

Etiology and Management of Allergic Eyelid Dermatitis

Smith Ann M. Chisholm, M.D., Steven M. Couch, M.D., and Philip L. Custer, M.D.

Department of Ophthalmology and Visual Sciences, Washington University in St. Louis, St. Louis, Missouri, U.S.A.

Purpose: Allergic dermatitis is a common but often misdiagnosed condition that can present with a variety of findings including inflammation, eyelid malposition, and tearing. This study was performed to identify likely etiologies, along with presenting findings and treatment strategies for allergic dermatitis.

Methods: A retrospective review of clinical records was performed of patients diagnosed with allergic dermatitis in academic oculoplastics practices from 2002 to 2014. Initial consultation included review of medications and cosmeceuticals. Suspected allergens were discontinued and an ophthalmic steroid was applied. Persistent allergic dermatitis led to further medication changes or formal allergy testing in an effort to identify the causative agent.

Results: Sixty-one patients were identified; average age was 66 years old (range: 33–94), and 45 of the patients were women (74%). Average follow up was 7 months (range: 1–60 months). Reasons for referral included epiphora (31.2%), ectropion (24.6%), blepharitis/dermatitis (18.0%), and “droopy” eyelid (14.8%). Presenting symptoms included irritation (77.1%) and tearing (50.8%). Average duration of symptoms was 16.5 months (range: 2 days–8 years). The 3 most common etiologies were eye drops (54.2%), creams/lotions (24.6%), and cosmetics (13.1%). Rubbing/manipulation was also thought to be a significant factor in 30% of the patients. Overall, the initial treatment regimen led to at least partial resolution in 88% of patients and 66% experienced complete resolution. Patients resistant to therapy were referred for patch testing. At follow up, 98% of patients had improvement in their symptoms and 90% of patients had complete resolution of their symptoms.

Conclusions: Allergic eyelid dermatitis is commonly related to eye drops and topical cosmetics or skin care products. Identification and elimination of causative agents is the mainstay of management. Topical corticosteroids often facilitate resolution of the associated inflammation. Therapy resistant patients may benefit from formal allergy testing.

(*Ophthalm Plast Reconstr Surg* 2016;XX:00–00)

Eyelid dermatitis and blepharitis is a commonly encountered problem in an ophthalmic practice that can present with a multitude of signs and symptoms. The inflammation can involve the eyelid margin, skin, or conjunctiva.¹ While an allergic reaction or hypersensitivity to a topical product or environmental stimulus is a common cause of eyelid inflammation,

the diagnosis is often unrecognized by eye care professionals. Prolonged eyelid inflammation contributes to a variety of secondary conditions including tearing, ectropion, ptosis, and exacerbation of dermatochalasis.^{2,3}

Although the dermatology literature has several studies describing various types of eyelid dermatitis, there is little information outlining the most common causes for allergic dermatitis presenting to an ophthalmologist or what treatments result in successful resolution.^{4–7} This study was performed to determine common etiologies, presenting symptoms, and treatment success in this condition.

METHODS

Following institutional review board approval, a retrospective chart review was performed on patients treated for allergic dermatitis/blepharitis between 2002 and 2014. Data collected included age, gender, laterality, signs/symptoms, time course, products used in/around the eyes, known medication and environmental allergies, work-up, established etiology of dermatitis, attempted/failed treatments, successful treatments, and resolution. Patch testing results were collected in patients requiring further workup. All the collected data were stored in password-secured files on HIPAA-compliant computers to appropriately protect individually identifiable health information.

In patients with suspected allergic dermatitis, a thorough examination was performed and historical information collected including a thorough review of ocular medications and periocular/facial cosmeceuticals. Patients were usually treated with topical ophthalmic steroid ointment applied to the eyelids in addition to cessation of the suspected allergen. Topical steroids were tapered to assess for recurrence of symptoms. Persistence or recurrence of symptoms prompted retreatment with steroids and cessation of other potential causes. Resistance to treatment or unexplainable recurrences of allergic dermatitis led to dermatology consultation for patch testing.

Data were analyzed using descriptive statistics in Excel software to further elucidate the demographics of the patients who present with allergic dermatitis, the most common etiologies of allergic dermatitis, and successful treatment regimens for allergic dermatitis. Comparisons between groups were performed using paired *t* tests.

RESULTS

During the study period, 61 patients were treated for allergic dermatitis. The average age of the patients was 66 years old (range: 33–94). The majority of patients were women (74% women, 26% men). Average follow up was 7 months (range: 1–60 months).

Reasons for referral were varied including tearing, ectropion, and eyelid malposition (Table 1). Only 18% of patients were referred for blepharitis or dermatitis. Average duration of symptoms before referral to an oculoplastics specialist was 16 months (range: 2 days–8 years). The majority of patients (64%) were unsuccessfully treated before referral with a variety of topical prescription and over-the-counter medications. Several patients (23%) were using warm compresses and eyelid scrubs at the time of presentation. On average, patients used 2.5 different drops or lotions without resolution of their symptoms. No patients had surgery for their conditions before referral.

Accepted for publication April 6, 2016.

Presented in part as a poster at Fall 2014 American Society of Ophthalmic Plastic and Reconstructive Surgery Annual Meeting in Chicago, IL.

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

Address correspondence and reprint requests to Steven M. Couch, M.D., 660 S. Euclid Avenue, Campus Box 8096, St. Louis, MO 63110. E-mail: Couchs@vision.wustl.edu

DOI: 10.1097/IOP.0000000000000723

TABLE 1. Referring diagnoses

Diagnosis	Number (%)
Epiphora	19 (31.2)
Ectropion	15 (24.6)
Blepharitis/dermatitis	11 (18.0)
Ptosis/dermatochalasis	9 (14.8)
Eyelid lesions	5 (8.2)
Dry eye syndrome	4 (6.6)

TABLE 2. Presenting symptoms

Symptom	Number (%)
Irritation/itching/burning	47 (77.1)
Tearing	31 (50.8)
Redness of eyelid skin	11 (18.0)
Discharge/matter/crusting	8 (13.1)
Pain/discomfort	8 (13.1)
Drooping eyelids	8 (13.1)
Dryness	7 (11.5)
Redness of eyes	7 (11.5)
Swelling of eyelids	6 (9.8)
Photophobia	3 (4.9)

TABLE 3. Presenting signs

Sign	Number (%)
Eyelid margin inflammation	56 (91.8)
Eyelid skin inflammation	53 (86.9)
Conjunctival reaction	35 (57.4)
Ectropion	23 (37.7)
Punctal congestion	14 (23.0)
Ptosis	5 (8.2)

TABLE 4. Presumed etiologies

Etiology	Number (%)
Glaucoma drops*	19 (31.2)
Over the counter lotions/creams	15 (24.6)
Other drops/preservatives	14 (23.0)
Cosmetics	8 (13.1)
Environmental allergens	8 (13.1)
Prescription topical creams	6 (9.8)

*Majority brimonidine (63%).

Presenting symptoms included eyelid irritation or itching, tearing, redness of eyelids, discharge, and drooping eyelids (Table 2). Clinical signs commonly seen were marginal eyelid inflammation, eyelid skin inflammation, conjunctival reaction, and eyelid malposition (Table 3). Inflammatory findings were seen in the lower eyelids of 46 patients (75.4%), upper eyelids in 43 patients (70.5%), medial canthus in 15 patients (24.6%), and lateral canthus in 5 patients (8.2%).

Presumed etiology for the allergic dermatitis was determined based on resolution of symptoms with discontinuation of the agent. The 3 most common likely causes were topical eye drops (Fig. A, B), topical creams/lotions (Fig. C, D), and cosmetics (Table 4). Rubbing/manipulation was also thought to be a significant contributing factor in 18 patients (29.5%). Implicated glaucoma medications included brimonidine in 12 patients (63.2%), prostaglandin analogs in 3 patients (15.8%), dorzolamide-timolol in 2 patients (10.5%), and timolol in 2 patients (10.5%).

TABLE 5. Characteristics of drop vs. skin care products

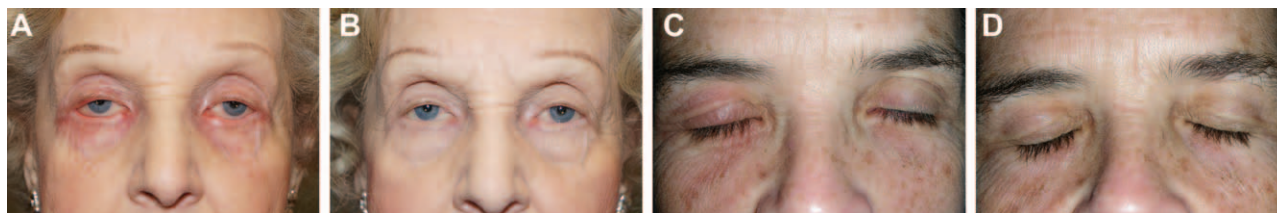
	Drops	Skin care	<i>p</i>
Average age	71	61	0.468
% women	63.6%	76.2%	0.838
% conjunctival reaction	81.8%	33.3%	0.0002
% punctal congestion	27.3%	14.3%	0.118
% ectropion	45.5%	28.6%	0.102

Comparisons were performed between patients with allergies to topical drops and those with allergies to external lotions. A statistically significant factor differentiating these 2 was conjunctival reaction, which was seen in 82% of patients on drops and only 33% of those using topical lotions (Table 5). There was no statistical difference in the location of inflammation (upper eyelids vs. lower eyelids) between the various etiologies.

The standard management protocol for these patients was abstinence of the suspected offending agent(s) and initiation of a steroid ointment 2 times per day for 1 month. The majority of patients ($n = 45$, 73.8%) were treated with loteprednol etabonate ophthalmic ointment 0.5%. Smaller numbers of patients were treated with fluoromethalone ophthalmic ointment 0.1% ($n = 9$, 14.8%) and tobramycin-dexamethasone ophthalmic ointment 0.3% to 0.1% ($n = 7$, 11.5%). Using this protocol, partial resolution of dermatitis was achieved in 14 patients (23.0%) and complete resolution in 40 patients (65.6%) of patients at the initial 1-month follow up. Nine of these patients (14.8%) had more than one agent discontinued at initial presentation. One patient with only partial resolution of their symptoms at 1 month, after stopping brimonidine, had complete resolution of symptoms after also stopping dorzolamide-timolol. Eight total patients with resistant eyelid inflammation were referred to a dermatologist for further workup, including patch testing. Four (50%) of the patients were found to be allergic to gold and their eyelid inflammation resolved after abstaining from wearing gold jewelry. Two patients (25%) were found to be allergic to fragrances and their symptoms resolved after stopping topical fragrances. One patient (12.5%) was found to be allergic to zinc only and one patient's patch testing was negative. By the time of final follow up, 60 patients (98.4%) had reduction in their symptoms and 55 patients (90.2%) had complete resolution of their symptoms.

Ectropion was present in 23 patients at initial evaluation (Table 3), 14 of these 23 patients (60.9%) had cicatricial ectropion with skin shortage. At final evaluation, 16 of the 23 patients (69.6%) had full resolution of their ectropion. Of the 7 patients who required surgery, all of whom had cicatricial ectropion with skin shortage before treatment, only one required a skin graft. Punctal congestion leading to functional occlusion and tearing was present in 14 patients at initial evaluation (Table 3). By final evaluation, 11 of these patients (78.6%) had complete resolution of the congestion and tearing. Of the other 3 patients, one only required a simple punctoplasty, one had nasolacrimal duct probing with stent placement, and one was lost to follow up. Nine patients were referred for a "droopy eyelid," and 5 of these patients were found to have ptosis on initial examination. All of these patients had resolution of their apparent skin redundancy or ptosis without surgical intervention.

Offending glaucoma drops were discontinued in 19 patients. Among these, 18 (94.7%) maintained adequate control of their intraocular pressure. In 2 patients (10.5%), discontinuation of the medication did not lead to any increase in intraocular pressure. Alternative topical glaucoma medications were started in 13 patients (68.4%). Further intervention was required in 3 patients (15.8%), consisting of laser trabeculoplasty, glaucoma drainage implant, and trabeculectomy. There was one patient (5.3%) who had an increased intraocular pressure after discontinuation of the offending drop whose course is unknown after being returned to the care of his glaucoma specialist.



A, Patient using brimonidine, referred for ectropion. **B**, After discontinuation of brimonidine and course of topical steroids. **C**, Patient using hand lotion on eyelids, referred for eyelid irritation. **D**, After discontinuation of lotion and course of topical steroids.

DISCUSSION

Allergic dermatitis is a common condition that is frequently unrecognized by eye care providers. Misdiagnosis can lead to inappropriate or delayed management. Left untreated, the condition can contribute to a variety of other functional disorders, including tearing, cicatricial ectropion, and ptosis.

Sensitivity to topical glaucoma medications appears to be a common etiology of allergic dermatitis. Either the active agent or preservatives could be the causative agent. This can be concerning for comprehensive ophthalmologists and glaucoma specialists considering treatment of allergic dermatitis involves discontinuation of the offending agents and the use of a topical steroid. Fortunately, our study showed that these patients can still manage to control their glaucoma through other methods whether that is different drops, laser therapy, or surgical treatment.

It is surprising that 6.6% of the patients in this study appeared to be reacting to gold, despite only wearing jewelry at sites distant from the eyelids. While gold-related eyelid dermatitis has been reported in the dermatology literature, this is not well recognized in the ophthalmic literature.^{4,5}

While this study was able to elucidate the presenting signs/symptoms and common presumed etiologies in a group of patients with allergic dermatitis, it has limitations. For one, the majority of the etiologies were presumed, as patch testing was only performed in select cases. While this may seem concerning at first glance, it actually just highlights the difference in the patient population between this study and most of the studies in the dermatologic literature. Patients in the dermatology literature tend to have recalcitrant, diffuse dermatitis of the face and eyelids. They often require treatment with topical calcineurin inhibitors in addition to topical steroids before discovering the inciting agent. The most common allergens found on patch testing in the dermatology literature are gold, fragrance mix, Balsam of Peru (a resin used in flavoring and fragrances), nickel, and neomycin.⁴⁻⁶ As most of the patients had resolution of their symptoms with simple discontinuation of the presumed

agent and a short course of topical steroid, they were able to avoid the additional cost and inconvenience of dermatologic consultation and patch testing. For those isolated patients who did not improve with this treatment regimen, allergy testing was thought to be beneficial to determine the inciting agent.

This study focuses on patients with allergic dermatitis who presented to oculoplastic surgeons. Since oculoplastics surgeons specialize in eyelid and lacrimal surgery, many of patients were referred for conditions other than their allergic dermatitis (only 18% were actually referred for blepharitis/dermatitis). The associated tearing, ectropion, and ptosis typically resolved with appropriate management of the dermatitis. The authors hope that the results of this study will increase the awareness of eyelid providers to the manifestations and causative agents of allergic dermatitis.

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