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dr., SpM

Author : SAWITRI BOENGAS
Institution :
Co-Author : Jefman Efendi Marzuki HY (Universitas Surabaya)
Debora Ratri Aldora (Universitas Airlangga)
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Psychotics Effects of Cyclopentolate 1%

Sawitri Boengas¹, Jefman Efendi Marzuki HY¹, Debora Ratri Aldora²

¹Faculty of Medicine, Surabaya University, Surabaya, Indonesia
² Faculty of Medicine, Airlangga University, Surabaya, Indonesia

Introduction

Although atropine, the gold standard cycloplegic drug, is frequently replaced by cyclopentolate 1% eye drops in pediatric eye exams due to its relative safety, cyclopentolate can have systemic side effects, including neurotoxic with psychotic symptoms, which can frequently go unnoticed. This paper aims to report the occurrence of side effects of neurotoxic with psychotic symptoms due to the use of 1% cyclopentolate.

Case Illustration

After instilling the 3rd Cyclopentolate 1% eye drops in both eyes, 30 minutes after the first drop in cycloplegic refraction preparation, a 5-year-old boy had neurotoxic with psychotic symptoms. This drug is given repeatedly every 10 minutes between drops until conditions of mydriasis and negative light reflex are found. Psychotics symptoms in the form of anxiety, restless, visual hallucinations-such as seeing several small children around him, and he appears to talk to other children he sees with disorganized words. Contact with his mother also shifted. Finally, it was decided to discontinue the medicine, the patient was promptly sent to the ER for further observation. The patient remains restless and silent in the emergency room, but his condition is generally stable. Sixty minutes after ceasing the drops and observing, the condition progressively improved and the hallucinations subsided. The cycloplegic refraction test has been pushed back by one week. On subsequent cycloplegic refraction tests, apply 1% tropicamide every 10 minutes until the pupils experience mydriasis, then administer a drop of 1% cyclopentolate. The previously observed side effects no longer occur.

Discussion

Topical drugs are chosen to obtain optimal treatment effects at the location of the drug application and minimizing systemic effects, but this does not rule out the possibility of systemic effects. Cycloplegic drug, cyclopentolate 1% affects muscarinic receptors (fig.1). Administering eye drops is supposed to have a local effect just on the eyes, but systemic effects can occur if the mucosa of throat, nose, and stomach absorb the medicine due to the drugs flowing through the nasolacrimal duct (fig.2). A neurotoxic and psychotic impact, which can be fatal, is one of cyclopentolate's 1% uncommon adverse effects. When cyclopentolate interacts with muscarinic receptors in the central nervous system, this condition can occur (fig.3). The severity of the side effects increases with dosage, frequency of administration, age, and BMI. It is recommended that the lacrimal canal be focused on during delivery and that the least amount of cyclopentolate be used.

Conclusions

The risk of cyclopentolate systemic side effects in children depends on the child's age, BMI and the dose used. Side effects can vary from mild to severe. The earlier the occurrence of side effects is known, the harmful effects for children can be minimized. To reduce the neurotoxic side effects 1% cyclopentolate can be combined with mydriatics such as 1% tropicamide. In this combination, 1% cyclopentolate eye drops are only given 1 drop, 1 or 2 times after the pupil has mydriasis with mydriaticum. If systemic side effects occur in children, stop administering the drug immediately and closely monitor the patient's condition.

Keywords

Psychotics effects, cyclopentolate 1%, cycloplegic

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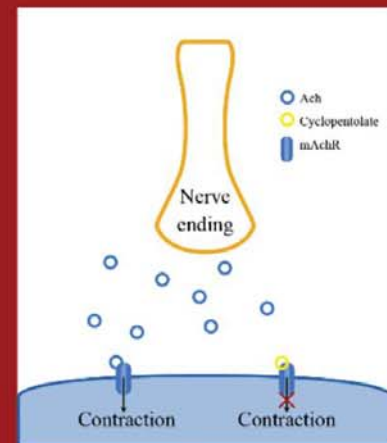


Fig 1. Cyclopentolate mechanism of action



Fig 2. Mechanism of Distribution of Topical Eye Drug to Systemic

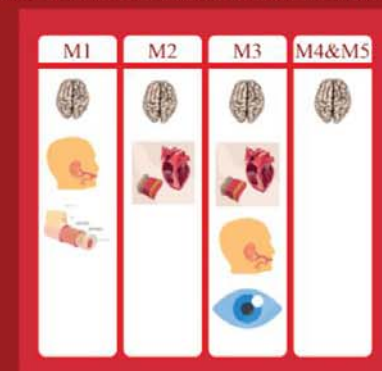


Fig 3. Muscarinic receptor locations



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Perhimpunan Dokter Spesialis Mata Indonesia

Gedung Baile Lantai 1 No. 101-3, Jalan Kimia No. 4

Pegangsaan, Menteng, DKI Jakarta, 10320, Indonesia

Telp: +62 21 310-4516

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First Author	SAWITRI BOENGAS (Universitas Surabaya)
Co-Author	<ul style="list-style-type: none">Jefman Efendi Marzuki HY (Universitas Surabaya)Debora Ratri Aldora (Universitas Airlangga)
Background	Cyclopentolate eye drops 1% are frequently used during the cycloplegic refraction test. Cyclopentolate 1% side effects that are neurotoxic have the potential to be fatal but are extremely rare.
Case Presentation	Thirty minutes after first drop of the cycloplegic refraction preparation, a 4-year-old kid had neurotoxic effects in the form of anxiety, disrupted communicative interactions, and hallucinations after receiving 3 drops of 1% cyclopentolate. Drug administration was stopped, and the patient was observed in the ER. After stopping the eye drops and being monitored in the ED for two hours, the condition improved.
Conclusion	<p>Discussion: A cycloplegic medication that affects muscarinic receptors is cyclopentolate 1%. Administering eye drops is supposed to have a local effect on the eyes only, but frequently systemic effects can happen if there is absorption via the mucosa of the throat, nose, and stomach due to the eye drops' flow through the nasolacrimal duct when the medicine is instilled. One of Cyclopentolate's 1% uncommon adverse effects is neurotoxic impact, which can be fatal. When cyclopentolate interacts with the central nervous system's muscarinic receptors, this syndrome may result. The severity of the side effects increases with dosage and administration frequency, age and BMI, and dose. Focusing on the Lacrimal Canal during delivery and using the lowest dose of cyclopentolate are recommended to minimize side effects.</p> <p>Conclusion: Cyclopentolate 1% has a rare but potentially catastrophic side effect called neurotoxicity. Reduce the dosage of cyclopentolate, administer it properly dan using it combination with other cycloplegic can reduce adverse effects.</p>
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Innovation in **H**olistic Eyecare

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WELCOME MESSAGE

Chairman of 48th IOA Annual Scientific Meeting Committee



Welcome to 48th IOA Annual Scientific Meeting 2023!

Dear colleagues and friends around the world,

It is our pleasure to invite you to the 48th IOA Annual Scientific Meeting which will be held at the Marriott Hotel, Yogyakarta from Thursday 24th to Saturday 26th of August 2023. The theme for this year's conference is "MULIH JOGJA: Moving Upon Latest Innovation Holistic Eyecare", presenting the latest developments in science and technology in the field of ophthalmology. This congress is one of the key ophthalmology conference in Indonesia and we believe that this event is the perfect platform to share and acquire knowledge as well as to establish collaborations and friendships among local and international ophthalmologists.

This scientific meeting will offer main symposium, didactic courses, wetlab courses as well as oral and poster presentations and cater to a broad range of interests and specialisations. Due to the COVID-19 pandemic, we faced many restrictions in our daily activities and scientific conferences were held online to minimize face-to-face interactions. As we progress to a new era amidst the pandemic, we are excited to announce that this year's Annual Scientific Meeting will be held as a fully face to face conference, the first in-person annual scientific meeting since 2019.

Rest assured that other than acquiring knowledge from this conference, you will also get to explore the local heritage and culture in Yogyakarta, which is rich in historical architectural landmarks and exquisite delicious traditional Javanese cuisine. Don't miss out on exciting social events and local tourism attractions for you and your families. Please mark your calendar to join us on this conference in the beautiful city of Yogyakarta!

Dr. Purjanto Tepo Utomo, MD

Chairman of 48th IOA Annual Scientific Meeting Committee



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