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Topical Adrenaline (1:1000) for the Management of Severe Tarsal Conjunctival Chemosis

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Abstract: Severe, refractory tarsal conjunctival chemosis developed in a severely autistic 9-year-old boy with a history of allergic conjunctival chemosis. The child was initially treated with topical and oral antihistamines, topical steroids, lubricants, and topical phenylephrine 10% with worsening of condition until complete eyelid eversion secondary to gross conjunctival chemosis with total obstruction of vision in the affected eye. Subsequently, he was successfully treated with topical adrenaline (1:1000) with rapid and lasting effect. The authors suggest that topical (1:1000) adrenaline is an effective therapy when other conservative therapies fail and can be useful in avoiding examination under general anesthetic and invasive intervention. Such a case has not been previously reported in the literature.

CASE REPORT

A 9-year-old severely autistic boy presented to eye casualty with gross left upper eyelid tarsal conjunctival chemosis and secondary upper eyelid eversion. The boy had a history of recurrent allergic conjunctivitis and habitually passes a finger beneath the upper eyelid to directly scratch the tarsal conjunctiva. Despite conservative management with oral and topical antihistamines and steroids, lubricants, topical phenylephrine (10%), and parental attempts to limit further mechanical trauma, his condition worsened with increasing chemosis, complete upper eyelid eversion and total obstruction of vision in the affected eye over a course of 10 days. Excoriations were visible on the exposed, inflamed, and



FIG. 1. Left upper eyelid tarsal conjunctival chemosis with eyelid eversion.



FIG. 2. OS 10 minutes after topical adrenaline (1:1000).

very chemotic tarsal conjunctiva (Fig. 1). There was no evidence of infection, and the bulbar conjunctiva appeared uninvolved.

This was the child's fifth presentation within the last 3 years. Previous episodes had responded to topical phenylephrine 10% and ice pack application, but on this occasion, these were not successful. The child was severely distressed. After ascertaining that the child had no history of cardiac or respiratory disease, adrenaline 1:1000 obtained from accident and emergency was applied to a gauze swab and held on the eyelid for approximately 30 seconds. Within 90 seconds eyelid chemosis resolved sufficiently for the eyelid to be returned to the anatomical state (Fig. 2) without systemic side effects. The child was maintained on topical and oral antihistamines and lubricants and followed up the next day and the following week; there was no rebound chemosis.

COMMENT

Chemosis is suggestive of severe inflammation and can be secondary to trauma, infection, allergy, or retrobulbar masses. Although usually self-limiting, conjunctival inflammation can be prolonged, uncomfortable, and may progress to chronic chemosis, with eversion of the eyelid and subsequent obstruction of vision.^{1,2} Subsequent eyelid closure problem, exposure, and dryness likely worsen the inflammation resulting in a positive feedback cycle that is difficult to break.

Adrenaline is a sympathomimetic drug that acts as an agonist on adrenergic receptors resulting in vasoconstriction with subsequent reduction in mucosal oedema. Topical (1:1000) adrenaline is a stronger and thus more effective vasoconstrictor than phenylephrine 10%. Adrenaline also downregulates the release of

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Accepted for publication January 4, 2014.

The authors have no financial or conflicts of interest to disclose.

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DOI: 10.1097/IOP.0000000000000143

inflammatory mediators from mast cells and basophils including histamine.³ Ocular effects include mydriasis and decreased intraocular pressure, which did not occur in our reported case with application solely on the tarsal conjunctiva. Since the discontinuation of the usage of topical adrenaline in the treatment of glaucoma, adrenaline has had limited uses in ophthalmology.⁴

There has been no previously reported usage of 1:1000 adrenaline as topical therapy for conjunctival chemosis. The authors suggest that in the absence of respiratory or cardiac comorbidities, topical adrenaline (1:1000), which is readily available in all crash trollies and accident and emergency departments, may be beneficial in severe, intractable tarsal conjunctival chemosis in children in whom conservative measures have failed. Topical adrenaline (1:1000) allowed sufficient vasoconstriction for normal eyelid apposition, thereby breaking the positive feedback cycle of inflammation and avoiding the potential examination under general anesthetic and invasive intervention that would have been distressing for the child and his parents.^{1,5} However, repeated or routine use for example

in postoperative chemosis is not advisable due to potential systemic effects including tachycardia and bronchodilation, particularly in elderly patients with cardiac or respiratory comorbidities.

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