Topical Ruxolitinib for the Treatment of Alopecia Universalis

Alopecia areata and variants alopecia totalis and alopecia universalis are common conditions for which treatment options are limited. Oral Janus kinase (JAK) inhibitors have recently been shown to be effective for the treatment of these disorders. There are, however, risks for serious adverse effects with systemic therapy that may be avoided if topical therapy were an option.

Report of a Case | A patient in her late teens presented for evaluation and management of alopecia universalis. Treatment with prednisone, intralesional triamcinolone, salsalazine, topical squaric acid dibutylester, and topical anthralin had been ineffective. The patient had not had any treatment in the previous 2 years. She was otherwise healthy and took no medications. There was no family history of alopecia areata or other autoimmune disease. Findings from a complete review of systems were negative. On examination, there was complete absence of scalp and arm hair and only sparse hair growth of the right lateral eyebrow (Figure, A).

In light of the recent successful treatment of alopecia areata and variants with the JAK inhibitors tofacitinib and ruxolitinib, these were discussed as therapeutic options. Apprehensive of the potential risks of these medications, the patient and her parents decided to pursue a trial of a topical JAK inhibitor. Topical formulations of both tofacitinib and ruxolitinib have been demonstrated to be effective in reversing disease in a murine model of alopecia areata, and topical tofacitinib ointment has been demonstrated to be well tolerated and effective for the treatment of plaque psoriasis. To our knowledge, the use of topical JAK inhibitors has not yet been explored for the treatment of alopecia areata and variants in humans.

Results of baseline laboratory tests, including QuantiFERON-TB Gold (Quest Diagnostics), human immunodeficiency virus, and hepatitis B and C blood tests were negative, and a complete blood cell count and comprehensive metabolic panel were within normal limits, though the white blood cell (WBC) count was borderline low at 4500/μL (normal, 4500/μL-13 000/μL) (to convert WBC to ×10⁹/L, multiply by 0.001).

The patient began treatment with topical ruxolitinib, 0.6%, cream twice daily to the scalp and eyebrow regions. After 12 weeks of treatment, the eyebrows were nearly normal (Figure, B), and there has been significant regrowth of the left eyebrow.

Discussion | To our knowledge, this is the first report of successful treatment of alopecia universalis with a topical JAK inhibitor. While additional studies will be needed to confirm the efficacy, further explore the safety and tolerability, and determine optimal concentrations of topical ruxolitinib and other topical JAK inhibitors for alopecia areata and variants, the results in this case are promising. Although uncommon, serious adverse effects including cancer have been reported in patients taking oral JAK inhibitors. In the case of the present patient, the small decrease in WBC count after starting topical ruxolitinib treatment is suggestive of systemic absorption; however, the patient’s baseline WBC count was borderline low, and so causality is difficult to assess.

Topical JAK inhibitors represent an exciting new treatment opportunity for an often psychologically devastating condition. Given the likely more favorable safety profile associated with topical administration, their use may be considered in patients for whom the potential for serious adverse effects makes oral administration unattractive, most notably the pediatric population.

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Misdiagnosed Periocular Pyoderma Gangrenosum Requiring Ectropion Repair With Development of Second Lesion of Pyoderma Gangrenosum at Graft Site

Pyoderma gangrenosum (PG) is a rare ulcerating inflammatory skin disease diagnosed after exclusion of infection, neoplasia, thrombophilia, and other inflammatory conditions. The incidence is between 3 to 10 patients per million and affects slightly more women than men in the second through fifth decades of life.1 The pathogenesis of PG is multifactorial and involves neutrophilic dysfunction, inflammatory mediators, and a genetic predisposition. Considering the diagnosis of PG for nonhealing ulcers that show a predominance of neutrophils on pathologic analysis is important to prevent unnecessary morbidity.

Report of a Case | A woman in her 60s with no significant medical history presented with a nonhealing lesion on the left lower eyelid of more than 2 years’ duration. The lesion began suddenly after the use of a concealer that caused burning on application. She had been treated initially by an oculoplastic surgeon with 3 30-day courses of trimethoprim-sulfamethoxazole. In addition, 3 biopsies were performed, from which she was diagnosed as having a benign keratosis with marked acute and chronic inflammation without evidence of malignancy. Findings of stainings and cultures for bacteria and fungi were negative. She then saw a local dermatologist who tried topical mupirocin treatment without improvement and performed an additional culture that revealed coagulase-negative Staphylococcus. At that point she sought another opinion.

Physical examination at the time of presentation revealed an erythematous edematous plaque with slight surface erosion and a rolled violaceous border on the left lower eyelid (Figure 1). Ectropion was also noted. Bacterial culture and a biopsy were performed. The biopsy demonstrated pseudoepitheliomatous hyperplasia with intraepidermal neutrophilic and eosinophilic pustule formation and mixed dermal inflammation with focal abscess formation. Bacterial culture revealed Staphylococcus epidermidis, and fungal and mycobacterial cultures were negative. The diagnosis of PG was favored. She was started on a dapsone regimen, 100 mg/d, but developed blue lips and jitteriness, and the dapsone treatment was stopped. She was then treated with oral prednisone taper over 4 weeks, starting at 40 mg and decreasing by 10 mg/wk, and topical tacrolimus, 0.1%, ointment twice daily. After a month of this treatment, the lesion decreased in size, and treatment with methotrexate, 10 mg/wk, was started. Over the subsequent month, the lesion healed leaving a residual scar with ectropion of the lower eyelid.

She then underwent ectropion repair with grafting from the right clavicle. Immediately thereafter, she developed a painful ulceration at the graft site and was treated by the oculoplastic surgeon with oral trimethoprim-sulfamethoxazole and topical erythromycin ointment.

Examination 9 months later revealed superficial ulcerations with rolled violaceous borders at the site of the donor skin for the graft (Figure 2). Treatment with clobetasol, 0.05%, topical ointment twice daily led to resolution of the ulceration within a month.

Discussion | The pathogenesis of PG is unknown. It occurs in association with inflammatory bowel disease, rheumatologic conditions, and hematologic disorders.1 Ocular