

## Treatment of vitiligo vulgaris with the combination therapy of topical steroid and vitamin D3 compound

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### Abstract

We report here two cases of vitiligo vulgaris successfully treated with the combination therapy of topical steroid and vitamin D3 compound and currently maintained by vitamin D3 analog without any adverse effects: skin atrophy, striae or telangiectasia on the exposed areas. The best-known mechanism of topical vitamin D3 analog is the enhancement of keratinocytes differentiation and anti-proliferative effects. Vitamin D3 analog is also reported to suppress T-cell mediated immunity, T-cell skin recruitment, and skin infiltration via down-regulating cutaneous lymphocyte antigen expression. Furthermore, vitamin D3 compounds are known to influence melanocyte maturation and differentiation and also to up-regulate melanogenesis. Auto-reactive lymphocytes against melanocytes are one of the causes. Topical vitamin D3 analog may control vitiligo itself, however stronger immunosuppressive effects of topical corticosteroid may contribute to rapid re-pigmentation suppressing auto-reactive lymphocytes. The topical combination therapy is a simple, effective and safe option for vitiligo vulgaris in sun-exposed areas.

### Introduction

Vitiligo vulgaris is one of the commonest acquired idiopathic hypomelanotic disorders. Involvement of autoimmune mechanism for melanocytes has been suspected,<sup>1,2</sup> and systemic and lesional immunosuppressive treatments are indicated. Narrow band UVB as well as psoralen UVA (PUVA) or solar irradiation therapies have been used for vitiligo. Some cases are resistant to therapies, and UV therapies are not recommended for face and scalp areas because of unwanted pigmentation and the risk of carcinogenesis in the future. We report here two cases of vitiligo vulgaris successfully treated with the combination of topical steroid and vitamin D3 ana-

log, and currently maintained by vitamin D3 analog without any adverse effects. This topical combination therapy is simple, effective and safe, and can be considered as one of the options for vitiligo vulgaris in sunexposed areas.

### Case Report #1

A 68-year-old Japanese man presented with asymptomatic round white patches on his head (Figure 1A). The skin lesions developed 6 months before his first visit. He was diagnosed having vitiligo vulgaris and treated with daily use of 0.05% Betamethasone butyrate propionate lotion (Antebate<sup>®</sup> lotion) and vitamin D3 analog: 2 µg/g tacalcitol ointment (Bonalfa<sup>®</sup> Ointment) once a day. After 3 months therapy, re-pigmentation developed, and the therapy was switched daily topical tacalcitol with once a week topical corticosteroid. Re-pigmentation has been gradually recovered without any adverse effect (Figure 1B).

### Case Report #2

A 66-year old Japanese man presented with diffuse white patches on both of his face and forehead. The involved areas expanded gradually (Figure 2A). He has a history of lupus erythematosus and has been treated with daily 5 mg of oral prednisolone. We treated him in the same protocol as described above, and then the skin lesions were improved (Figure 2B). Currently he has been treated with topical tacalcitol.

### Discussion

Vitiligo vulgaris is characterized by depigmented macules with reduced or absent cutaneous melanocytes. Pathogenesis of vitiligo is still unclear, and the autoimmune,<sup>3,4</sup> the neurogenic,<sup>5,6</sup> and the redox control abnormalities,<sup>7-9</sup> have been suggested. Several medical and surgical options are currently available for the treatment of vitiligo, including calcineurin inhibitors, topical corticosteroids, topical and/or oral PUVA, UVA, nB-UVB therapy, topical tacrolimus, laser therapy, and surgical therapies; however, there are resistant cases. Topical steroid therapy has been widely used to treat vitiligo with efficacy especially in patients with less than 20% of involved body surface area.<sup>10</sup>

Topical vitamin D3 analog, tacalcitol is used for treatment of psoriasis, and the best-

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Key words: vitiligo, topical steroid, vitamin D3 compound.

Conflict of interests: the authors report no potential conflict of interests.

Received for publication: 18 February 2012.

Revision received: 7 April 2012.

Accepted for publication: 20 April 2012.

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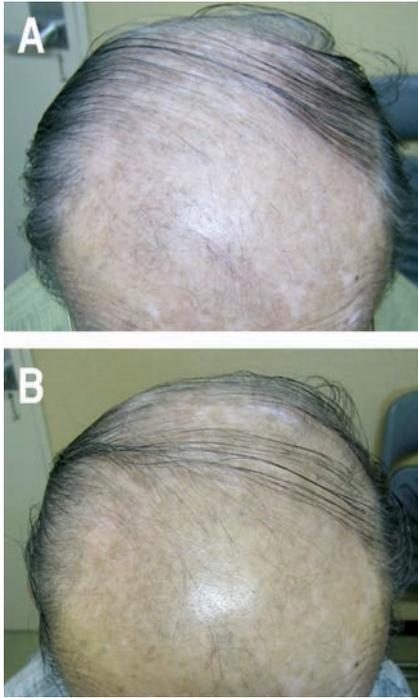
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Dermatology Reports 2012; 4:e8  
doi:10.4081/dr.2012.e8

known mechanism of this compound is the enhancement of keratinocytes differentiation and anti-proliferative effects. Vitamin D3 analog is also reported to suppress T cell mediated immunity.<sup>11</sup> As we reported previously, vitamin D3 and tacalcitol suppresses T-cell skin recruitment and skin infiltration via down-regulating cutaneous lymphocyte antigen expression and binding to the E- and P-selectin.<sup>12,13</sup> Furthermore, vitamin D3 compounds are known to influence melanocyte maturation and differentiation and also to up-regulate melanogenesis through pathways activated by specific ligand receptors, such as endothelin receptor and c-kit.<sup>14</sup>

There are some reports describing the effect of calcipotriol or calcipotriene for vitiligo.<sup>15-17</sup> In this report, we have initially treated vitiligo with the topical corticosteroid and tacalcitol, and then gradually reduced topical corticosteroid to avoid the adverse effects: skin atrophy, striae and telangiectasia on the exposed areas. Topical vitamin D3 analog may control vitiligo itself, however stronger immunosuppressive effects of topical corticosteroid may contribute to rapid re-pigmentation suppressing auto-reactive lymphocytes against melanocytes.

### Conclusions

In conclusion, although further studies are required, the combination therapy of topical steroid and tacalcitol is effective and safety therapeutic candidate for vitiligo vulgaris.



**Figure 2. Case Report #2.** A) Diffuse irregular white and pinkish patches on his head. B) The vitiliginous area had been improved with pigmentation one year after his first visit.



**Figure 1. Case Report #1.** A) Diffuse round white and pinkish patches on his head; B) the re-pigmented areas expanded gradually. Picture two years after of his first visit is shown.

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