

CORRESPONDENCE

Raised intraocular pressure and orbital inflammation: A rare IgE-mediated allergic reaction to sub-Tenon's hyaluronidase

Fayyaz Musa, MRCOphth,
Sathish Srinivasan, FRCSEd, FRCOphth,
Clodagh M. King, FRCP, Ahmed Kamal, FRCS

In clinical practice, an allergic response to hyaluronidase is a rare event.¹⁻⁴ We report a case of orbital inflammation and increased intraocular pressure (IOP) following a rare IgE-mediated allergic reaction (protein-contact dermatitis) to hyaluronidase used during sub-Tenon's anesthesia.

CASE REPORT

A 50-year-old woman had uneventful cataract surgery in the left eye under sub-Tenon's anesthesia. Medical history was significant for asthma and systemic hypertension. The anesthetic mixture consisted of lignocaine 2% (3 mL), levobupivacaine 0.5% (1 mL), and 1500 IU of hyaluronidase (CP Pharmaceuticals). At the end of the operation, a subconjunctival injection of cefuroxime and betnesol was administered.

Thirty-six hours postoperatively, the patient presented with pain and decreased vision in her left eye. Examination revealed a visual acuity of 20/40, a 3 mm axial proptosis, swollen lids, tense orbit, and ocular motility restriction (Figure 1). Biomicroscopy showed dilated, tortuous episcleral vessels and a centered intraocular lens. Intraocular pressure was elevated at 55 mm Hg. She was apyrexial, and the full blood count was normal.

An allergic reaction to hyaluronidase was suspected. She was treated with 500 mg of intravenous methylprednisolone followed by tapering doses of oral steroids. The IOP was controlled with intravenous acetazolamide and mannitol. Within the next 2 days, there was complete resolution of the proptosis and orbital inflammation. The IOP was normalized, and visual acuity improved to 20/20.

Patch testing and 20-minute skin-prick testing was carried out with lidocaine 2%, levobupivacaine hydrochloride 2.5 mg/mL, betamethasone 0.1% eyedrops and injection, povidone-iodine 5%, chloramphenicol eyedrops, cefuroxime, proxymethacaine hydrochloride, benzalkonium chloride 0.5%, and hyaluronidase 1500 U/mL. Patch-test readings at 48 and 96 hours showed no evidence of delayed-type contact sensitivity, but the 20-minute prick test to hyaluronidase was positive, showing a palpable wheal of 5 mm diameter. Prick testing in 5 normal controls proved negative.

DISCUSSION

Allergy to hyaluronidase is uncommon.¹⁻⁴ Previous reports of hyaluronidase allergy have described both acute and delayed onsets of periorbital and orbital inflammation. Cases with an acute



Figure 1. Clinical photograph showing axial proptosis and orbital inflammation in the left eye.

onset simulated an expulsive choroidal hemorrhage, retrobulbar hemorrhage,^{2,3} whereas cases with a delayed onset simulated orbital pseudotumor.⁴

A positive 20-minute skin prick usually indicates an immediate type 1 IgE-mediated reaction. This immediate IgE-mediated response to hyaluronidase allergy usually presents with periorbital edema within minutes of administration of the drug and clears within hours of supportive therapy.⁵ In our case, however, the onset of symptoms was delayed for up to 36 hours and persisted for 2 days. This is suggestive of a rarer type of IgE-mediated allergic reaction, namely protein-contact dermatitis. This condition has been described in food handlers who present with hand dermatitis and negative patch tests but positive skin-prick tests to foods and is thought to be due to a combination of type 1 and type 4 IgE-mediated allergic reactions.⁶ One similar case of hyaluronidase allergy has been described, the symptoms occurring after 48 hours and the allergy confirmed by a positive skin-prick test but a negative patch test.⁴

In the previously reported cases, orbital inflammation secondary to hyaluronidase allergy developed following peribulbar or retrobulbar anesthesia. In our case, similar orbital inflammation occurred following sub-Tenon's administration of hyaluronidase.

We would like to remind readers that delayed hyaluronidase allergy should be considered in the differential diagnosis as it can present with signs and symptoms that might be confused with infectious processes, namely, preseptal cellulitis or a true orbital infection (secondary to needle inoculation). In this case, sub-Tenon's anesthesia and the orbital inflammation (secondary to the hyaluronidase allergy) may have caused an increase in the episcleral venous pressure, leading to elevated IOP.

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Intraoperative lidocaine in phacoemulsification without preoperative eyedrops

Yelda Ozkurt, MD

We evaluated the intracameral injection of unpreserved lidocaine hydrochloride (HCL) 1% as an alternative means of mydriasis during phacoemulsification. This prospective study comprised 30 eyes of 30 patients having phacoemulsification. Group 1 (topical group, $n=15$ eyes) consisted of patients whose presurgical dilation was obtained with tropicamide 0.5%, cyclopentolate 1%, and phenylephrine 2.5%. In group 2 (intracameral lidocaine group, $n=15$), 3 drops of proparacaine HCL 0.5% were instilled for topical anesthesia before side-port incision, and 0.2 to 0.5 mL unpreserved lidocaine HCL 1% was injected into the anterior chamber immediately before the ophthalmic viscosurgical device was injected. The procedure involved a 3.0 mm corneal incision, 2 side-port incisions, capsulorhexis, hydrodissection, and phacoemulsification. A foldable acrylic intraocular lens was implanted in all cases. The same surgeon (Y.Ö.) performed all procedures. Pupil diameters in all eyes in both groups were measured by a Castroviejo caliper before and after dilation. Preoperative and postoperative intraocular pressure, visual acuity, inflammation, and surgical complications were also recorded.

After dilation, the mean pupil size in group 1 was $7.09 \text{ mm} \pm 0.7$ (SD) and in group 2, 7.28 ± 0.7 mm. After lidocaine injection, adequate mydriasis occurred within 20 to 90 seconds (mean time 49.5 ± 21.1 seconds). Table 1 shows the mean pupil diameters before and after dilation in each group. There was no statistically significant difference between groups in dilation before surgery ($P>.05$).

Intraocular lidocaine HCL 1% is used widely in phacoemulsification as an adjunct to topical anesthesia.¹ Intraocular lidocaine

paralyzes the pupil sphincter and enlarges the pupil in addition to anesthesia. We studied both anesthetic and mydriatic effects of intracameral lidocaine in phacoemulsification cataract surgery.

Cionni et al.² present a technique using intracameral lidocaine to induce pupil dilation without using preoperative mydriatic eye drops. Eggeling et al.³ found that lidocaine at higher concentrations (5%) was toxic to the endothelium but lidocaine 1% did not cause corneal endothelial damage. They therefore recommend the clinical use of lidocaine at a concentration of 1%. We also used this concentration and did not see unexpected corneal pathology edema, thickening, or other signs of toxicity in the intraocular lidocaine group.

Anterior chamber irrigation with unpreserved lidocaine HCL 1% was an effective, rapid, and safe method for pupil dilation in phacoemulsification. We concluded that unpreserved lidocaine 1% to induce pupil dilation without using preoperative mydriatic eye drops excludes cardiac-risk topical sympathetic agents, reduces patient's preoperatively preparation time, and reduces corneal inflammation in phacoemulsification surgery.

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Spontaneous cilia in the cataractous lens

Bong Hyun Kim, MD, Bonnie A. Henderson, MD

Intraocular cilia are rare and usually associated with a history of trauma or surgery. Since the first report of intraocular cilia by Lerche in 1835, 29 cases have been reported.¹ Only 3 of the 29 cases did not have an antecedent history of trauma.² There have been no reports of cilium found in the lens without a history of trauma.

CASE REPORT

A 37-year-old woman presented with a 3-month history of painless progressive loss of vision in her right eye. The patient denied any history of trauma. Preoperative examination revealed a white cataract. No other abnormalities or inflammation were noted. During routine phacoemulsification, 8 cilia were found inside the equatorial region of the lens (Figure 1). All were approximately 1.0 to 2.0 mm in length and had their roots in the cortex. The lens capsule was intact.

The cataract surgery and postoperative course were uncomplicated. Ten days after the surgery, posterior capsule opacification was noted and the patient had neodymium:YAG laser capsulotomy. Two months postoperatively, the best corrected visual acuity was 20/20 in the right eye and has remained stable for the past year.

Table 1. Mean pupil sizes before and after dilation.

Group	Mean Pupil Diameter (mm)
1	
Without topical mydriatic eyedrops	$2.62 \pm 0.6^*$
After topical mydriatic eyedrops	$7.09 \pm 0.6^{**}$
2	
Before intracameral lidocaine injection	$2.56 \pm 0.7^*$
After intracameral lidocaine injection	$7.28 \pm 0.7^{**}$

* $P = .62$

** $P = .03$