Tacrolimus Ointment for the Relief of Dermatitis Symptoms
Chad Nellis (PharmD IV student) and Verne Betlach, RPh
Richfield, Minnesota

Topical medications and therapies are often necessary for the proper management of skin diseases. Whether it is used in children or adults, topical therapy must be individualized, and success often depends on proper vehicle selection, ease of application, and cost to patients or their families. New therapies such as tacrolimus may prove to be as effective as and less toxic than commercially available topical therapies. 1

Case Report
A 76-year-old woman had been suffering from redness and itching over most of her body for 15 years, during which she had been evaluated by 5 different dermatologists. She had been diagnosed as having a wide range of conditions including atopic dermatitis and vasculitis.

The patient’s pruritus, which sometimes developed into a rash, affected her arms, legs, back, and abdomen. This pruritus erupted more often and more severely during the winter. The patient had been able to identify a few triggers that included detergents, wool, changes in temperature, and permanent wave solution for hair, all of which exacerbated her symptoms, and she had to wear gloves to decrease her exposure to soaps and chemicals. However, she had experienced periods of complete remission from the symptoms produced by her condition.

The patient’s previous physicians had prescribed treatment with topical steroids such as triamcinolone (Kenalog), fluocinonide (Lidex), and halobetasol (Ultravate). Those agents were successful in relieving itching and associated redness; however, the patient’s thinning skin forced her to discontinue therapy with steroid products.

In May 2000, the patient presented to our pharmacy with a recent diagnosis of contact dermatitis. Her physician had ordered a prescription for tacrolimus ointment 0.1%, which was to be applied to affected areas twice a day to relieve itching and redness. Tacrolimus, a macrocide immunosuppressant produced by Streptomyces tsukubensis, is indicated for the prophylaxis of organ rejection in patients receiving an allogeneic liver or kidney transplant. In animals, tacrolimus suppresses some humoral immunity and, to a greater extent, cell-mediated reactions such as allograft rejection, delayed-type hypersensitivity, collagen-induced arthritis, experimental allergic encephalomyelitis, and graft-versus-host disease. The net result of tacrolimus is the inhibition of T-lymphocyte activation (ie, immunosuppression), although the exact mechanism of action is not known. 2

Published studies that describe the use of tacrolimus in a routine clinical setting for the treatment of scleroderma 3 and in a patient with corticosteroid-resistant ulcerative colitis 4 indicate some success in the treatment of conditions involving the immune system in patients in whom other agents have failed. After 2 months of therapy with tacrolimus ointment, the patient reported a decrease in the number and duration of breakouts as well as a reduction in itching and skin redness. At the time of this writing, she has experienced no side effects from this treatment.

Tacrolimus 0.1% ointment is prepared by using the powder from commercially available tacrolimus (Prograf) capsules, which is placed into a base of mineral oil, wax (white beadlets and paraffin), and petrolatum. The formula for tacrolimus 0.1% ointment is available upon request.

References
Nifedipine in PLO 40 mg/mL for Gangrene of the Foot
Rhonda Yarzab, RPh, and David Graham, DO
Greenville, Pennsylvania

In 1996 a 79-year-old white woman became a patient of our pharmacy. According to her medical history, she had been diagnosed as having diabetes at 41 years of age. She currently monitors her diabetes by performing blood glucose checks 3 to 4 times a day (before meals and at bedtime). Depending on her blood glucose levels, her insulin regimen is adjusted. The patient has decreased cardiac function and takes bumetanide (Bumex) and isosorbide dinitrate (Isordil). Diabetes has caused poor circulation in her left foot.

Nifedipine and other calcium-channel blocking agents have been administered orally in immediate or extended release form to treat patients with Raynaud’s disease, which is another condition characterized by a decrease in peripheral vascular blood flow. When conventional medical management has failed, the clinical pharmacist can assist in the treatment of patients with decreased vascular blood flow by recommending a new medication or citing new medications that are approved by the Food and Drug Administration to the site at which they are needed (in this case, the left foot).

In the patient described in this case study, gangrene of the great toe and 2 other spots on the left foot developed. She was awaiting hospitalization and surgery as described in the literature to increase her peripheral circulation when a family member referred her to our pharmacy. This patient had decreased peripheral circulation and placement in 3 to 4 weeks and wanted to know whether there were other treatments that she could use to increase the circulation to her foot and possibly prevent the further development of gangrene. We contacted the patient’s physician, who prescribed nifedipine (Procardia) topical gel 40 mg/mL (0.5 mL [20 mg] twice a day for 3 days) to most of her foot and to the affected toes. After 3 days of treatment, the patient reported a decrease in the pain, which led to a decrease in the dose of nifedipine, which was administered, more when 150 µg of testosterone per day was given, and most when 300 µg of testosterone per day was given, more when 150 µg of testosterone per day was given, and most when 300 µg of testosterone per day was given, more when 150 µg of testosterone per day was given, and most when 300 µg of testosterone per day was given.

Transdermal Testosterone Treatment in Women with Impaired Sexual Function After Oophorectomy

Oophorectomy in premenopausal women causes a decrease of serum testosterone and estradiol concentrations of about 50% and 80%, respectively. To prevent the decrease in sex hormone levels, and thus the symptoms of menopause, which include vagi nal atrophy, hot flashes, and osteoporosis, many such women are treated with estrogen. However, many women with surgically induced menopause experience decreased libido and a sense of decreased well-being that is thought to result from a decrease in androgen production by the ovaries. According to the authors, the literature indicates that treatment with transmucosal, vaginal, or oral androgen therapy one enanthate, administered alone or with estrogen, or therapy with testosterone and estradiol implants increases the level of sexual activity and desire more than did the use of estrogen or estradiol alone. This study by Shifren and colleagues explores the effect of sublingual doses of testosterone enanthate administered to women with impaired sexual function after surgical menopause.

The study participants consisted of 75 healthy women who ranged in age from 31 to 56 years of age and who, before their natural menopause, had undergone bilateral oophorectomy and ovariectomy at least by age 1 year before but not more than 10 years earlier (mean, 4.7 years) than the time of the study. All exhibited either severe depressive symptoms or concentrations of estradiol one in women with impaired sexual function. These concentrations of estradiol one per day. They report that the mean serum concentrations of dihydrotestosterone and estradiol concentrations of estradiol concentrations that exceeded the normal ranges during treatment with placebo and that the mean serum concentrations of these hormones-binding globulin, which was high at baseline because of the administration of oral conjugated equine estrogens, decreased slightly during treatment. No other significant changes were observed in concentrations of sex hormones were observed during treatment.

The authors write that the mean serum concentrations of free and bioavailable testosterone remained at low to low normal levels during treatment with placebo, increased to midnormal values during treatment with 150 µg of testosterone per day, and increased to high normal values during treatment with 300 µg of testosterone per day. They report that the mean serum concentrations of dihydrotestosterone and estradiol concentrations of estradiol concentrations that exceeded the normal ranges during treatment with placebo and that the mean serum concentrations of these hormones-binding globulin, which was high at baseline because of the administration of oral conjugated equine estrogens, decreased slightly during treatment. No other significant changes were observed in concentrations of sex hormones were observed during treatment.

The authors conclude that in women who have undergone bilateral oophorectomy and hysterectomy, the administration of transdermal testosterone improves both sexual function and the sense of well-being.

References