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Case report

Combination of tacalcitol ointment and photodynamic therapy for the treatment of follicular mucinosis of the scalp

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ABSTRACT

Follicular mucinosis (FM) is a rare inflammatory disorder histologically characterized by mucin deposition in the follicular epithelium. There is no standard therapy for FM and several treatments have been described in the literature. We present the case of a 59 year-old female affected by a recalcitrant FM with diffuse scalp alopecia, in which complete clinical remission was achieved after a combination of topical tacalcitol and photodynamic therapy.

1. Introduction

Follicular mucinosis (FM) is an uncommon follicular skin disorder characterized by mucin deposition within the hair follicle. Although a variety of therapies have been tried, treatment of FM remains not well defined and is still a challenge.

Tacalcitol is a synthetic analogue of Vitamin D_3, with proven efficacy for the topical treatment of psoriasis and other disorders of keratinization or epidermal hyperproliferative skin diseases [1]. Recently pretreatment with chemical drugs, such as vitamin D_3 analogues (calcipotriol) have been suggested to enhance the efficacy of photodynamic therapy (PDT) for actinic keratosis [2].

Herein we describe a 59 year-old female patient affected by recalcitrant FM with diffuse scalp involvement, successfully treated with a combination of topical 4 μg/g tacalcitol ointment and 5-aminolaevulinic acid (ALA)-PDT.

2. Case report

This is the case of a 59 year-old Caucasian female with 8 years history of FM characterized by widespread, non-scarring, scaling alopecia of the scalp. Over the years skin biopsies were performed, all with the same features: dilated hair follicles with prominent hyperkeratosis, surrounded by perivascular and perifollicular lymphocytic infiltration with scattered intrafollicular lymphocytes, but no evidence of marked atypia. Alcian blue stain revealed deposits of intrafollicular mucin.

Her past medical history was significant for hypertension, hypercholesterolemia and hypothyroidism, well controlled with drugs and diet. General clinical examination was unremarkable and complete blood cell count was within normal limits. She did not have any calcium metabolic disorders and/or abnormal serum vitamin D levels. Previous treatments with oral prednisolone (25 mg/day for 2 months), cyclosporine, (200 mg/day for 6 months) and acitretin (25 mg/day for 8 weeks) were partially effective, with prompt relapse at the suspension of the drugs. A remarkable and durable result, consisting of hair regrowth and significant reduction of itch severity, was achieved with 27 sessions of NB-UVB, combined with a foam containing 2% salicylic acid on alternate night to reduce scaling. The improvement was also confirmed by almost complete absence of keratotic plugs and broken hair at dermoscopy [3]. The patient has been free of disease for the successive 18 months when a new worsening of alopecia was observed (Fig. 1a). A new biopsy showed no sign of progression to lymphoma. Trichoscopy showed diffuse scaling, broken hair, follicular openings filled by mass of white-yellowish keratotic material and hair shafts wrapped by thick scales at their emergence (Fig. 2a–c).

Treatment with hydroxychloroquine (200 mg twice/daily) plus topical treatment with salicylic acid and betamethasone valerate for 12 weeks was started, with no improvement. A new cycle of NB-UVB phototherapy had poor results. Therefore, we decided to start photodynamic therapy, using 5-aminolaevulinic acid (ALA) as topical porphyrin precursor. In order to remove follicular hyperkeratosis and to enhance PpIX production, pretreatment with topical tacalcitol once daily was started one month before the first session and continued during the entire period of PDT. After obtaining the patient's informed

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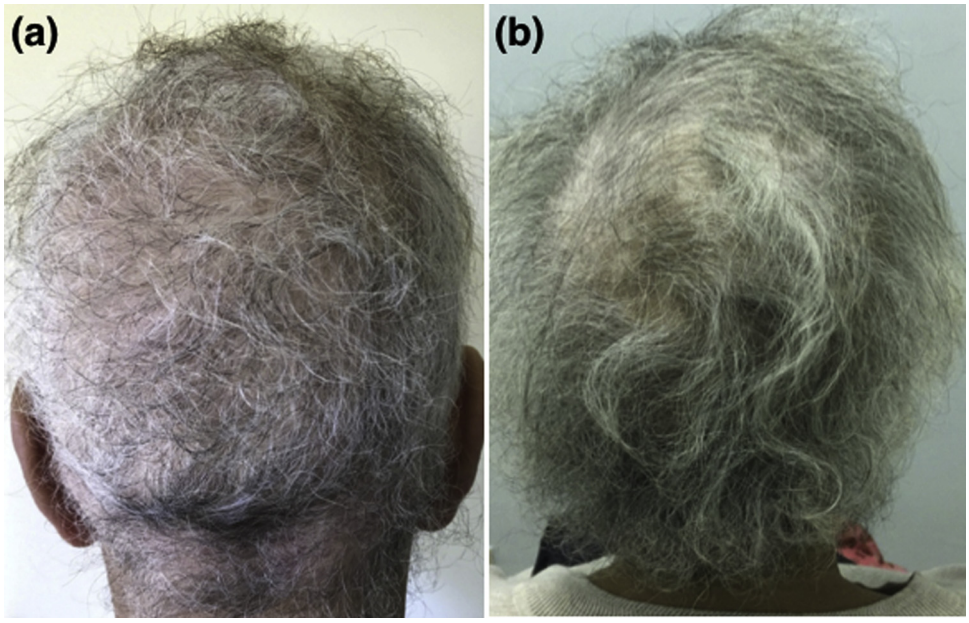

Fig. 1. A 59-old-woman with recalcitrant primary follicular mucinosis of the scalp a) before treatment with tacalcitol and photodynamic therapy and b) 6 months after the end of treatment.

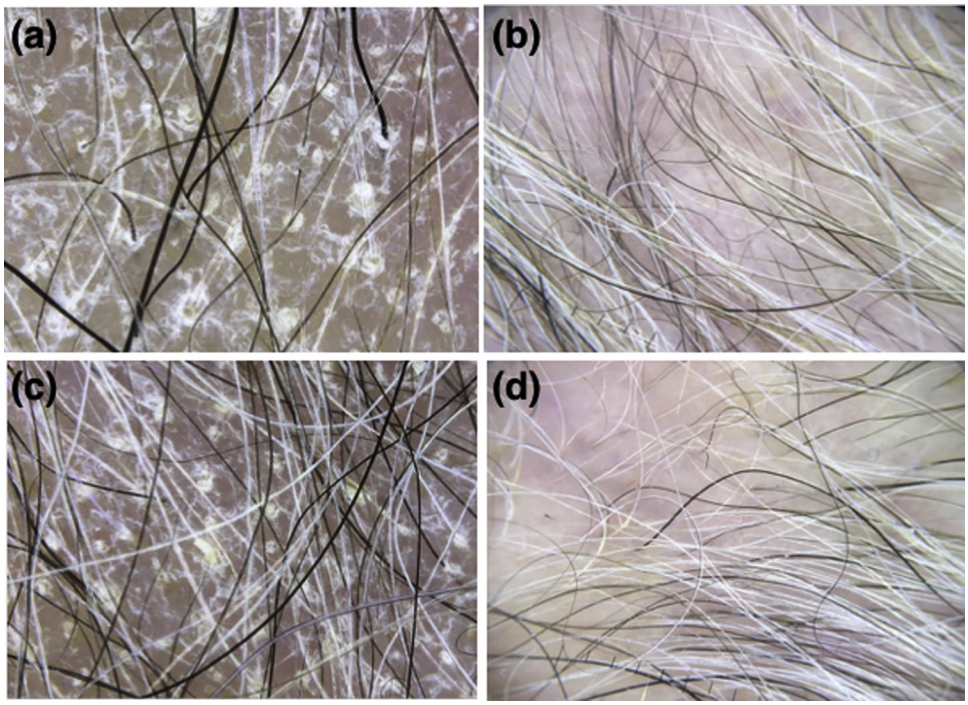

Fig. 2. a–c) diffuse scaling, follicular openings filled by mass of white-yellowish keratotic material and hair shafts wrapped by thick scales at their emergence are visible on trichoscopy before starting treatment with tacalcitol and photodynamic therapy; b–d) trichoscopy showing significant reduction of follicular keratosis and hair regrowth at 6 months follow-up.

consent, 10% ALA in polyethylene glycol ointment was applied and after three hours of occlusion the illumination was performed for 10 min using the diode red light at 630 nm, resulting in a total light dose of 75 J/cm2. The patient was treated every 3 weeks for a total of five treatments, using the same protocol. Topical tacalcitol was well tolerated with no side effects.

A progressive reduction of scales and itching, associated with a new hair growth was recorded at the end of the treatment. At six months follow-up, the patient had complete regrowth of hair with no recurrence (Fig. 1b, 2b–d).

3. Discussion

Follicular mucinosis (FM) is a pathologic epithelium reaction pattern, characterized by intrafollicular and perifollicular mucin accumulation. It may occur as a primary form (“idiopathic” FM), usually in children and young adults with a self-limiting course, or associated with lymphoproliferative disorders (“lymphoma-associated” FM), commonly mycosis fungoides or Sézary syndrome, in elderly patients [3]. The exact etiopathogenesis of FM is not clear, although it’s been suggested that the accumulation of mucin within the hair follicles could be due to the interaction between T lymphocytes and keratinocytes. Indeed, lymphokines released by T-helper lymphocytes might stimulate the production of mucin from follicular keratinocytes [4], with subsequent

variable scaling clearly visible both clinically and dermoscopically. Although several anecdotal therapies have been used for FM, including corticosteroids, retinoids, dapsone, minocycline, pimecrolimus, hydroxychloroquine, narrow-band UVB, interferon, methotrexate, there is no consensus about first choice treatment [3]. Only one case of FM treated with PDT has been reported to date [5]. Tacalcitol is a synthetic analogue of Vitamin D_3, with proven efficacy for the topical treatment of psoriasis and other hyperkeratotic or epidermal hyperproliferative skin diseases. Its antiproliferative effects are due to its affinity for the keratinocyte vitamin D_3 receptors (VDR), present in the nuclei of keratinocytes, which in turn binds to vitamin D responsive elements in multiple genes, with the capacity to inhibit keratinocyte proliferation and to stimulate keratinocyte differentiation [6]. In this regard it is interesting to underline that keratinocytes lining the outer layer of the hair follicle also contain VDR [6]. Furthermore, the VDR signaling pathway has also strong anti-inflammatory and immunoregulatory roles via the suppression of synthesis of proinflammatory cytokines [6]. Recently pretreatment with chemical drugs, such as vitamin D_3 analogues (calcipotriol) have been suggested to enhance the efficacy of PDT for actinic keratosis through up-regulation of coproporphyrinogen oxidase, resulting in increased PpIX production [2].

The use of tacalcitol before and during PDT in hyperkeratotic scalp diseases, such as FM, may be effective via removing follicular hyperkeratosis, reducing of inflammation and enhancing the penetration of 5-ALA into the skin, without increasing the incidence of adverse effects.

The combination of tacalcitol ointment and PDT should be considered when the disease is recalcitrant and resistant to other standard treatments.

Declaration of competing interest

None declared.

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