

Response to: Brazilian guideline for pediatric cycloplegia and mydriasis

Goksu Alacamli¹ 

1. Ophthalmology Department, Trakya University Faculty of Medicine and Education and Research Hospital, Edirne, Turkey.

Dear Editor,

We read the article by Ian Curi, Simone Akiko Nakayama, Érika Mota Pereira, Luisa Moreira Hopker, Fábio Ejzenbaum, Ronaldo Boaventura Barcellos, Rosane da Cruz Ferreira, Monica Fialho Cronemberger, Craig A. Mckeown, and Júlia Dutra Rossetto⁽¹⁾ with interest. Responding to this comprehensive, well-thought-out article⁽¹⁾, I would like to highlight a serious side effect of cycloplegic and mydriatic drops used in retinopathy of prematurity (ROP) examinations for premature infants. Though instances of babies experiencing this side effect are rare and have only been reported in past case studies, necrotizing enterocolitis (NEC) should be considered in infants showing gastrointestinal symptoms such as abdominal distension, pneumatosis intestinalis, and ongoing abdominal color change after the application of mydriatic eye drops (cyclopentolate, tropicamide, and phenylephrine). 20%–40% of NEC patients require surgery, with a significant mortality rate^(2,3). Also, isolated case reports have previously presented transient ileus associated with the use of mydriatics after screening for retinopathy of prematurity in low birth weight infants^(4,5). Although these cases⁽²⁻⁵⁾ are rare, abnormal abdominal and gastrointestinal findings should prompt pediatricians or ophthalmologists to diagnose NEC or ileus. Practitioners dealing with these immature infants must also be aware of these potential complications.

At our clinic, Trakya University Faculty of Medicine and Education and Research Hospital, we administer 0.5% tropicamide and 2.5% phenylephrine 30 minutes prior to the ROP examination. We have the opportunity to purchase these drops in low doses commercially. In our tertiary referral faculty of medicine hospital, we experience low rates of side effects from the ROP examination due to these types of drops. The article⁽¹⁾ describes that cyclopentolate is generally not preferred due to its high side effect rates in infants.

The article by Curi et al.⁽¹⁾ provides a comprehensive and detailed guideline for pediatric cycloplegia and mydriasis. We owe immense gratitude and respect to all authors⁽¹⁾.

Although, phenylephrine and tropicamide collyrium are well tolerated in neonates, to minimize side effects, the concentrations of these eye drops should be limited (cyclopentolate at 0.5%, phenylephrine at 2.5%, tropicamide at 0.5%). The drug excess should be cleaned up. Application of pressure to the eye's medial corner will avoid nasal mucosal absorption of the topical eye drop⁽¹⁻⁵⁾.

Author Contributions: Significant contribution to conception and design: Goksu Alacamli. Data Acquisition: Goksu Alacamli. Data Analysis and Interpretation: Goksu Alacamli. Manuscript Drafting: Goksu Alacamli. Significant intellectual content revision of the manuscript: Goksu Alacamli. Have given final approval of the submitted manuscript (mandatory participation for all authors): Goksu Alacamli. Statistical analysis: No statistical analysis. Obtaining funding: None. Supervision of administrative, technical, or material support: Goksu Alacamli. Research group leadership: Goksu Alacamli.

REFERENCES

1. Curi I, Nakayama SA, Pereira ÉM, Hopker LM, Ejzenbaum F, Barcellos RB, et al. Brazilian guideline for pediatric cycloplegia and mydriasis. *Arq Bras Oftalmol* [Internet]. 2023[cited 2023 Oct 6]; 86(4):388-96. Available from: SciELO - Brasil - Brazilian guideline for pediatric cycloplegia and mydriasis Brazilian guideline for pediatric cycloplegia and mydriasis

Submitted for publication: September 19, 2023

Accepted for publication: September 22, 2023

Funding: This study received no specific financial support.

Disclosure of potential conflicts of interest: The authors have any potential conflicts of interest to disclose.

Corresponding author: Goksu Alacamli.
E-mail: goksualacamli@yahoo.com

 This content is licensed under a Creative Commons Attributions 4.0 International License.

2. Ozgun U, Demet T, Ozge KA, Zafer D, Murat S, Mehmet Y, et al. Fatal necrotising enterocolitis due to mydriatic eye drops. *J Coll Physicians Surg Pak*. 2014;24 Suppl 2:S147-9.
3. Nair AK, Pai MG, da Costa DE, Khusaiby SM. Necrotising enterocolitis following ophthalmological examination in preterm neonates. *Indian Pediatr*. 2000;37(4):417-21.
4. Degirmencioglu H, Oncel MY, Calisici E, Say B, Uras N, Dilmen U. Transient ileus associated with the use of mydriatics after screening for retinopathy of prematurity in a very low birth weight infant. *J Pediatr Ophthalmol Strabismus*. 2014;51 Online:e44-7.
5. Lim DL, Batilando M, Rajadurai VS. Transient paralytic ileus following the use of cyclopentolate-phenylephrine eye drops during screening for retinopathy of prematurity. *J Paediatr Child Health*. 2003;39(4):318-20.

Response

Dear Dr. Alacamli,

We appreciate your interest in our article, your shared knowledge of your service's practices, and your careful attention to the severe side effects of phenylephrine. All ophthalmologists should know the side effects of a commonly used ophthalmic drug that can be highly detrimental to premature infants.

In the work, we emphasize these effects in the section "Should we use phenylephrine as an adjuvant to maximize mydriasis?" as follows:

Special attention should be paid to extremely premature infants, very low-weight infants, and patients with respiratory distress, as they are more prone to gastrointestinal side effects. In these patients, blood supply vasoconstriction and anticholinergic effects can decrease peristalsis, leading to delayed gastric emptying, emesis, abdominal distension, and even necrotizing enterocolitis. In older infants and children, using one

drop of 2.5% phenylephrine, though seldom required, offers a satisfactory safety profile. However, a 10% concentration appears to cause a significant rise in the number and severity of side effects, including reports of cardiorespiratory arrest⁽¹⁾."

The comment aptly highlights the signs to watch for such side effects: abdominal distension, pneumatosis intestinalis, and abdominal color change.

Additionally, we would like to thank the valuable references mentioned in your comment.

Julia D. Rossetto
Corresponding author

REFERENCE

1. Curi I, Nakayama SA, Pereira ÉM, Hopker LM, Ejzenbaum F, Barcellos RB, et al. Brazilian guideline for pediatric cycloplegia and mydriasis. *Arq Bras Oftalmol* [Internet]. 2023[cited 2023 Oct 6]; 86(4):388-96. Available from: SciELO - Brasil - Brazilian guideline for pediatric cycloplegia and mydriasis Brazilian guideline for pediatric cycloplegia and mydriasis