

## CASE REPORT

## Treatment of asymmetrical vernal keratoconjunctivitis with supratarsal corticosteroid injection

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**SUMMARY**

A 6-year-old Thai girl presented with itching, redness and copious discharge in both eyes. Slit-lamp biomicroscopy of the left eye revealed cobblestone papillae with marked ptosis while in the right eye only small papillae were observed. Punctate epithelial keratitis was noted only in the left eye. There were no associated factors for giant papillary conjunctivitis (ie, suture or contact lens). The cobblestone papillae in the left eye persisted after maximal topical and oral antiallergic medications. Two doses of supratarsal corticosteroid (20 mg of triamcinolone acetonide) injection without any topical or oral antiallergic medications were undertaken in the left eye 1 month apart. Cobblestone papillae and punctate epithelial erosion (including allergic symptoms) were completely recovered. There was no recurrence after 18 months of follow-up. This case report indicates that using supratarsal corticosteroid injection by itself in recalcitrant vernal keratoconjunctivitis provides promising results.

**BACKGROUND**

Vernal keratoconjunctivitis (VKC) is a chronic conjunctival inflammatory condition predisposed to atopic disease. Generally, most cases are bilateral with symmetrical involvement.<sup>1</sup> Asymmetrical involvement can, however, be found and unilateral cases are uncommon.<sup>1 2 3</sup>

Giant papillae or 'cobblestone' papillae at the upper tarsal conjunctiva is one of the most common findings in VKC. Treatments of choice for reducing papillae include topical medications (ie, antihistamines, mast cell stabilisers, corticosteroids, cyclosporine A and tacrolimus) and/or oral medications (ie, antihistamines and corticosteroids) as well as immunotherapy for recalcitrant cases.<sup>1</sup> In case of failure to respond to these medications, supratarsal corticosteroid injection has been reported. Partial improvement with possible recurrence was observed. We report a paediatric patient with asymmetrical VKC successfully treated with two doses of supratarsal corticosteroid injection after failure of topical as well as oral medications.<sup>1-3</sup>

**CASE PRESENTATION**

A 6-year-old Thai girl presented after 2 months of itching, foreign body sensation, copious discharge and ptosis in the left eye. Her best corrected visual acuity was 20/20 in the right eye and 20/40 in the left. Slit-lamp biomicroscopy of the left eye revealed bulbar conjunctival redness, mucous discharge and giant (cobblestone) papillae at the upper tarsal conjunctiva with superficial punctate

keratitis (figure 1A). There was a mild papillary reaction without corneal involvement in the right eye (figure 1B). She had no history of wearing contact lenses, having an ocular prosthesis or undergoing ocular surgery (eg, glaucoma filtering surgery or sclera buckles).

**INVESTIGATIONS**

Since the papillae were relatively large and recalcitrant to all medications, incisional biopsy of the tarsal conjunctiva was undertaken to rule out a conjunctival tumour. The pathological examination revealed fibrovascular tissue with infiltration of eosinophils and other chronic inflammatory cells.

**TREATMENT**

For the first 2 months, both eyes were treated four times a day with topical mast cell stabiliser (sodium cromoglycate) and the left eye was additionally treated with a potent topical corticosteroid (prednisolone acetate 1%) four times a day. The symptoms as well as the papillary reaction in the right eye improved markedly; however, the cobblestone papillae and punctate corneal erosion (including ocular itching in the left eye) persisted. The ketotifen fumarate 0.025% eye drops were therefore prescribed instead of the sodium cromoglycate and the frequency of topical prednisolone acetate was increased to six times a day. The symptoms, however, worsened.

A 20 mg injection of supratarsal triamcinolone acetonide was scheduled for the left eye. Supratarsal injections in small children are difficult to administer without sedation and thus general anaesthesia was chosen in this patient. After the injection, the size of the cobblestone papillae significantly decreased. Since some residual papillae remained, a further supratarsal steroid injection was performed.

**OUTCOME AND FOLLOW-UP**

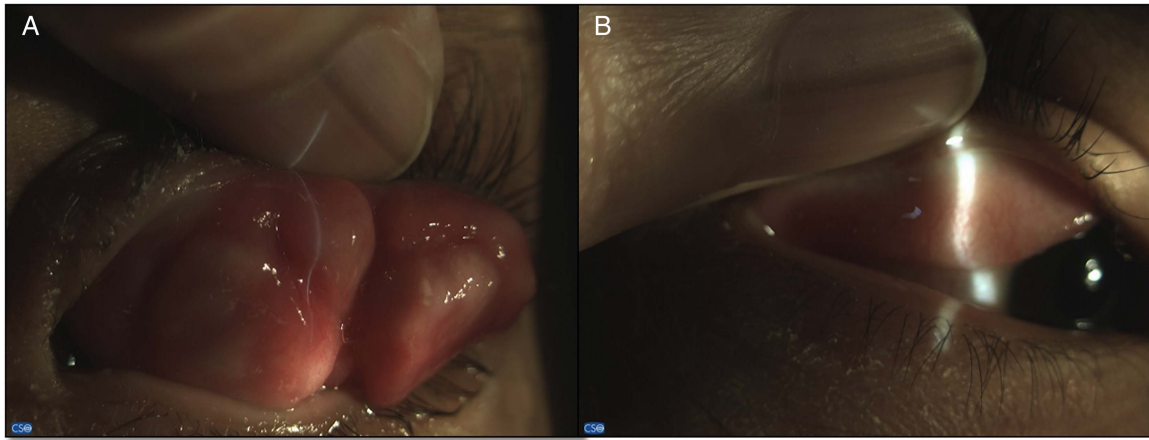
Two months later, the cobblestone papillae and punctate epithelial erosion (including allergic symptoms) were completely alleviated (figure 2). There was no further recurrence during 18 months of follow-up. The intraocular pressures—measured by Goldmann tonometry—were not elevated; and no other ocular side effects were detected. After the supratarsal steroid injection, only antibiotics without any antiallergic eye-drops were prescribed and used for 1 week.

**DISCUSSION**

Generally, VKC is a chronic bilateral and symmetrical disease. Since asymmetrical involvement is



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**Figure 1** Slit-lamp photograph of eyelids with eversion showing cobblestone papillae in the left eye (A) and fine papillae in the right eye (B).

rare, giant papillary conjunctivitis (GPC), which induces similar conjunctival changes as VKC, should be excluded.<sup>4</sup> GPC is not a true ocular allergy; instead, the main cause is a consequence of repetitive microtrauma or irritative event(s) (ie, from sutures, contact lenses or ocular prostheses).<sup>4 5</sup> Owing to the extremely large, giant (cobblestone-like) papillae we found, and significant corneal involvement with no history of irritative stimuli, VKC was the most likely cause in our patient.

Conjunctival tumours can simulate allergic conjunctivitis. Lymphoid tissue from conjunctival lymphoma may sometimes be misdiagnosed as giant papillae.<sup>6 7</sup> Should the condition be unresponsive to antiallergic drugs and if the papillae are relatively large, a conjunctival tumour should be included in the differential diagnosis. Incisional biopsy was, therefore, undertaken in our case but was negative and allergic conjunctivitis was approved as the diagnosis.

Pharmacological therapy is the main treatment of all types of allergic conjunctivitis. For VKC, such therapy can be palliative but may not eliminate the disease. Recurrence can occur when the medications are withdrawn.<sup>1 4</sup> In severe cases with giant papillae unresponsive to medical therapy, surgical management (ie, excision of the papillae or cryotherapy) often gives only a transient response,<sup>8–10</sup> but if combined with amniotic membrane transplantation, better results have been reported.<sup>11</sup>

Supratarsal corticosteroid injection has been found to be an effective and relatively safe treatment for refractory VKC.<sup>12–15</sup>



**Figure 2** Slit-lamp photograph of eyelid with eversion showing complete recovery in the left eye.

Either short-acting dexamethasone or intermediate-acting triamcinolone are equally effective with a low risk of increased intraocular pressure.<sup>12 13</sup> In support of such an approach, previous studies have reported a  $\geq 50\%$  decrease in papillae size with complete healing of a shield ulcer.<sup>12 15</sup> Injections are repeated when the disease recurs or is recalcitrant.<sup>15</sup> In our patient, after two injected doses, there was a 100% decrease in papillae and the corneal erosion was totally healed. Most antiallergic drugs were maintained after surgery, as in prior reports; however, other medications may not be required after the two doses of injection as in our case. Furthermore, most studies proposed partial response and recurrence after injection.<sup>13–15</sup> In the present observation, there was a complete recovery without recurrence after two doses of injection.

Supratarsal corticosteroid injection is an effective choice of treatment for refractory VKC. Significant improvement without any long-term medications has been observed.

### Learning points

- ▶ The associated risk factors for giant papillary conjunctivitis should be excluded before diagnosis of vernal keratoconjunctivitis (VKC).
- ▶ Although the adverse effects of corticosteroid were not detected in the present study, they should be monitored for meticulously.
- ▶ This case shows the benefits of supratarsal corticosteroid injection for refractory VKC without any other medications.

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