



## **SIDE EFFECTS OF THE OPHTHALMIC CYCLOPENTOLATE IN ADULT**

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<b>Article Info</b>	<b>ABSTRACT</b>
<p><i>Received 14/12/2015</i> <i>Revised 17/01/2016</i> <i>Accepted 28/01/2016</i></p>	<p>Cyclopentolate adverse affects are rare and dose-dependent. We report the occurrence of a significant systemic reaction to 1% cyclopentolate eye drops in a normal dosage manifesting as inability to walk, disequilibrium, dysarthria, and impaired cognition. A 78 year-old woman presented the emergency department with inability to walk, disequilibrium, dysarthria, and disorientation 5 minutes after 4 drips of eye drops containing 1% cyclopentolate were placed in both eyes for evaluation of the retina in routine eye examination. She was conscious and had no prior history of convulsions. His vital signs were normal. In eye examination, pupils were mydriatic, and there was no pupil reflex. Evidence relative to atropinization was not determined in systemic examination. Serum glucose levels, blood count, biochemical parameters, and blood gas analyses were within reference ranges. Intracranial pathologic findings were not determined in computed cranial tomography and diffusion weighed MR. His clinical symptoms deteriorated at 4-hour follow-up, and he was discharged without any complaint at 12hours. These clinical findings were dedicated to adverse affect of cyclopentolate because of no convulsion history in the patient and his family. Delirium and extra pyramidal side effects are well known adverse affects of cyclopentolate and especially occur with oral and parenteral use. Adult patient can present with similar findings after use of local cyclopentolate. Doctors should remember these adverse affects and treated these patients.</p>
<p><b>Key words:</b> Cyclopentolate, Side effects, Disequilibrium.</p>	

### **INTRODUCTION**

Cyclopentolate hydrochloride (CH) is a medication with anticholinergic properties and it is commonly used to produce cycloplegia and mydriasis. It is widely known that psychotropic, hallucinogenic and

euphorogenic properties can lead to abuse of anticholinergic agents [1]. Cyclopentolate induces peripheral and systemic symptoms such as atropine toxicity by arresting postganglionic cholinergic receptors.



Side effects are rare and dose-dependent. Children are likely to have side effects [2]. We report a case of systemic reaction accompanied by inability to walk, disequilibrium, dysarthria (incoherent speech) and impaired cognition (disorientation) following the instillation of 1% cyclopentolate eye drops.

### CASE REPORT

A 78-year-old female presented to the emergency department with inability to walk, disequilibrium, dysarthria and disorientation 5 minutes after the instillation of 4 drops of Cyclopentolate 1% in both eyes to evaluate the retina in routine eye examination. She was conscious and had no past history of convulsions. Her personal and family history revealed no distinguishing findings. Body temperature was 36.5 C; respiratory rate 15 breaths/min; pulse rate 96 beats/min; systolic blood pressure 110 mm Hg. Eye examination revealed mydriatic pupils. There was no pupil reflex. Atropinization was not observed in systemic examination. Serum glucose levels, blood count, biochemical parameters, and blood gas analyses were within reference ranges. Diffusion-weighted MRI and computed cranial tomography scans did not detect intracranial pathologic findings. Clinical deterioration occurred at 4 hour-follow up and at discharge patient had no complaints. The clinical findings were attributed to the side effects of cyclopentolate because there was no past history of convulsions.

### DISCUSSION

Restricted trans-corneal diffusion of eye drops, atropine-like adverse effects of cyclopentolate include nasal mucosal absorption after the drainage through the lymphatic channels of conjunctiva and capillary. Absorption rises particularly in inflammation of conjunctiva. Contrary to drugs absorbed from gastrointestinal tract, after ocular administration eye drops absorbed more and they do not lead to hepatic metabolism. More than 80% of drugs provide systemic absorption in order to prevent nasolacrimal duct from blocking [3]. Addiction depending on dose and prolonged use may result in systemic toxicity [4]. Most commonly observed central nervous system symptoms can be listed as seizure, psychosis, disequilibrium, dysarthria, impaired cognition, ataxia, hallucination, hyperkinesias, and gastrointestinal system symptoms [5-6]. Unlike other cases reported in literature, in our case central nervous system effects were observed despite the absence of repeated doses. Besides, these effects are related to the amount of dose and are

frequently observed in children with high concentrations or high doses [5-6]. Adverse effects reported in adults with normal doses have been rare. The onset ranges from 20 min to 1 h, and the reactions are generally transient [2]. In our case, findings were observed 5 minutes after instillation/use of drug and spontaneous regression began 4 hours later, in line with literature. Unlike other cases reported in literature our patient was elderly.

Systemic effects may be prevented by avoiding high dose drug management. Adverse effects of addiction should be kept in mind. Nasolacrimal sac compression after instillation of eye drops can diminish nasal mucosal absorption. Systemic effects could be prevented by storing drugs in hot and wet places. Recognizing symptoms is of vital importance in preventing systemic toxicity [7]. In our case nasolacrimal duct compression was not administered. We presume this has led to systemic effect faster. Treatment is symptomatic, but Physostigmine is used to treat severe toxicity [7].

### CONCLUSION

Adverse effects of cyclopentolate such as delirium and extrapyramidal side effects are notable and they appear during oral or parenteral use. Adult patients may present with similar findings following instillation of cyclopentolate. Ophthalmologists should consider all adverse effects of anticholinergic eye drops. If a patient reports a history of these symptoms and signs which are observed during eye review, emergency medicine specialist should keep in mind that cyclopentolate can be the possible cause.

### DECLERATIONS OF INTEREST

We declared that we have no commercial, financial, and other relationships in any way related to the subject of this article all that might create any potential conflict of interest.

### PRIOR PUBLICATION

This article has not been published or submitted for publication elsewhere, in whole or in part, before submission to Journal.

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