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Successful treatment of topical photodynamic therapy using 5-aminolevulinic acid for lymphadenosis benigna cutis

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Photodynamic therapy using topical 5-ALA has been used for non-melanoma skin cancers. Recently, the therapeutic method using incoherent light brought beneficial result in the treatment for mycosis fungoides. We used ALA-PDT for two Japanese patients suffering from lymphadenosis benigna cutis. In both cases, lesions were markedly faded and histologically, the number of infiltrated cells also decreased. We suggest that ALA-PDT can be used as an effective and safe modality in the treatment of benign cutaneous lymphoma.

INTRODUCTION

Photodynamic therapy (PDT) is a novel treatment that utilizes interaction between visible light and systemically administered photosensitizer in malignant tumors of lung, gastric and uterine cancers. The topical photosensitizer, 5-aminolevulinic acid (5-ALA) has been used for superficial non-melanoma skin cancers such as squamous cell and basal cell carcinomas, resulting in complete tumor destruction [1]. Recently, the therapeutic method using incoherent light brought beneficial result in the treatment for mycosis fungoides [1-7]. We now report the successful use of topical ALA-PDT for two Japanese patients suffering from lymphadenosis benigna cutis.

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PATIENTS AND METHODS

Case 1: A 16-year-old female. She had a solitary infiltrated erythema with 12×16 mm in size on the left cheek (Fig.1a). Microscopic examination of a biopsy specimen showed dense leukocytes infiltrate in the dermis.

Case 2: A 16-year-old female. She had an erythematous nodule with 7×12 mm in size on the right upper eyelid (Fig. 2a). Histologically, dense inflammatory cells were recognized in the dermis. Infiltrates consist of lymphocytes, histiocytes and plasma cells but atypical cells.

As a photosensitizer, 5-ALA (Sigma Co., St. Louis, MO) was dissolved in an oil-in-water emulsion, Dortin® (ASTA Medica Avzneimittel, Vienna), with final concentration of 20%. As a light source, the illuminator (SUS66, Ushio Ltd., Tokyo) containing a single 500W metalhalide-lamp with peaks of 630 and 700 nm was used. The lamp-to-skin distance was 6 cm. Six hours after

application of the ointment to the lesions with occlusive dressing technique, the area was immediately irradiated with visible light for 20 min. The energy of the single irradiation was 120 J/cm^2. Each lesion was treated with topical 5-ALA-PDT four times. The accumulation of ALA-derived protoporphirin IX (PpIX) in the skin lesions was confirmed as red fluorescence by a Wood's light in a darkened room. Furthermore, to confirm the therapeutic effect of topical PDT, histological observation was performed.

RESULTS

Two cases received ALA-PDT showed markedly faded lesions (Fig. 1b, 2b). Histologically, the number of infiltrated cells markedly decreased. We observed slight transient hyperpigmentation at the irradiation site, but no other adverse effects were seen.

DISCUSSION

We showed that topical photodynamic therapy by 5-aminolevulinic acid application was successful for treatment of lymphadenosis benigna cutis.

There were some reports that ALA-PDT has been used for mycosis fungoides, but cutaneous lymphoproliferative disease. Daugherty et al. reported that PDT using HpD (hematoporphyrin derivative) has been useful for MF [5].

The mechanism of action of PDT for MF is not completely understood. However, Malik et al. [8] suggest that the accumulation of porphyrins in lymphoma cells may be caused by lack of ferrocheratase and the efficiency of ALA-PDT in MF may be based on direct cytotoxic mitochondrial damage to T lymphocytes. In these cases, ALA-PDT might also be associated with mitochondrial damage.

In conclusion, we suggest that ALA-PDT can be used as an effective and safe modality in the treatment of benign cutaneous lymphoma. It is necessary that further clinical trials are performed.

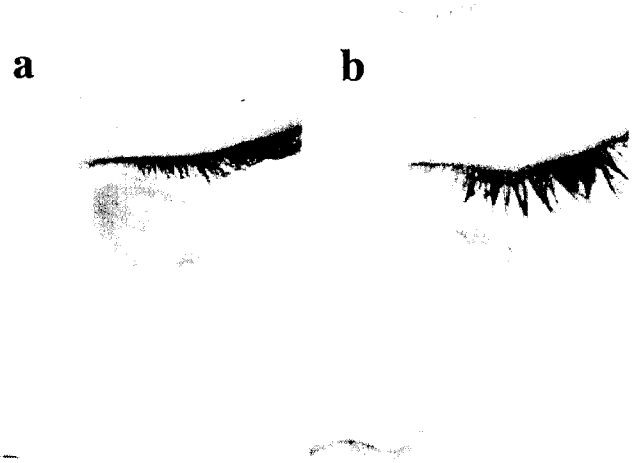

Figure 1. *Case 1*: before (a) and after (b) ALA-PDT treatment

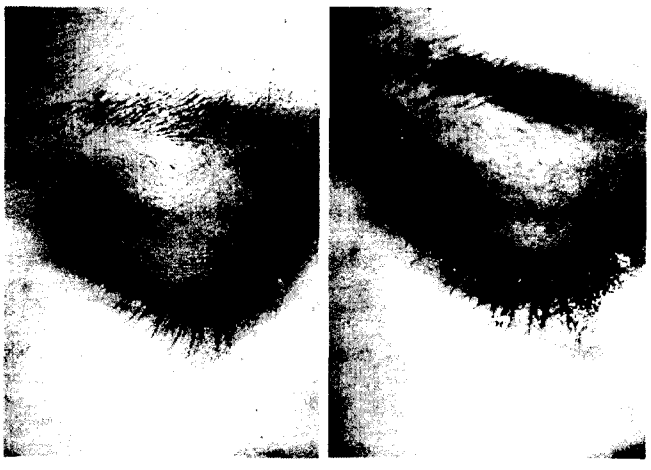

Figure 2. *Case 2*: before (a) and after (b) ALA-PDT treatment

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