

New report documents cardiopulmonary arrest in premature infant after cyclomydril eyedrops

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Eyedrops administered to infants as part of routine outpatient retinopathy of prematurity (ROP) screening can have life-threatening consequences. A case report published in the current issue of the Journal of the American Association for Pediatric Ophthalmology and Strabismus (AAPOS) describes cardiopulmonary arrest in a 27-week-old infant following administration of three sets of cyclopentolate 0.2%/phenylephrine 1% (Cyclomydril) eyedrops.

"Cardiopulmonary arrest can occur from just instillation of eyedrops in a premature infant seen for ROP in an outpatient setting, and pediatric ophthalmologists should be prepared to handle such an emergency in their office," says Sylvia Kodsi, MD, Professor of Ophthalmology at Hofstra North Shore-LIJ School of Medicine. "This can be particularly perilous in outpatient offices where patient monitoring and emergency back-up is not as readily available as in the hospital setting."

Retinopathy of [prematurity](#) is one of the most common causes of impaired vision in children and can lead to severe visual impairment and blindness. ROP primarily affects premature infants who weigh 2.75 pounds or less who are born before 31 weeks of gestation. Each year, about 28,000 infants in the U.S. fall into this category and about half are affected to some degree by ROP. About 400-600 of these children with ROP become legally blind. ROP occurs when babies are born before blood vessels in the eye have had a chance to reach the edges of the

retina. Abnormal blood vessels form, resulting in inadequate blood supply, retinal scarring, and retinal detachment.

Professional organizations such as the American Association for Pediatric Ophthalmology and Strabismus, American Academy of Pediatrics, and American Academy of Ophthalmology recommend that at-risk infants be regularly screened for changes associated with ROP. To conduct the examination, eyedrops are administered to dilate the pupil (mydriasis) and reduce eye movements by temporarily paralyzing eye muscles (cycloplegia).

In the case that was reported, a 27-week-old low-birth-weight infant presented for a follow-up ROP [screening](#) examination at 41 weeks' corrected gestational age. The patient had previously undergone several such examinations, beginning at 30 weeks' corrected gestational age and every 2 weeks thereafter. For all those examinations, the infant received three sets (one drop per eye) of Cyclomydril, a combination of cyclopentolate (an anticholinergic that blocks pupillary constriction and eye muscle contraction) and phenylephrine (an alpha-adrenergic agent that causes mydriasis).

Fifteen minutes after the last set of drops was administered, but prior to the eye examination, the baby suffered a cardiopulmonary arrest and was revived within a few minutes. After transport to the hospital, she experienced another episode of apnea (breathing difficulty) and bradycardia (slow heart rhythm) and was found to have new-onset pulmonary hypertension.

These serious events are most likely attributed to an adverse drug reaction to cyclopentolate. According to co-author Jung M. Lee, MD, an ophthalmology resident also affiliated with Hofstra North Shore-LIJ School of Medicine, the phenylephrine would have mostly been cleared by the time the patient experienced the second event of apnea and

bradycardia three hours after instillation of the eyedrops. She cautions that other anticholinergic drugs such as tropicamide may have a similar side effect profile. For this child, subsequent dilated ROP examinations performed with tropicamide 1% and phenylephrine 2.5% were performed without incident.

"Eyedrops used for mydriasis and cycloplegia can be systemically absorbed and cause serious side effects, including oxygen desaturation, apnea, bradycardia, transient hypertension, delayed gastric emptying, and transient paralytic ileus. These effects can be more serious in [infants](#) because of their lower body mass and immature cardiovascular and nervous systems," cautions Dr. Kodsi. "Pediatric ophthalmologists should be equipped to handle this type of emergency, either personally or with ancillary services that are immediately available."

More information: "Cardiopulmonary arrest following administration of Cyclomydril eyedrops for outpatient retinopathy of prematurity screening," by Jung M. Lee, MD, Sylvia R. Kodsi, MD, Majida A. Gaffar, MD, and Steven E. Rubin, MD, *Journal of AAPOS*, Volume 18, Issue 2 (April 2014) published by Elsevier. doi: [dx.doi.org/10.1016/j.jaapos.2013.11.010](https://doi.org/10.1016/j.jaapos.2013.11.010).

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