

## Pre-treatment Assessment of Basal Cell Carcinoma for Topical Photodynamic Therapy and Long-term Treatment Outcome

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Eidi Christensen recently defended her PhD thesis on basal cell carcinoma and photodynamic therapy at the Norwegian University of Science and Technology (NTNU) in Trondheim. Opponents were Olle Larkö, University of Gothenburg, Petter Gjersvik, University of Oslo, and Odrun Gederaas, (NTNU).

The incidence of basal cell carcinoma (BCC) is increasing. Several therapies are available, including various forms of surgery, radiation and thermal destruction. Topical photodynamic therapy (PDT) involves application of a photosensitizer followed by irradiation of visible light, which in the presence of oxygen gives a phototoxic reaction and destruction of the tumour. The method is most appropriate for thin lesions and is known to provide a good cosmetic result. Improved results in nodular lesions are achieved by prior curettage and the use of tissue penetration enhancers. This thesis is based on studies on certain pre-treatment aspects of BCC and long-term outcome of PDT (1).

In the first study, cytological and histopathological examination of BCCs and actinic keratosis (AK) were compared (2). Scrape cytology agreed with histopathology in more than 90% of the cases. Two different staining methods (May-Grüwald Giemsa and Papanicolaou, Pap) were used. No significant difference in sensitivity between the two staining methods was found, but there was a trend towards higher sensitivity for the Pap method. Also, touch imprint cytology was evaluated, but seemed in this study to be unsatisfactory. Cytological examina-

tion for diagnosing BCC and AK is minimally invasive and easy to carry out. However, cytology has so far not been shown to differentiate between different forms of BCC, and the depth of invasion of tumours cannot be evaluated.

In another study, 48 BCC lesions were biopsied with 2 or 3 mm punches and then excised *in toto* (3). Tumour thickness was measured in both punch and excised tissue and compared. The results indicate that a BCC with thickness <1.0 mm in a punch biopsy would most likely have a "true" thickness of less than 2.0 mm, which is the current recommended limit for topical PDT. The disparity between measurements of the two methods, however, increased with increasing tumour thickness.

In a cohort study of 60 BCCs in 44 patients, the long-term outcomes after treatment with one or two sessions with curettage and DMSO-sponsored ALA-based PDT were reported (4). Lesions in clinical complete remission after 3 months ( $n=55$ ) was followed regularly with clinical inspection, biopsy and evaluation of cosmetic results in up to 6 years. For 43 of 53 lesions (81%) there was no clinical or histological signs of relapse, the proportion being higher after two treatment sessions



Eidi Christensen (3<sup>rd</sup> from left) with her supervisors Eirik Skogvoll, Cato Mørk and Anna M. Bofin.

than after one (91% vs 68%). Recurrence was detected for 2, 4, 2 and 2 lesions after 6, 12, 24 and 36 months, respectively. Gender (male) and localisation (H-zone of the face) were significantly associated with recurrence. Almost all recurrences were identified by clinical examination. Cosmetic results after 72 months were judged as good or excellent in 100%.

Even longer follow-up results of basically the same cohort of PDT-treated BCCs were reported in another paper (5). After 10 years, the over-all lesion complete response rate was reported as 75%; 60% after one treatment session and 87% after two sessions. Treatment failure was found in 25%, all identified within 3 years after treatment. Male gender, recurrent BCC and one treatment session was each associated with treatment failure in a multivariable Cox regression analysis. The study confirms and strengthens previous evidence that curettage and PDT in small, primary BCC provides high and sustained efficacy with excellent cosmetic outcome. The results are comparable with results from other well-accepted non-surgical treatment methods.

## Literature

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