



PHOTOTHERAPY, PHOTODYNAMIC THERAPY

LIGHT EMITTING FABRICS PHOTODYNAMIC THERAPY FOR THE TREATMENT OF ACTINIC KERATOSIS OF THE SCALP/FOREHEAD: A RANDOMIZED COMPARATIVE CLINICAL TRIAL

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Background: Actinic keratosis (AK) is a common chronic skin disease in elderly patients. Photodynamic therapy (PDT) is an effective field-targeted treatment for AK on a large skin surface such as a scalp. The major side effect of conventional PDT (C-PDT) is pain, sometimes leading to incomplete treatment. We designed a light emitting fabrics (LEF) made of optical fibers connected to a light source that delivers homogenous light over any surfaces to treat.

Objective: Our primary objective was to compare LEF-PDT to C-PDT in terms of efficacy at 3 months. Our secondary objective was to evaluate pain with a visual analogic scale (VAS 1 to 10) for each treated area.

Materials and Methods: We conducted a prospective bi-centric, randomized, open label, split-face comparative, and non-inferiority study. Patients with symmetrically distributed AK of the scalp and/or the forehead upon clinical examination were included. Each patient received a single session of LEF-PDT on one side and C-PDT on the other side of the scalp/forehead area AK. Topical methyl 5-aminolevulinate was used as a photosensitizer. VAS was evaluated after each session. Efficacy was evaluated after 3 months.

Results: Forty seven male patients with grade I/II AK of the scalp/forehead were enrolled at both Lille University Hospital (Lille, France) and Klinikum Vest GMBH (Recklinghausen, Germany) between June 2016 and December 2017. The mean age was 72.4 years old. The complete clinical response rate at 3 months for AK treated with LEF-PDT was 79.3% vs 80.7% with C-PDT showing no significant difference ($p=0.34$). The area treated with LEF-PDT had a significantly lower average VAS score of 0.32 compared to 7.43 for the area treated with C-PDT ($p<0.0001$).





Conclusions: LEF-PDT was non-inferior to C-PDT in terms of efficacy for AK treatment, with significantly less painful sessions.

