

CORRESPONDENCE



Pulsed oral corticosteroids for the treatment of vernal and atopic keratoconjunctivitis: a management plan

Pasan Fernando¹ · Elisa Marziali² · Marta Chlubek¹ · Daniel F P Larkin² · Melanie Hingorani² · Stephen Tuft² · Annegret Dahlmann-Noor²

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To the Editor:

Vernal keratoconjunctivitis (VKC) and atopic keratoconjunctivitis (AKC) are severe allergic diseases of the ocular surface that can have sight-threatening complications such as corneal macro-erosion, shield-shaped ulcers and plaques [1, 2] (Fig.1). They are underdiagnosed and undertreated due to the similarity of symptoms to non-sight-threatening ocular allergies, and the lack of a consistent management approach [3]. Specifically, practitioners may be unaware of the benefit of a short pulse of oral corticosteroids (OCS). In this article we review clinical practice at a UK tertiary referral centre and propose a management algorithm.

The study was registered as a service evaluation. We reviewed the medical records of Fifteen children prescribed OCS (prednisolone 1 mg/kg for three days) for VKC/AKC between 2008 and 2018, noting age, gender, severity of corneal epithelial disease (modified Cameron [1]), and outcome including the proportion of ulcers healed within 2 weeks of starting OCS, proportion requiring surgical intervention, and time between starting OCS and re-epithelialisation. In children prescribed OCS on multiple occasions, these were included as distinct episodes, resulting in 30 interventions.

The median age at diagnosis was 11 years (IQR 9–14). All but one patient were boys (94%). Indications for OCS were as follows: the presence of ulceration or severe punctate corneal epitheliopathy indicative of imminent ulceration; to control inflammation before and after lamellar keratectomy. Twelve interventions (40%) involved grade 3

lesions (Fig.1). Of these, OCS was supplementary to superficial keratectomy in 7 (58%), with early re-epithelialisation in all cases. In the five who did not have early keratectomy, two resolved with OCS alone but two eventually required keratectomies (48 and 63 days after starting OCS). One was lost to follow-up. Four cases (13%) involved grade 2 lesions. Two re-epithelialised within 14 and 28 days but two required superficial keratectomy four weeks after starting OCS. Ten interventions (33%) involved stage 1 lesions, of which six re-epithelialised within 14 days, one within 22 days, and three were lost to follow-up. Four cases (13%) received OCS for pre-stage-1 lesions, with the epithelium stabilising within 14 days. No child suffered adverse events from OCS.

In summary, OCS led to swift re-epithelialisation across severity gradings 1–3 when used as an adjunct to lamellar keratectomy or as the primary treatment. The limitations of this study are its retrospective design and lack of controls. We sought to reduce selection and reporting bias by including all children treated with OCS for severe allergic eye disease during the observation period. A recent review of ocular allergy treatment includes OCS for recalcitrant VKC [4], but few studies have reported the use of OCS in VKC. In a case of paediatric AKC resistant to topical treatment there was a good response to oral immunosuppression including OCS [5]. Clinical experience suggests that OCS is likely a safe and effective treatment or adjunct

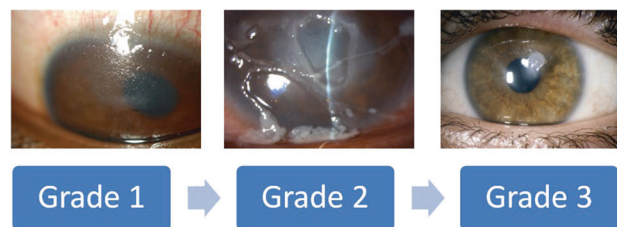


Fig. 1 Severity stages of VKC that might benefit from OCS (modified, after [1]). Grade 1: Coarse epitheliopathy. Grade 2: Epithelial defect/macroerosion, ulcer with clear or translucent base or with microplaque. Note copious mucus. Grade 3: Established plaque.

✉ Annegret Dahlmann-Noor
annegret.dahlmann-noor@nhs.net

¹ University of Cambridge, Cambridge CB2 1TN, UK

² NIHR Moorfields Biomedical Research Centre, 162 City Road, London EC1V 2PD, UK

Pre-Stage 1	Stage 1	Stage 2	Stage 3
Fine punctate epithelial stain (early keratopathy)	Coarse epitheliopathy/ adherent mucus	Epithelial defect/ macroerosion/ ulcer with clear or translucent base or with minimal plaque	Established plaque
Topical treatment*	Maximum topical treatment**	Maximum topical treatment plus oral steroid plus topical antibiotic	Maximum topical treatment plus oral steroid; arrange superficial keratectomy and supratarsal steroid once inflammation controlled (1-2 weeks)

Fig. 2 Management-based staging of shield/plaque ulcers. *Topical treatment: topical mast cell stabiliser/antihistamine, topical steroid four to six times a day and ciclosporin A 1 mg/ml two to four times a day. **Maximum topical treatment: G dexamethasone 0.1% or prednisolone 1% forte every one to two hours during the day plus

ciclosporin A 1 mg/ml four times a day plus mast cell stabiliser/antihistamine plus acetylcysteine 10% if available (alternatively, use 5%). In selected stage 1 cases consider oral corticosteroids (non-compliance, very inflamed appearance of tarsal conjunctiva with mucous between giant papillae): prednisolone 1 mg/kg once daily for 3 days.

to surgery for severe VKC/AKC. Ideally, a RCT could formally test this. However, the rarity of this condition and the lack of a suitable placebo hampers study design. In the interim, we recommend the treatment algorithm illustrated in Fig. 2, with regular audit of outcomes.

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Compliance with ethical standards

Conflict of interest ADN is advisor to Santen Inc.

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