

## Authors' reply

Sir,

Thanks for raising some very important questions and issues regarding my article.<sup>[1,2]</sup> The article was not a review article to cover the entire gamut of management of vernal keratoconjunctivitis. Nonpharmacologic therapy and surgical management were not the main focus. The article was written to present a simple grading system and medical management scheme based on this grading system. The objective was to give a new insight onto how we could better treat severe allergies in our clinics.

Nonpharmacologic management was outside the purview and can be a separate article by itself. It includes allergen avoidance, protective goggles, hygiene, mite and mold control, air filtration systems, allergy testing and desensitization, and multiple environmental control interventions. Not rubbing the eyes, cold compresses, face washing, washing hands, etc., are indeed important factors as you have mentioned and are well known to most ophthalmologists.

The preservative-free lubricants are very helpful and always used in severe allergy; however, I am not aware of how they can reduce the risk of hypersensitivity to other preservatives used by the patients.

Loteprednol has been my preferred topical steroid because of its greater safety and lower potency to cause cataract and glaucoma. However, one could use fluorometholone, dexamethasone, and prednisolone eye drops in more severe cases if desired.

The low, long-term safety profile of traditional corticosteroids led to the development of modified corticosteroids such as loteprednol that retain the anti-inflammatory mechanism of action of traditional corticosteroids with a much-improved safety profile, because of their rapid breakdown to inactive metabolites after exerting their activity. Loteprednol etabonate has an ester (instead of a ketone) group at the carbon-20 (C-20) position of the basic corticosteroid structure. Clinical trials assessing this C-20 ester corticosteroid have revealed similar efficacy to C-20

ketone corticosteroids in the prevention or treatment of the signs and symptoms of seasonal allergic conjunctivitis, but with a greatly improved safety profile, as the C-20 ester corticosteroid is less likely to elevate intraocular pressure. In addition, the ketone at the C-20 position has been implicated in the formation of cataract while nonketolic corticosteroids do not form Schiff base intermediates with lens proteins, which is a common first step in cataractogenesis. Loteprednol etabonate offers a well-tolerated treatment option for patients with debilitating acute exacerbations as well as chronic forms of the disease.<sup>[3]</sup>

Long-term data for more than 12 months are now available for use of loteprednol in allergic conjunctivitis.<sup>[4]</sup> In another study, loteprednol was as effective as prednisolone and more effective than fluorometholone, and it had no side effects during the short-term treatment of vernal keratoconjunctivitis patients.<sup>[5]</sup>

Loteprednol has a lower propensity to cause intraocular pressure rise in steroid responders as compared to prednisolone.<sup>[6]</sup> On the other hand, 60.5% of steroid responder patients showed a rise in intraocular pressure of more than 5 mm Hg even after the use of fluorometholone.<sup>[7]</sup> A word of caution with regard to fluorometholone use in children is because of its higher propensity to cause a steroid response, especially when used at a higher frequency or for a longer period.<sup>[8]</sup>

In severe allergies, we would still try allergen avoidance, lubricants, antihistaminics, and mast cell stabilizers because they would reduce the dosage needed for more potent immunosuppressive medications. A multipronged approach has to be used in these patients.

For severe cases, we need to start with multiple medications in the acute stage and then based on response to therapy further modify therapy. If there is a better algorithm that comes up in the future, I would be happy to put it into my practice.

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### Conflicts of interest

There are no conflicts of interest.

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