surgeon around 3 to 4 months post treatment.

The cosmetic result is usually excellent. *Fig 5a and b* show a Bowenoid keratosis pre and post PDT treatment.



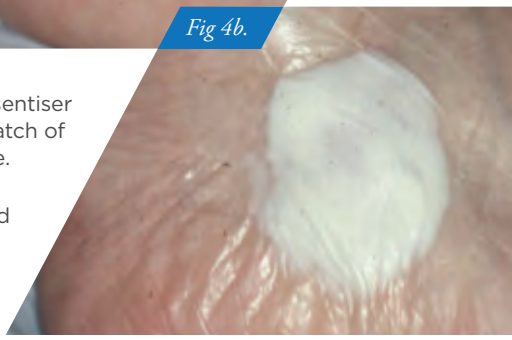


Fig 4a. Photosentiser applied to a patch of Bowen's disease.

Fig 4b. Covered and dressing applied.

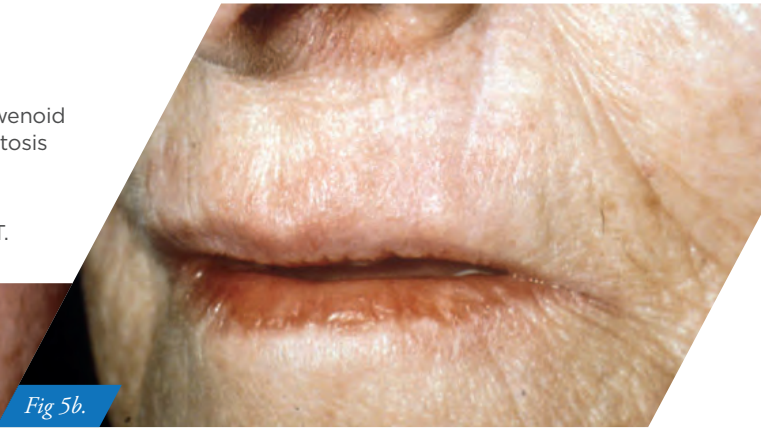


Fig 5a. Bowenoid actinic keratosis pre PDT.

Fig 5b. Post PDT.

Bowen's disease and actinic keratoses only require one treatment.

OTHER NON-SURGICAL TREATMENTS FOR SUPERFICIAL BCC'S, BOWEN'S DISEASE AND ACTINIC KERATOSES

SUPERFICIAL BCCS

Other non-surgical treatment options for superficial BCCs include cryotherapy and 5% imiquimod cream. Cryotherapy (30 seconds x2) is not suitable for BCCs on the face or lower leg. It is a useful treatment for small lesions but will usually leave a permanent white mark at the treatment site.

Imiquimod is applied by the patient from Monday to Friday for 6 weeks. It often produces significant inflammation and may leave residual erythema. With PDT there is usually only minimal inflammation and the cosmetic result is generally excellent.

The cure rate of superficial BCCs treated with PDT in the literature varies depending on the photosensitiser used and length of follow up – studies range from rates of 70 to 95%. A recent study showed that imiquimod was slightly superior to PDT with respect to cure rates but the cosmetic result is generally better with PDT.

PDT is particularly useful for facial lesions (where patients do not want to have the inflammation that is often caused by imiquimod), multiple lesions that can be treated at one sitting or BCCs on non-accessible sites such as the back, when there isn't someone who can help to apply the cream.

BOWEN'S DISEASE

Small areas of Bowen's disease can be treated by cryotherapy (around 15 seconds), although care needs to be taken on the lower leg where there is a risk of ulceration. 5-flurouricil and imiquimod may also be used.

ACTINIC KERATOSES

For individual actinic keratoses cryotherapy can be used and is usually very effective, but there is a risk of post treatment hypopigmentation. For larger areas 3% Diclofenac Gel, (Solaraze), Imiquimod (Aldara), 5-florouricil (Efudix) and Ingenol mebutate (Picato) are all potential treatments. Temporary inflammation is very common with all these topical treatments apart from Solaraze.

Patients with field change with numerous actinic keratoses as in the patient in *Fig 3* can be treated with PDT however, this can be painful. An alternative treatment called daylight PDT will be available at Cancer Centre London from spring 2017. With this treatment the photosensitiser is applied to affected areas and natural sunlight is used to activate the treatment.

COST OF TREATMENT

TREATMENT COST IS USUALLY COVERED BY INSURANCE, IN ADDITION SELF PAY PACKAGES ARE AVAILABLE AT THE CANCER CENTRE LONDON.

CALL **020 8247 3432** FOR FURTHER DETAILS.