

Persistent Pupillary Dilatation After Cycloplegic Refraction in Child Taking Systemic Benztropine

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Abstract

Cyclopentolate is a substance that has a mydriatic and cycloplegic effect which is used frequently by ophthalmologists before pediatric glasses prescription. In this case, a child came to the clinic for glasses prescription, but later her pupil didn't return to normal size even after using the antidote (Pilocarpine eye drop 2%). Accidentally, we found that she is on systemic medication containing Benztropine which has a mydriatic effect. After the stoppage of the systemic Benztropine, the pupils return to their normal size after two weeks. That case gives an important rationale to check the medications taken by the patient before giving cycloplegic drugs, which could help in the diagnosis and treatment of mysterious situations.

Keywords: Benztropine; Cyclopentolate; Eye; Medication; Ophthalmology

1. Introduction

Cyclopentolate (Ciclopejico) is an eye drop containing cyclopentolate which is a muscarinic antagonist. It is commonly used during pediatric eye examinations to dilate the eye (mydriatic) and prevent the eye from focusing and accommodating (cycloplegic). After installation of cyclopentolate, pupil dilation (mydriasis) typically lasts up to 24 hours, while the paralysis of the ciliary muscle

(cycloplegia) typically lasts 6-24 hours [1]. During this time, patients may be light-sensitive than normal and may notice close objects blurred and possibly distant objects blurred. Cyclopentolate is often chosen as a mild, short-lasting, cycloplegic alternative to atropine, the latter which lasts much longer time up to 14 days [2].

Cogintol® is a kind of tablet that contains Benztropine as an active substance which is a medication used to treat a type of movement disorder such

as dystonia and parkinsonism. Benztropine belongs to a class of medication called anticholinergics that work by blocking a certain natural substance (acetylcholine). Unfortunately, Benztropine produces mydriasis which lasts up to 2 weeks [3].

On the other hand, Pilocarpine is a muscarinic agonist which causes pupillary constriction. Hence it is used in eye drops form to neutralize the cyclopentolate effect [4].

2. Case Report

A ten-year-old female patient came to clinic for glasses prescription. Routinely, she took cyclopentolate before examination and glasses were prescribed. After three days she came again to the clinic complaining of blurry vision, by examination we discovered that the cause was the pupillary dilatation. Then we prescribed pilocarpine eye drop 2% twice daily to induce pupillary constriction.

After two days she came back for follow up and surprisingly pupils were still dilated. We asked her parents if she is taking any other systemic medications. Her parents told us that she is on Cogintol® tablets which contains Benztropine in the last three weeks before attending ophthalmology clinic. Then we told them to stop it and continue pilocarpine for two weeks. Also, we prescribe two glasses to wear; one for far vision and another one for near vision as she complains of difficulty in reading as she is in school. Before she attends the Ophthalmology clinic there were no complaints of near work, and she was on one glass used for far and near work despite she took systemic Benztropine in the last three weeks before ophthalmic consultation.

After two weeks of Benztropine discontinuation, she started to recover, and she rejected the near vision glasses and the glasses for far are working well for near also.

3. Discussion

In ordinary cycloplegic refraction, the usage of local Cyclopentolate produces a cycloplegic effect which lasts for up to 24 hours and fades away

without using an antidote. In the present case using Pilocarpine for 2 days, it fails to regain normal pupillary size. What is noticeable in that case is the use of Benztropine systemically, which produces a cycloplegic effect for up to 14 days, causes an aggressive local effect which counteracts the effect of local antidote and needed to stop its administration in order to eliminate its effect. We had a hypothesis that cyclopentolate initiates mydriasis and cycloplegia and systemic Benztropine induces long-lasting cycloplegia for two weeks that is not responding to topical pilocarpine eye drop 2% and this is not the behavior of the pupil if mydriasis was induced by cyclopentolate alone. So, systemic medications that contain derivatives of atropine can potentiate cycloplegic effect on the pupil for prolonged time up to two weeks with no antidote medication [5]. Failure of 2% pilocarpine drops to contract the pupils of our patient indicates that the iris sphincter had been blocked by an anticholinergic agent [6].

There are no such studies talking about the correlation between the usage of systemic benztropine and local pilocarpine. But there are many talks related to the side effects of Benztropine as an anticholinergic drug, which induces besides blurring of vision, confusion, constipation, dry mouth and throat, hyperthermia, nausea, paralytic ileus, tachycardia, vomiting, visual hallucinations, and urinary retention [7].

4. Conclusion

Proper history taking from patients is obligatory even in pediatric cases. At that case, we would waste a long time searching for pathological causes of persistent pupillary mydriasis. Ophthalmologists must make sure that history taking from all patients is done properly with good documentation of systemic medications especially atropine derivatives to avoid such surprising conditions.

5. References

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