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CORRESPONDENCE

Topical ciclosporin 1 mg/ml for chronic ocular surface inflammation in children

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Vernal keratoconjunctivitis, atopic keratoconjunctivitis, and blepharokeratoconjunctivitis are common forms of chronic ocular surface inflammation in children, frequently requiring intermittent or long-term use of topical steroids to control symptoms and preserve corneal clarity [1–3]. Topical steroid use can be complicated by lens opacification and intraocular pressure rise, which can be challenging to accurately check for in children. Therefore, there is a need for topical steroid-sparing agents. Since 2015, guttae ciclosporin A (g.CsA) 1 mg/ml eye drops have been licensed for the treatment of severe keratitis in adults with dry eye disease. Off-label use in children has gradually replaced the veterinary 0.2% CsA ointment or hand-made preparation of CsA 2% dissolved in maize oil, providing wider availability to patients. We aimed to review the efficacy and safety of g.CsA 1 mg/ml in the first cohort of children attending our facility to receive this preparation.

Following internal trust approval, our retrospective service evaluation (CA17/CED/01) identified 61 children under 16 years of age who had been prescribed g.CsA 1 mg/ml between June 2015 and December 2016, from the hospital pharmacy database. We reviewed electronic and paper-based records (Table 1). We excluded 11 children (incomplete data $n = 4$, emigrated $n = 1$, previous use of CsA ointment $n = 3$, shared care leading to undocumented treatment changes $n = 3$).

Within 12 weeks of starting g.CsA 1 mg/ml, topical steroids were discontinued in 25 (50%) and reduced in frequency or strength in 17 (34%) children. Mast cell inhibitors and/or anti-histamines were continued in 27, and newly started in 5 children for atopic-related disease. The median best corrected vision on the day g.CsA first prescribed was 0.16 (0.02–0.3) logMAR, and at three months, 0.09 (0–0.23) logMAR. Two patients (4%) reported adverse effects (stinging at the time of instillation) and discontinued the g.CsA (Table 2).

Topical CsA is recognized as an effective and steroid-sparing treatment in a range of T-cell mediated ocular surface inflammatory disease in adults [1]. Our retrospective review indicates good tolerance and steroid-sparing effect (84%) in children. The main limitations of this report are the

Table 1 Demographics and treatment summary

$n = 50$	
Gender	Female $n = 23$; Male $n = 27$
Mean age	10.2 years (SD 3.1)
Median dose frequency	Twice a day
Mean duration of treatment with CsA	35.5 weeks (SD 26.4)
Indication for treatment	Vernal keratoconjunctivitis - VKC ($n = 26$, 52%)
	Blepharokeratoconjunctivitis - BKC ($n = 16$, 32%)
	Atopic keratoconjunctivitis - AKC ($n = 5$, 10%)
	Interstitial keratitis ($n = 2$, 4%)
	Perennial allergic conjunctivitis ($n = 1$, 2%)
Topical steroids before CsA	Dexamethasone ($n = 31$, 65%) Fluorometholone (FML) ($n = 9$, 19%)
$n = 48$	Prednisolone 1% ($n = 3$, 0.1%)
	Dexamethasone and FML ($n = 2$, 0.04%)
	Rimexolone ($n = 1$, 0.02%)
	Dexamethasone by day and oc maxitrol™ at night ($n = 2$, 0.04%)
Topical mast cell inhibitors and/or anti-histamines before CsA	Olopatadine $n = 26$ Nedocromil $n = 1$

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Table 2 Reasons for stopping topical g.CsA 1 mg/ml

Person deciding to discontinue treatment	Reason for discontinuation	*n*	%
Family/child	Resolution of symptoms	6	12
	Stinging on instillation, eyes felt worse	2	4
	Reason not documented	9	18
Ophthalmologist	Resolution of symptoms/ Improvement of signs	5	10
	Patient intolerance	1	2
	No improvement in response to treatment	3	6

small sample size, selection bias, and incomplete data. As g. CsA 1 mg/ml was only introduced in 2015, the follow-up period is limited so we cannot comment on the risk of long-term complications such as ocular surface squamous cell neoplasia, although the previous data for other preparations used for over 30 years indicate that the risk of serious adverse events is minimal and unproven [4].

Based on this study, our first cases and continuing experience in using the new preparation, topical CsA appears safe and highly effective for disease control and as a steroid-sparing agent in chronic ocular surface inflammation in children at a dose of between two and four times daily. The lack of licence for this age group and indication leads to difficulties accessing it from non-specialist units and as repeat prescriptions in primary care. A randomized controlled trial of g.CsA 1 mg/ml in children with VKC has recently been completed [5], and licensing for this indication and age group will permit wider use.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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