

TRIAMCINOLONE IN A SPRAY VEHICLE:

A Clinical Perspective on Its
Importance in Dermatology

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Much research has been spent and continues to be spent to produce topical vehicles that can better deliver active ingredients to the dermatology patient. The multibillion dollars per year cosmeceutical industry is at the forefront of this research. This is driven by the expectations of our patients to be given products that are cosmetically pleasing and minimally irritating. The patient's compliance and therefore the efficacy of treatment are certainly affected by the properties and acceptability of the delivery vehicles. As one can certainly deduce, a cosmetically elegant product, that is easy to use, would increase compliance of our patients and therefore lead to better clinical results and higher patient satisfaction.

Even with the advent of novel delivery systems that are helping make topical medications more palatable to the patients and increasing compliance (vesicular systems, particulate systems, silicones, emulsions, etc.),¹ most topical corticosteroids prescribed are formulated as lotions, creams, and ointments. Many of these can present challenges to our patients during their application. Patients with large treatment areas or hairy areas may have difficulties covering them appropriately. Scalp lesions would be very difficult to treat and cosmetically, our patients may not tolerate the greasy feel or the stickiness of the topical medication on their clothes. This may therefore cause a decreased compliance leading to poor treatment efficacy and patient satisfaction.

The aim of this article is to discuss a long available triamcinolone acetonide in a unique solution vehicle, delivered as a spray, with an optional nozzle (Kenalog® Spray, Ranbaxy Laboratories, Inc.). This class 4 corticosteroid is indicated for the relief of inflammatory and pruritic manifestations of corticosteroid-responsive dermatoses. It has been used to control flares in psoriasis, eczema, atopic dermatitis, seborrheic dermatitis, and contact dermatitis, among others.^{2,4} Kenalog® Spray has been available since 1958 and has remained the only mid-potency corticosteroid available in a spray formulation. In this article, we will discuss both patient vehicle preferences as well as a review of the literature that is available on triamcinolone spray.

Housman et al. evaluated patient preference of vehicles used in dermatology.³ Their study showed that patients preferred solutions and foams over other vehicles. Patients with psoriasis (N=20) applied various topical medications formulated in different vehicles for their condition, assessed the effects of the vehicle on their quality of life, and completed a preference measure for each vehicle. Vehicles included cream, ointment, solution, foam, and gel.

The investigators reported a good correlation of the vehicle preference with patient expectations of quality of life.³ Solution and foam formulations were preferred over cream, gel, and ointment formulations. In fact, nearly 8 out of 10 patients (75%) preferred the solution to the ointment, whereas only 3 patients preferred the ointment to the solution ($P = .003$). Side effects ranked first in importance for quality of life, followed by

messiness and ease of application, respectively. Time needed for application, absorption, and cost for replacing soiled or stained clothing and bed linens also ranked high in importance for use. Interestingly, the authors did not find significant differences between preference ratings for daytime versus nighttime use. Solutions and foams were preferred over the other vehicles for both daytime and nighttime application. The results of the study suggest that solution and foam preparations may favor improved adherence to topical therapy since patient preference was significantly higher with these formulations.

Literature Review

A number of studies have investigated triamcinolone spray for its clinical outcomes in steroid-responsive dermatoses and the extent of patient satisfaction with the product. Four of these studies are reviewed here.^{2,4-7}

Fowler and Fowler evaluated patient satisfaction and clinical outcomes of this corticosteroid using investigator and patient global assessment scores.⁵ This open-label, single-center, non-comparator investigation followed 39 adult male and female patients with a diagnosis of steroid-responsive dermatoses and an Investigator Global Assessment score of 2 (mild) and 5 (very severe), on a 0 to 5 scale, at baseline. Patients were evaluated for improvement in their condition every 7 days for 28 days, and patient satisfaction was assessed through a questionnaire completed at the end of treatment.

Patients' response to the study medication was overwhelmingly positive—more than 9 out of 10 patients preferred triamcinolone spray over creams and ointments citing “no residue,” “easier to apply,” “not greasy,” “fast drying,” and “not sticky.”⁵ Interestingly, more than 50% experienced a pleasant cooling effect upon application of the spray, and nearly all patients stated that they would use the spray in the future.

At baseline, 19 % of the patients had an IGA of 4 (severe), 64% had an IGA of 3 (moderate), and 17% had an IGA of 2 (mild).⁵ By day 3, more than half the patients noted an improvement and by day 7, more than 8 out of 10 patients reported an improvement. At day 14, 32% of the patients were clear or almost clear, 50% were rated as mild, and 18% had an IGA of 3 (moderate). Improvement of patients' dermatoses continued and at day 28, 64% of patients were clear or almost clear, 23% were rated as mild, and only 13% were rated as moderate with no one rated as severe. Moreover, the investigators reported that signs and symptoms of erythema, papules/vesicles, excoriation, pruritus, and burning/stinging decreased over the course of treatment.

As early as 1981, Goldner evaluated triamcinolone spray in a broad aged patient population—from pediatric patients 11 years old to geriatric patients 86 years old (N=50).⁴ Patients used triamcinolone spray for contact dermatitis, poison ivy (which was evaluated separately), seborrheic dermatitis of the scalp, atopic dermatitis, nummular dermatitis, sunburn, and lo-

calized neurodermatitis. The overall response to triamcinolone spray was similar to the results of Fowler's study—50% of patients had complete clearing with another 30% having marked to moderate improvement during the course of therapy. One patient did not respond and 3 worsened. Contact dermatitis showed the most improvement with all 6 cases completely clearing followed by poison ivy, in which 83% of the cases completely cleared or improved moderately, and seborrheic dermatitis of the scalp, in which 80% of the cases completely cleared or improved markedly or moderately.

Patient acceptance of triamcinolone spray was high with 76% rating it as excellent to good. In terms of side effects, 3 patients complained of burning and one stopped the medication because of a dislike of the spray.⁴ Goldner concluded that triamcinolone spray is “particularly valuable when the lesions are acute, exudative, or weeping, and involve difficult to reach areas” and commented that the spray provided patients with an anti-pruritic and pleasantly soothing feeling upon application and that it is a safe way to treat lesions without causing irritation or contamination.

Christianson and Derbes conducted a large study with triamcinolone that followed 138 patients ranging in age from 2 to 78 years.⁶ Nearly 75% of the patients were treated for neurodermatitis, contact dermatitis, eczema of the hands, and nummular eczema involving the trunk and/or extremities. Triamcinolone spray was applied several times daily for an average of 1 to 2 weeks. Favorable results were noted in 76% of patients who experienced an excellent or good response to treatment, especially those with chronic, localized neurodermatitis recalcitrant to many other treatments, contact dermatitis, and eczema. Side effects were minimal—a few patients complained of a burning sensation upon application.

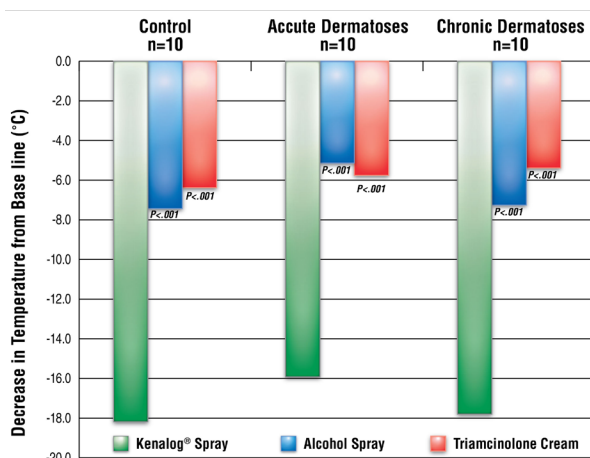
Similar to Goldner, the authors found triamcinolone spray to have the greatest usefulness in treating acute, exudative, and weeping dermatitis, along with localized pruritic neurodermatitis, lesions in hairy areas, and lesions in difficult to reach areas.⁶ They cite the simplicity of the spray vehicle as the principal advantage of the product and the fact that extensive lesions can be treated easily, quickly, and economically.

Furthermore, in 1961, Singer reported on the effects of the spray in 67 patients with a variety of dermatoses; patients ranged in age from 6 to 72 years.² Use of triamcinolone spray led to excellent (90% to 100% improvement) and good (80% to 90% improvement) results in 43 of the patients. He warned that heat-retaining properties of some ointments and creams could be responsible for treatment failures and for worsening of the skin condition during the day when patients are most active. As in other studies, triamcinolone spray was noted to have an immediate cooling effect, which provided a distinct relief.

Most recently, in 2012, Linkner et al⁷ sought to clarify what gave triamcinolone spray its “unique qualitative cooling relief

of pruritus when used for chronic steroid-responsive dermatoses.” They also applied the spray on acute steroid responsive dermatoses to see whether this cooling effect would help skin that is “open, excoriated, or actively inflamed.” Thirty randomized subjects included 10 healthy subjects, 10 subjects with chronic steroid-responsive dermatoses, and 10 subjects with acute steroid-responsive dermatoses. The subjects were tested with triamcinolone spray (applied for 2 seconds, as indicated), alcohol spray (applied similarly), and triamcinolone cream. A measure of the skin surface temperature showed that there was a statistically significant decrease in temperature in the triamcinolone spray cohort compared to the other two. Furthermore, a study of counterirritancy properties showed that in the acute and chronic dermatoses cohorts, there was a significant change in the threshold for cold sensory stimuli only after the application of T Spray (Figure 1). Lastly, an evaluation of itch relief using a subjective visual analog scale (VAS) showed that in both diseased cohorts, there was a statistically significant change in VAS after application of T spray. Because Triamcinolone spray contains only 4 ingredients (each gram of spray provides 0.147 mg triamcinolone acetonide in a vehicle of isopropyl palmitate, dehydrated alcohol (10.3%), and isobutane propellant), the authors concluded that it is most likely the isobutane propellant that is affecting sensation in the patients.

Figure 1. Effect of triamcinolone spray on skin surface temperature. At least 2 anatomic areas in controls were matched to those in the diseased cohorts. $P < .001$ Kenalog® Spray vs. alcohol spray and triamcinolone cream in controls, acute dermatoses, and chronic dermatoses.



Discussion

The treatment of steroid responsive dermatoses can be challenging to both the patient and the physician. Of course, efficacy is the most important factor when choosing a treatment plan, but the physician has to take into consideration factors that would affect the compliance of the patient such as cosmetic elegance, irritation and ease of use.

Today's patient is acutely aware of the cosmetic elegance of the product we give him or her. Products that are not cosmeti-

cally elegant are less preferred by patients.³ Therefore, patients may be more likely to be compliant with a product that does not stain, or stick.

Both Housman and Fowler showed that patients prefer a solution (specifically triamcinolone spray in Fowler's study) over creams and ointments. Furthermore, Fowler and Goldner commented on the cooling effect of triamcinolone spray in their subjects. This was thoroughly investigated by Linkner et al, who showed a statistically significant drop in skin temperature and an increase in the threshold of cold and warm stimuli after the application of triamcinolone spray. Moreover, patients in the study reported a statistically significant improvement of itch in both the acute and the chronic dermatoses cohorts.

In all the studies, and despite the presence of alcohol in the vehicle, there were very few reports of stinging even though Goldner recommended its use in lesions that are acute, exudative, or weeping (lesions that we would expect to burn when exposed to alcohol). This may be due to the fact that the alcohol in the vehicle is dehydrated alcohol.

Furthermore, the spray and the present of the optional nozzle make the application process easier for our patients who can cover large areas of skin if needed as well as hirsute areas. The nozzle is ideal to apply the spray on dermatoses of the scalp.

Conclusion

Triamcinolone spray incorporates a class 4 midpotency steroid in a simple, well tolerated, and cosmetically pleasing vehicle containing only 3 non-active ingredients. The properties of the vehicle help give our patients a cooling effect which helps alleviate their symptoms. Furthermore, its ease of use makes it very helpful in large area of dermatoses as well as hard to reach and hirsute areas. This leads to a very good efficacy and possibly an increase in patients' compliance. The combination of these properties make triamcinolone spray a great option in our armamentarium for the treatment of steroid-responsive dermatoses.

Disclosure

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