

Hyaluronidase Allergy Simulating Expulsive Choroidal Hemorrhage

Choroidal hemorrhage and choroidal effusion are two of the most serious intraoperative complications of cataract surgery. Reported herein is a case of an intraoperative allergic reaction to hyaluronidase (Wydase) used in a retrobulbar injection that caused a similar marked intraoperative increase in posterior pressure. Allergy to this medication is extremely rare and I found only one similar case in the ophthalmic literature.¹

Report of a Case. The patient was a 67-year-old Asian woman who had undergone extracapsular cataract extraction and posterior-chamber lens implantation in the right eye in May 1986. A Van Lint lid block and retrobulbar injection of 2% lidocaine with 0.75% bupivacaine hydrochloride (Marcaine) and hyaluronidase were used during that surgery. The surgery was uneventful, although the patient's orbital architecture caused some difficulty with exposure during the surgery.

Cataract surgery for the left eye was subsequently scheduled for April 1991. Because of the patient's orbital anatomy, extreme care was taken to prevent infiltration of the eyelids by the anesthetic injection. An identical retrobulbar injection of 5 mL of 2% lidocaine mixed with 0.75% bupivacaine and hyaluronidase was used along with a Van Lint lid block. The eye was massaged for 5 minutes and intravenous mannitol was administered to help prevent anticipated tightness of the orbit due to the anatomic variation present. Five to ten minutes elapsed before the surgery was actually begun.

A capsulotomy was performed and the nucleus was delivered. At that point, increasing intraorbital conges-

tion was noted. Preplaced silk sutures were tied and multiple interrupted 10-0 nylon sutures were placed because of apparently increasing orbital pressure. At no time could a choroidal shadow be noted through the operating microscope, although a choroidal hemorrhage or choroidal effusion was strongly suspected. An attempt was made to aspirate as much cortex as possible, and the wound was closed with difficulty. The total procedure lasted 50 minutes owing to the problem with wound closure.

Thirty minutes after surgery, marked periorbital edema was noted extending into the cheek and the preauricular space. This was associated with localized pruritus. The edema responded to intravenous administration of diphenhydramine hydrochloride (Benadryl) over 60 to 90 minutes, and no respiratory compromise or hypotension was encountered. The patient was subsequently examined in the office and no choroidal effusion or hemorrhage was noted in the fundus. Owing to the lack of an intraocular explanation for the problems encountered during surgery and to the marked soft-tissue edema, it was believed that an allergic reaction to one of the agents in the block may have occurred.

Skin testing was performed on the forearm to test sensitivity to lidocaine, bupivacaine, and hyaluronidase. Within 15 minutes, significant wheal and flare associated with localized pruritus were noted on skin testing with hyaluronidase only (undiluted 150 USP U/mL of stabilized solution, Wyeth Laboratories Inc, Philadelphia, Pa), substantiating an allergy to this medication. To rule out a reaction to the thimerosal preservative contained in the hyaluronidase, the patient was tested with 0.1 mg/mL of subcutaneous thimerosal diluted in a sterile saline vehicle. No skin reaction to the thimerosal was noted. In addition, to substantiate the lack of a nonspecific

cutaneous reaction to the vehicle in the prepared hyaluronidase solution, identical skin testing using the hyaluronidase solution was performed on four normal volunteers. No skin reaction was noted after a 1-hour observation. Unfortunately, I was unable to obtain pure hyaluronidase without preservatives for use in the skin testing of my patient.

The patient's eye subsequently healed. When she was found to be contact lens intolerant, a secondary intraocular lens was implanted in the posterior chamber using general anesthesia. Her final uncorrected visual acuity was 20/20—.

Comment. Wydase is a commonly available hyaluronidase widely used in anesthetic injections administered during cataract surgery.² The only prior report in the literature, to my knowledge, of such an allergic reaction was in a patient having similar intraorbital swelling during intracapsular cataract surgery. This resulted in significant vitreous loss.¹ In retrospect, the present case certainly illustrated a similar hyaluronidase allergy, causing the intraoperative difficulty in this patient with extracapsular cataract extraction. Even in patients undergoing phacemulsification, such marked posterior pressure would create a severe intraoperative problem. Bona fide allergy to lidocaine or bupivacaine is extremely rare, but all ophthalmologists should consider a possible allergy to hyaluronidase when such a rapid, atypical increase in intraorbital pressure occurs during intraocular surgery.

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Pet Flea and Tick Collar-Induced Anisocoria

The differential diagnosis of anisocoria is extensive.¹ Frequently, the origin has a pharmacological basis.² Our patient represents a case of chemically induced anisocoria that could have been easily misdiagnosed. The purpose of our case report is to make others aware of this potential toxic effect to avoid overtreatment and unnecessary concern.

Report of a Case. A healthy 42-year-old woman presented to the University of California–San Francisco Medical Center with excellent vision complaining that she had unequal pupils. She had no history of ocular or systemic disease or head trauma. Furthermore, she denied any coexistent ocular signs or symptoms. She gave no history of exposure to any drugs or chemicals, including insecticides and pesticides. Her ocular examination was completely unremarkable except for anisocoria (right pupil, 4 mm; left pupil, 7 mm). During a careful review of her activities preceding her observation, she mentioned watching television with her cat prior to the appearance of the anisocoria. Further discussion revealed that she was gently rubbing the cat's neck around and under a recently purchased flea collar while watching television. In addition, she remembered subsequently touching and rubbing her own eye. She did not recall experiencing problems with accommodation or asthenopia. A presumed diagnosis of parasympathomimetic drug-induced unilateral miosis presenting as anisocoria was made. Her pupils were equal in size and reacted normally within 24 hours. The patient was requested to mail the cat's flea collar and its container to our laboratory for examination.

Comment. This patient represents a case of pharmacologically induced an-

isocoria. The active pesticide within the flea collar is 3% chlorpyrifos (O,O-diethyl O-3,5,6-trichloro-2-pyridyl phosphorothiate), an anticholinesterase agent that is chemically related to the indirect-acting parasympathomimetics commonly used to treat glaucoma.³ Therefore, it was easy to observe miosis within a rabbit eye following intentional ocular contamination with dust from the collar. However, miosis was not induced with an aqueous mixture extracted from the collar because the organophosphate is rapidly hydrolysed during the preparation of the solution. Therefore, patients can avoid this potential ocular toxic effect by simply washing their hands following manipulation of the flea and tick collar.

Although this chemical was identified on the box of the flea collar as a cholinesterase inhibitor, no warning of potential ocular problems following accidental self-contamination with dust from the collar was mentioned. A brief survey of several local pet stores revealed that many different flea and tick collars for dogs and cats are commercially available and that many of these products are incompletely or inaccurately labeled. Most of these preparations consist of one or more of the cholinesterase inhibitors combined with inert ingredients. Many, but not all, labels on flea and tick collars for dogs and cats mention the presence of a cholinesterase inhibitor. This label is often accompanied by misleading warnings and incomplete information about toxic effects as indicated in the following labels and warnings given for various brands of flea and tick collars (principal ingredients are given in the first set of parentheses):

- Bansect Flea and Tick Collar (10% naled) (Con Agra Pet Products, Richmond, Va) provides no warning.
- Color Guard Cat Collar (3% chlorpyrifos) (Cater-Wallace Inc, Lambert Kay Division, Cranbury, NJ) is labeled as a cholinesterase inhibitor, with possible toxic side effects of tremors, salivation, vomiting, and diarrhea.
- Herbal Cat Collar (chamomile, pennyroyal, eucalyptus, and essential oils) (Herbal Cat Collars, Newport Beach,

Calif) provides no warning.

- Scratchex Color Collar (3% chlorpyrifos) (Combe Products, White Plains, NY) is labeled as a cholinesterase inhibitor, with possible toxic side effects of tremors, vomiting, salivation, and diarrhea.
- Sergeant's Dual Action Flea and Tick Collar (7% naled) (Con Agra Pet Products) is labeled as a cholinesterase inhibitor, with "temporary capillary constriction" if applied to the eyes.
- Sulfodene Scratchex Flea and Tick Collar (3% chlorpyrifos) (Combe Products) is labeled as a cholinesterase inhibitor.
- Vet-Kem Breakaway Flea and Tick Collar (9.4% O-isopropoxyphenyl methylcarbamate) (Zodiac Pet Products, Division of Zoecon Corporation, Dallas, Tex) is labeled as a cholinesterase inhibitor, with the dust in the eyes causing temporary pupillary constriction. Atropine and homatropine are antidotal.
- Victory 11 Saf-T-Stretch Cat Collar (3% chlorpyrifos) (Cater-Wallace Inc, Lambert Kay Division) is labeled as a cholinesterase inhibitor.
- Zodiac Step 2 Breakaway Flea and Tick Collar (9.4% O-isopropoxyphenyl methylcarbamate) (Zodiac Pet Products, Division of Zoecon Corporation) is labeled as a cholinesterase inhibitor, causing temporary pupil constriction. Atropine and homatropine are antidotal.

It is unlikely that these labeling oversights will result in serious toxic effects. However, the observation of anisocoria associated with a flea and tick collar is briefly presented herein to prevent this potential toxicologic nuisance from being mistaken for something more significant.

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