Topical Photodynamic Therapy in Verrucae
A Pilot Study

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Key Words
Verrucae vulgares
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Abstract
Background: Topical photodynamic therapy (PDT) has shown good response rates in solar keratoses and superficial skin cancers. Objective: To investigate the efficiency and tolerance of PDT in refractory verrucae vulgares. Method: In an open pilot study, 6 patients were treated with 5-aminolevulinic acid-PDT and followed up for 2 months. Result: One patient showed a complete response, the other 5 patients were treatment failures. Conclusion: Topical PDT is probably not efficient in treating verrucae vulgares.

Introduction
Dougherty et al. [1] first described the clinical use of systemic photodynamic therapy (PDT), a method later used experimentally to treat various tumors including skin malignancies [2]. Kennedy et al. [3] and Kennedy and Pottier [4] introduced a new modality of PDT with topical application of the photosensitizer 5-aminolevulinic acid (ALA), which has the advantage of avoiding the generalized and occasionally severe photosensitivity over several weeks caused by systemic PDT.

ALA, a precursor of endogenous porphyrins in the biosynthetic pathway of heme, readily and selectively penetrates the epidermis with abnormal stratum corneum and accumulates in the stratum basale, where it is rapidly metabolized to photosensitizing porphyrins, mainly protoporphyrin IX. Consecutive photoactivation by visible light leads to tissue destruction due to the release of cytotoxic substances (singlet oxygen radicals) [5, 6].

Experimental clinical studies have shown very good responses and cosmetic results in the treatment of solar keratoses, superficial basaloma and Bowen’s disease [5-10]. The treatment of refractory verrucae vulgares is often frustrating. We investigated whether topical PDT could be a therapeutic alternative.

Patients and Methods
In an open pilot study 6 healthy adult patients (4 males, 2 females; age 21-31 years) with refractory verrucae vulgares of the hands (treatment failures, duration of verrucae 2-10 years) were treated by the following procedure: 20% ALA in oil-in-water emulsion was applied under occlusive dressing for 5-6 h prior to photoactivation by visible light emitted by a slide projector for the duration of 30 min. The patients were then controlled on days 1, 7, 28, and 60 following photoactivation.

Results
The treated areas consistently exhibited an acute and prominent inflammatory skin reaction. In 5 patients, the verrucae showed no change after the inflammation had receded. In 1 patient, however, all the verrucae including those on the untreated hand completely cleared within 6 weeks after treatment.

Discussion
Despite the intensive local inflammatory reaction seen in all patients after topical PDT, only 1 patient showed a total response within the observation period of 2 months. Besides a ‘psychological’ effect often seen in the context of treatment of verrucae vulgares, an immunological reaction induced by the treatment must be considered. The other 5 patients were treatment failures. The results of this pilot study thus indicate that topical photodynamic therapy using the method which has proven successful in the treatment of solar keratoses and superficial skin malignancies is probably not efficient in treating verrucae vulgares. Further studies using other modalities and possibly larger patient numbers are necessary for a definite evaluation of the efficiency of topical PDT in the treatment of verrucae vulgares.

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References