Abstract

Background: Molecular profiling of tissue samples in organ transplant recipients (OTR) would allow an early and minimally invasive identification of actinic keratosis (AK).

Objectives The aim of this study was to compare mRNA expression profiles of genetic markers of AK before and after treatment, employing two different field-therapies, and to correlate the results with histological and clinical parameters.

Patients and Methods: For this single center prospective randomized intra-patient controlled study, ten OTRs with AKs were recruited for field therapy with 2 cycles of methyl-5-aminolevulinate 16% cream-PDT at one site and imiquimod 5% cream for four weeks at another site.

Results: AKs in the photodynamic therapy (PDT) area were reduced significantly one, two and six months after completion of the treatment ($p<0.001$). The effect of imiquimod was weaker but still significant, when evaluated in the same intervals ($p<0.001$). Comparing the mRNA expression profiles of various genetic markers before, during and 3 months after therapy, we found significant correlations and dynamics for skin derived peptidase inhibitor 3 (PI3) and chemokine ligand 27 (CCL27) in all groups, regardless of the treatment modality. Compared to healthy skin, the expression of PI3 was strongly decreased and that of CCL27 increased in the AK-lesions before therapy. Both genes showed a significant convergence to values observed in healthy skin in both groups after therapy.

Conclusion: Gene expression pattern and level in actinic keratoses could serve as a biomarker**.**

Key words: actinic keratosis, skin markers, photodynamic therapy