Topical Tacrolimus Therapy for Erythematous Lesions of Dermatomyositis

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We report a female patient with dermatomyositis whose erythematous lesions were successfully treated with topical tacrolimus. In spite of the usually good response of muscle symptoms to systemic corticosteroid, the skin lesions of dermatomyositis often remain resistant to conventional therapy. The skin lesions of our patient were markedly improved after four weeks of topical application of tacrolimus. The clinical efficacy of tacrolimus has been described for other skin disorders, but tacrolimus ointment is also useful for treating the skin lesions of dermatomyositis. (Kitakanto Med J 2008; 58: 77~79)

Key Words: dermatomyositis, tacrolimus

Introduction

Topical corticosteroid therapy has been widely accepted for treatment of the erythematous lesions of dermatomyositis (DM). However, the response to this therapy varies in each patient. Topical tacrolimus has been proven to be a safe and effective treatment for refractory facial lesions of atopic dermatitis.1 The clinical efficacy of tacrolimus ointment has been also documented for other dermatoses including pyoderma gangrenosum,2 chronic actinic dermatitis,3 steroid-induced rosacea,4 cutaneous lupus erythematosus and others.5 We herein report a female patient with dermatomyositis whose skin lesions were successfully treated with tacrolimus ointment.

Case Report

A 29-year-old Japanese female presented in January of 1996 with a seven-month history of malaise and erythema on her face and hands. She also complained of dysphagia and muscle weakness in her arms. On physical examination, violaceous papules on the dorsa of the finger joints (Gottron’s papules) and periorbital heliotrope erythema were noted. Laboratory studies revealed no abnormality in serum muscle enzymes, liver function tests or antinuclear, anti-RNP, anti-SSA, anti-SSB and anti-Jo-1 autoantibodies. The chest Roentgenogram was normal and no internal malignancy was found. A needle electromyogram revealed short duration and polyphasic potentials of the biceps. A muscle biopsy from the triceps brachii showed atrophic muscle fibers with slight degeneration and diffuse infiltration of mononuclear cells around them. A skin biopsy from the facial erythema showed a superficial lymphocytic infiltrate with interstitial edema of the dermis. These findings satisfied the criteria for dermatomyositis (DM).6 Her symptoms disappeared with oral prednisolone (PSL) (initially 50 mg/day), then the dose was gradually tapered to 8-10 mg/day. In December of 2004, her symptoms recurred with worsened eruptions, muscle weakness, and pain. There were no changes in laboratory tests including creatine kinase and aldase. She also developed purplish-red heliotrope erythema involving the eyelids, upper cheeks, and forehead (Fig 1A). Pinkish papules or plaques with telangiectasia were noted on her hand; they were prominent over the dorsa of the finger joints (Fig 1B). There was violaceous erythema on her upper back. She was treated with an increased dose of PSL at 40 mg day. Her muscle symptoms promptly improved; however, her skin lesions remained unchanged. A skin biopsy from her finger revealed a slight lymphocytic infiltration around the small vessels and vasodilation in the upper dermis. We therefore introduced topical tacrolimus therapy. Tacrolimus ointment (0.1%) was topically applied twice a day. After four weeks, a significant improvement of her facial and hand lesions was obtained.

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without any adverse side effects (Fig. 1C and D).

**Discussion**

The response of the cutaneous lesions of DM to systemic corticosteroid treatments is sometimes poor despite the improvement of muscular symptoms. Tacrolimus is a macrolide immunosuppressant derived from *Streptomyces tsukubaensis*. This tacrolimus ointment has been reported to be effective for treating the cutaneous lesions of pyoderma gangrenosum, chronic actinic dermatitis, steroid-induced rosacea, and cutaneous lupus erythematosus.\(^5\)

Recently, the clinical efficacy of topical tacrolimus for the skin lesions of DM has been reported by several authors.\(^7\) Yoshimasu *et al.*\(^8\) reported that 3 out of 4 cases with DM were successfully treated without any side effects. They described that slight mononuclear infiltrates, vasodilation and edematous changes were the common histological characteristics in those patients who responded to topical treatment of tacrolimus.\(^8\)

Tacrolimus inhibits hapten-induced production of Th1 cytokines by T cells and TNF-\(\alpha\) production by T-cells and macrophages. Because the development of the skin lesions of DM is considered to be mediated by Th1 cells or TNF-\(\alpha\), as is the pathogenesis of muscle inflammation,\(^7\) it is possible that tacrolimus improves the skin lesions via its anti-inflammatory effects. It inhibits calcineurin phosphatase activity, leading to T-cell inactivation,\(^9\) and it blocks histamine release from mast cells.\(^10\) It is also not able that tacrolimus has vasoconstriction properties when given systemically for organ transplantation.\(^11\) Although it is not known whether or not topically applied tacrolimus has direct effects on dermal vessels, it is possible that tacrolimus indirectly modulates vascular tone by restoring the altered expression of cytokines.

The present case suggests that tacrolimus ointment is worth trying for the refractory skin lesions in dermatomyositis. Further clinical trials are warranted.
References