

Topical adapalene for the treatment of follicular conjunctivitis due to periocular molluscum contagiosum in children[☆]

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ABSTRACT

Purpose: Periocular molluscum contagiosum can cause a chronic secondary follicular conjunctivitis or keratoconjunctivitis that rarely leads to corneal scarring and visual impairment. We describe two cases of follicular conjunctivitis due to periocular molluscum contagiosum that were successfully treated with topical adapalene 0.1%.

Observations: Case 1 is a 9-year old female with a history of leg molluscum contagiosum who presented with three 1mm flesh-colored umbilicated papules on the periocular skin of the right eye with associated follicular conjunctivitis and diffuse corneal punctate epithelial erosions. Ocular symptoms were persistent for 6 months. Case 2 is a 4-year old female with a 3-month history of right periocular bumps and one month of conjunctival redness with eyelid edema. Examination revealed umbilicated flesh colored nodules on the right upper and lower eyelids with associated trace conjunctival injection. Both patients experienced rapid resolution of both eyelid involvement and conjunctivitis following the use of twice daily topical adapalene 0.1% to the eyelid lesions, with no reported side effects.

Conclusions and importance: Topical adapalene 0.1% is a cost-effective, convenient, and non-toxic over-the-counter retinoid cream that should be considered for first-line therapy in the treatment of periocular molluscum contagiosum and any associated conjunctivitis.

1. Introduction

Molluscum contagiosum is a common childhood skin infection caused by the molluscum contagiosum poxvirus. Molluscum contagiosum classically presents as flesh-colored, dome-shaped, umbilicated papules that can occur anywhere on the body. Occasionally, molluscum contagiosum can affect ocular tissue, most notably the eyelids and less commonly as primary lesions on the conjunctiva. Molluscum contagiosum, although usually self-limited, may persist for months to years and, if present in a periocular distribution, can cause a chronic secondary follicular conjunctivitis or keratoconjunctivitis. In severe cases, molluscum-associated chronic keratoconjunctivitis can lead to corneal scarring and visual impairment. Involution of the eyelid lesions

causes resolution of the incited ocular inflammation. Popular treatment options to hasten involution include topical keratolytics, cantharidin and imiquimod, but these may be toxic when applied to the periocular region. We report two cases of periocular molluscum contagiosum successfully treated with topical adapalene 0.1% gel, a commercially available third-generation retinoid, which may be a safe and effective treatment for ophthalmic molluscum contagiosum in pediatric patients.

2. Case 1

A 9-year old otherwise healthy female presented to the pediatric ophthalmology clinic at Seattle Children's Hospital with six months of right eye redness. She denied changes in vision, eye pain, photophobia,

[☆] This study was conducted at Seattle Children's Hospital.

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discharge, tearing or itching. She was previously diagnosed with molluscum contagiosum on her right leg by her pediatrician one year before presentation to ophthalmology, and her family elected observation without intervention at that time. On examination in the ophthalmology clinic, visual acuity was 20/15 in each eye, without correction. Three 1mm flesh-colored umbilicated papules were visible on the periocular skin: one on the right lower lid 3mm from the lid margin, and two on the right upper lid between the brow and lid crease (Fig. 1A). Slit lamp examination was notable for trace right eye conjunctival injection with mild follicular reaction and 1+ diffuse corneal punctate epithelial erosions. No lagophthalmos, trichiasis, blepharitis or rapid tear break up time were seen to suggest other underlying causes of punctate epithelial erosions. The remainder of the right and left eye examinations were unremarkable.

The patient was diagnosed with presumptive molluscum contagiosum with associated keratoconjunctivitis of the right eye; treatment with topical adapalene 0.1% gel twice daily to all skin lesions was recommended. Other diagnoses were considered unlikely so no viral culture, bacterial culture or PCR was obtained. Within a few days, the patient's mother reported that the skin lesions and eye redness resolved, and at that point the medication was discontinued to the eye. However, the lesions again appeared in the right upper brow and cheeks, therefore the medication was applied to those regions for the next few weeks over which time the patient's mother noted their disappearance. Four months later, a dermatologist clinically diagnosed molluscum contagiosum based on a new small papule with central small white core on the left cheek that was without pain, pruritis, bleeding or oozing. There was no recurrence of previous skin lesions. Application of adapalene 0.1% twice daily to the left cheek lesion was recommended. Five days later, the ophthalmology visit demonstrated no remaining skin lesions and complete resolution of the follicular conjunctivitis and punctate epithelial erosions on slit lamp examination (Fig. 1B). The remainder of the examination was unremarkable in both eyes. No treatment complications were reported from the adapalene, including no local irritation.

3. Case 2

A 4-year old otherwise healthy female presented to Newton Well-sley Eye Associates in Newton, Massachusetts with a three-month history of "bumps" on the right upper and lower eyelids. At that time, the mother reported one month of mild right eyelid swelling and redness that did not improve with topical erythromycin ointment. She did not have vision changes, discharge or tearing, per parental report.

On examination, visual acuity was 20/30 in each eye, using Allen figures. Mild right eyelid edema was seen along with multiple small 1mm to sub-millimeter flesh-colored lesions with central umbilication along both upper and lower eyelids of the right eye. The patient also had trace injection of the conjunctiva of the right eye, however, the cornea remained clear and without infiltrates. The remainder of the examination in both eyes was unremarkable. The patient was diagnosed with presumptive right periocular molluscum contagiosum with associated conjunctivitis and treated with a 2-week course of dexamethasone/neomycin/polymyxin B ointment twice daily.

At the 3-month follow-up visit, the patient's mother reported no improvement in eyelid lesions or ocular injection. On examination, visual acuity was unchanged. Slit lamp examination demonstrated an interval increase in size of the central right lower eyelid lesion, from approximately 1mm–2.8mm × 2.5mm, and stable smaller lesions noted above. The patient continued to have trace injection of the conjunctiva, however now was noted to have 1–2+ palpebral conjunctival follicles. The corneas were clear and without infiltrates bilaterally. The remainder of the examination was unremarkable. The patient was diagnosed clinically with progressive molluscum contagiosum and associated conjunctivitis; treatment was recommended using adapalene 0.1% gel twice daily applied directly to all skin lesions. Other diagnoses were considered unlikely so no viral culture, bacterial culture or PCR was obtained. A two-month follow-up appointment was scheduled, however, the patient's mother canceled citing complete resolution of lesions and ocular injection with the treatment. There were no reported side effects of the adapalene, including no local irritation. The patient was subsequently lost to follow up, and no photographs are available.

4. Discussion

Periocular molluscum contagiosum is typically benign, but localized viral shedding can result in chronic follicular conjunctivitis and, rarely, vision-threatening keratoconjunctivitis.^{1–3} Safe and effective therapies are needed to treat eyelid lesions and reverse downstream ocular sequelae. Many traditional therapies for molluscum contagiosum are toxic to the eye and none appear to be definitively effective^{1,4–6}; therefore, ophthalmologists often resort to unroofing or surgically excising eyelid molluscum lesions,⁵ which for many children requires general anesthesia. Along with anesthesia risks, surgical excision may lead to a poor cosmetic outcome, with potential for scarring, pigmentation changes and eyelash loss.

Topical retinoids are derived from vitamin A and have been utilized

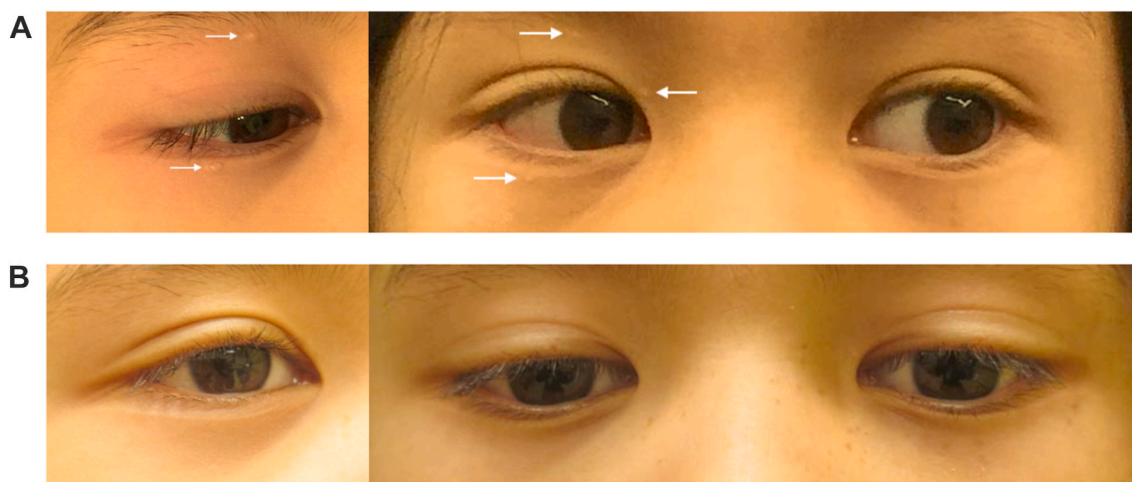


Fig. 1. (A) Patient in Case 1 showing two 1mm flesh-colored umbilicated papules located on the right upper eyelid, one on the right lower eyelid, and trace conjunctival injection. Image was taken 14 days prior to treatment initiation with adapalene gel. (B) Patient in Case 1 showing resolution of umbilicated papules on right upper and lower eyelids. Patient's mother reported complete resolution of lesions and redness within a few days of starting treatment with adapalene gel. Image was taken 4 months after treatment cessation.

by dermatologists to treat cutaneous molluscum contagiosum.^{4,7,8} The mechanism by which topical retinoids treat molluscum contagiosum is thought to be due to induction of a localized irritant response that stimulates the immune system to recognize the virus.⁷ Topical retinoids are regarded as safe for use in the periocular region as they are used routinely by dermatologists for a number of skin conditions that require application to the entire face, including acne vulgaris and photo-damaged skin. First-generation topical retinoids have been reported to cause minor ocular side effects such as dry eye and blephar-conjunctivitis in some patients.⁹ However, the newer, third-generation topical retinoids are milder, better tolerated and do not appear to cause the same side effects as their earlier counterparts.¹⁰ For example, recent case series showed that tazarotene, another third-generation topical retinoid, improved ectropion in five pediatric patients with lamellar ichthyosis, without any reported ocular side effects related to its use.¹¹

Adapalene is another third generation retinoid and a naphthoic acid derivative more structurally rigid than previous retinoids, which prevents binding to multiple retinoid receptors, thus decreasing off-target effects.¹² Both patients in our case series experienced rapid resolution of both eyelid involvement and conjunctivitis following the use of topical adapalene 0.1% to the eyelids. Twice daily dosing was chosen as it was believed this was sufficient to stimulate an immune response and induce viral clearing. No side effects were reported at this dosage. Nonetheless, given the natural history of spontaneous involution of molluscum lesions over months to years, we cannot exclude the possibility that our cases would have resolved on the same timeline without treatment. Both patients experienced symptoms for at least three months, exercised watchful waiting without improvement, and in one case, failed erythromycin and dexamethasone/neomycin/polymyxin B therapy prior to the initiation of adapalene. As such, our results are promising that the use of adapalene may be a safe and effective option for treating periocular molluscum contagiosum and any associated conjunctivitis. Furthermore, adapalene may be the best candidate among available topical retinoids as it has been shown to be less irritating, affordable, and is conveniently available over-the-counter.¹²

5. Conclusion

Given the considerable cost-effectiveness, convenience, and low risk to the patient relative to alternative approaches, topical adapalene should be considered as first-line treatment for periocular molluscum contagiosum and any associated conjunctivitis.

Patient consent

Verbal consent to publish the case series was obtained from the

parents and legal guardians for both patients. This report does not contain any personal information that could lead to the identification of the patient.

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