Phenytoin hydrochloride is a direct-acting α₁-adrenergic agonist used for its mydriatic and vasoconstrictive properties. In addition to its ophthalmic uses, phentolamine is used in the management of angle-closure for which it is instilled intranasally to induce miosis and nasal obstruction prior to cautery or packing. We describe a patient who developed sequelae ipsilateral acute angle-closure attacks after intranasal phentolamine use.

Report of a Case. A 67-year-old woman had right eye pain, redness, blurry vision, and nausea. Prior to the onset of symptoms, the patient had experienced right-sided epistaxis that was treated in an emergency department with nasal 0.25% phenylene hydrochloride, topical tetracaine, silver nitrate cautery, and nasal packing.

Visual acuity was 20/200 OD and 20/40 OS. The patient’s refractive error was +1.75 diopters (D) OD and +2.00 D OS. The right pupil measured 7 mm and was nonreactive. The left pupil measured 4 mm and constricted to direct and consensual stimulation. Intraocular pressure was 62 mm Hg OD and 18 mm Hg OS. The right eye had conjunctival hyperemia, corneal edema, a quiet anterior chamber, and iris bombe. The lens had moderate nuclear sclerosis. Findings from the left eye were unremarkable, except for similar lens changes. There was a hazy view of the right fundus. The left fundus was normal, with a cup-disc ratio of 0.2.

The patient was treated with 1 drop of 0.5% timolol maleate and 2% dorzolamide hydrochloride to the right eye followed by 100 mL of oral glycerin. This was repeated 15 minutes later. An attempt to create a Nd:YAG laser peripheral iridotomy was unsuccessful. The patient had multiple episodes of emesis during treatment, and she was transferred to the emergency department, where she received 12.5 g of intravenous mannitol and 1 drop of 4% pilocarpine hydrochloride. Intraocular pressure improved to 30 mm Hg. The patient was given 12.5 mg of promethazine hydrochloride and 1 drop of 4% pilocarpine hydrochloride. Intraocular pressure improved to 30 mm Hg. The patient was given 12.5 mg of promethazine hydrochloride and 1 drop of 4% pilocarpine hydrochloride.
angle-closure attack. The following day the patient was seen for left eye pain, redness, and blurry vision. Visual acuity was 20/100 OS, and there was corneal edema and iris bombe. Intraocular pressure was 42 mm Hg. The patient was treated with 2% pilocarpine hydrochloride and 0.2% brimonidine tartrate to the left eye and underwent Nd:YAG laser peripheral iridotomy in the left eye as well as revision of iridotomy in the right eye. Intraocular pressure normalized in both eyes.

The patient was referred to the Kresge Eye Institute/Detroit Medical Center. Visual acuity was 20/40 OD and 20/30 OS. Intraocular pressure was 17 mm Hg OD and 16 mm Hg OS. There were 2 patent peripheral iridotomies in the right iris and 1 patent iridotomy in the left iris. Fundus examination findings were normal in both eyes.

Comment. To our knowledge, there are no previously reported cases of acute angle-closure glaucoma secondary to the intranasal application of phenylephrine. Phenylephrine is frequently used in the acute management of epistaxis because of its vasoconstrictive properties. Our patient experienced sequential angle-closure attacks after the administration of intranasal phenylephrine that likely were precipitated by phenylephrine-induced pupillary mydriasis in the ipsilateral eye. Previous reports of angle-closure glaucoma induced by intranasally administered substances have been reported.1,2 Hari et al1 reported a case of acute angle-closure glaucoma after ipsilateral intraoperative painting of the nasal mucosa with 25% cocaine paste. Mitchell and Schwartz2 described a patient with a history of cocaine abuse who developed angle-closure glaucoma ipsilateral to the intranasal use (the patient had a traumatically deviated septum and could only use 1 naris). In these cases, like ours, the angle closure occurred in the ipsilateral eye. There is some evidence that intranasally administered aerosolized medications may reflux through the ipsilateral nasolacrimal duct and be detected in tears.3 Systemic absorption through the nasal mucosa is another possible mechanism of action. Physicians should be aware of this uncommon cause of acute angle-closure glaucoma.

Charles T. Zenzen, MD
Dean Elliott, MD
E. Michael Balok, MD
Richard L. Watnick, MD
Paul German, DDS
Detroit, Mich

The authors have no relevant financial interest in this article.

Corresponding author and reprints: Dean Elliott, MD, Kresge Eye Institute, Wayne State University School of Medicine, 4717 St Antoine, Detroit, MI 48201 (e-mail: deliott@med.wayne.edu).