
Hyaluronidase allergy after peribulbar anesthesia with orbital inflammation

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A 70-year-old woman previously exposed to hyaluronidase during ophthalmic surgery had excision of hypertrophic bulbar conjunctival tissue in the right eye. Hyaluronidase was added to the peribulbar anesthetic agent. Five days postoperatively, the patient presented with proptosis in the right eye, extraocular muscle restriction, and decreased visual acuity. She was afebrile with a normal white cell count; computed tomography of the orbits showed a diffuse increase in soft tissue density. Clinical features were unchanged after 24 hours of intravenous antibiotics, but subsequent administration of high-dose oral steroids led to clinical improvement.

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An allergic response to hyaluronidase after eye surgery is rare but has manifested with sight-threatening orbital inflammation in the reported cases.^{1–4} We present a further case to illustrate the importance of early diagnosis and intervention.

Case Report

A 70-year-old white woman had uneventful excision of hypertrophic bulbar conjunctival tissue in the right eye under peribulbar anesthesia, using a mixture of 4 mL lidocaine 2%, 1 mL bupivacaine 0.5%, and 150 units/mL of hyaluronidase (Hyalase®). No intraoperative subconjunctival antibiotic was administered. The patient was discharged from the hospital on the day of surgery with a standard postoperative topical antibiotic (neomycin) and steroid regimen.

Eighteen months earlier, an extruded silicone band had been removed from the same site using the same anesthetic agent and technique. Right eye retinal detachment surgery had also been performed 2 years before under general anesthe-

sia. The medical history was unremarkable aside from a possible penicillin allergy. There was no history of thyroid dysfunction.

Five days postoperatively, the patient presented to the ophthalmic emergency room with gradually worsening pain and decreasing visual acuity in the right eye since the day of surgery. On examination, the visual acuities were 20/200 in the right eye and 20/20 in the left eye; the right eye visual acuity was 20/20 preoperatively. The right eyelids were moderately edematous and erythematous. There was 3.0 mm nonaxial right eye proptosis with the globe displaced 3.0 mm inferiorly and moderately restricted movement of the eye in all directions. Optic nerve function was clinically normal apart from the decreased visual acuity, and there was no optic disc swelling. The left eye was normal on examination; there was no sinus tenderness, and the patient was afebrile. A provisional diagnosis of orbital cellulitis was made, and intravenous antibiotics were commenced.

The white cell count was normal. Computed tomographic (CT) scanning confirmed the nonaxial proptosis and showed a diffuse increase in soft tissue density within the orbit of the right eye, with no focal lesion and no significant sinus disease (Figure 1).

After treatment with antibiotics for 24 hours, there was no clinical improvement. Allergy to one of the components of the peribulbar anesthetic was suspected, and high-dose systemic steroids were started. One day later, all clinical parameters had improved, including recovery of visual acuity to 20/40 in the right eye. The steroid dose was tapered over 4 weeks, by which time the visual acuity had returned to 20/20 in the right eye. An allergy to hyaluronidase was confirmed using intradermal testing against a control subject.

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Figure 1. (Quhill) An axial CT scan of the orbits demonstrates a diffuse increase in soft tissue density associated with right eye proptosis.

Discussion

Hyaluronidase, a hydrolytic enzyme, is commonly added to anesthetic agents administered using peribulbar and retrobulbar techniques to enhance diffusion through the orbital tissues. Reports of an allergy to hyaluronidase in this context are rare, with 8 reported cases.¹⁻⁴ Kempeneers and coauthors,¹ who reported a series of 5 cases, estimate an incidence of approximately 1 in 2000 retrobulbar anesthesia procedures in their unit. We found 1 additional case of apparently noninfective orbital inflammation after peribulbar anesthesia in which the allergen was not established.⁵

Six of the 8 published cases presented with gradually worsening orbital inflammation, typically within 2 post-operative days^{1,4}; the other 2 cases presented acutely during surgery.^{2,3} In 5 of the 6 cases with gradual onset, substantial optic nerve compromise was evident by presentation. Three of these patients received early treatment with systemic steroids and recovered full visual acuity. The remaining 2 cases had permanent visual impairment. Previous exposure to hyaluronidase was documented in 6 of the 8 cases, most commonly in

the form of local anesthesia for cataract surgery in the contralateral eye.^{1,3,4}

We suggest hyaluronidase allergy as a diagnostic possibility when proptosis occurs after peribulbar or retrobulbar anesthesia, although orbital cellulitis has also been reported in these circumstances.⁶ Previous hyaluronidase exposure, the patient's temperature and white cell count, and the CT appearance can be useful diagnostic aids. In the presence of compromised optic nerve function, administration of systemic steroids should be considered at an early stage.

Trends in ophthalmic anesthesia include the wider adoption of topical and sub-Tenon's (parabulbar) techniques,⁷ neither of which requires adjunctive hyaluronidase.⁸ Although allergy to hyaluronidase is rare, its sight-threatening potential should justify caution when including it in an anesthetic technique.

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