Case Report

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Psychiatry

A CASE OF ACUTE PSYCHOSIS INDUCED BY TOPICAL 1% CYCLOPENTOLATE EYE DROPS IN A YOUNG CHILD

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ABSTRACT Cyclopentolate is used in situations requiring mydriasis and cycloplegia. Systemic absorption of the drug can occur transconjunctivally or via nasolacrimal duct through highly vascular nasal mucosa. Topical Cyclopentolate may manifest CNS effects like restlessness, hallucination, psychosis, hyperactivity, seizures, incoherent speech, and ataxia. A 10 year old female child was seen in ophthalmology outpatient department for the refractive error assessment so single drop of 1% Cyclopentolate eye drops was instilled to both eyes 3-4 times at an interval of 10-15 minutes. After 1 hour the child became restless, irritable and started talking irrelevantly with hallucinatory behavior.The child was then diagnosed with Acute Psychosis induced by Cyclopentolate. Her symptoms were resolved spontaneously after few hours and she was discharged after 24 hours of observation.

KEYWORDS : Cyclopentolate Eye Drops, Acute Psychosis, Acetylcholine

INTRODUCTION

Intraocular drugs are used in paediatric practice for diagnostic procedures as well as in the treatment of ocular conditions. Cyclopentolate is used in situations requiring mydriasis and cycloplegia. Systemic absorption of the drug can occur transconjunctivally or via nasolacrimal duct through highly vascular nasal mucosa[1]. Central anticholinergic syndrome (CAS) was first described by Longo in 1966. The estimated frequency of this syndrome varies between 1 and 11.2%[2]. CAS results from the inhibition of muscarinic cholinergic neurotransmission and manifested by central nervous system (CNS) effects or peripheral nervous system effects, or both. These include tachycardia and CNS effects like restlessness, hallucination, psychosis, hyperactivity, seizures, incoherent speech, and ataxia.[3,4] .

We describe a case in which the patient had acute CNS manifestation following after topical instillation of 1% cyclopentolate hydrochloride eye drops into conjunctival sac during assessment for refractive error.

CASE REPORT

A 10 year old female child accompanied by her father came to ophthalmology outpatient department in morning hours with complaint of diminuition of vision since the past 6 months. She had no history of any allergy, systemic illness, or drug intake in the past. For the purpose of refractive error assessment, single drop of 1% Cyclopentolate eye drops was instilled to both eyes 3-4 times at an interval of 10-15 minutes. After 1 hour the child became restless, irritable and started talking irrelevantly.On examination child's vitals were stable. General and neurological examination did not reveal any abnormality. The patient was then referred to psychiatry outpatient department where child exhibited altered behavior in form of shouting, crying, running around, muttering to self, making purposeless gestures, talking irrelevantly and she was trying to catch something in space that was not actually visible manifesting through visual hallucinations. Mental status examination revealed the child to be conscious, oriented and well aware of her surroundings. She was restless, easily startled, eye to eye contact was not established and rapport was established with difficulty. She also had increased psychomotor activity. Her attention could be aroused but concentration ill sustained. Involuntary movements of hands and fingers observed with dryness of the tongue and the oral mucous membrane. There were no other systemic or neurological complications observed. On the basis of above findings and onset of acute psychotic symptoms after instillation of Cyclopentolate eye drops, a diagnosis of Cyclopentolate induced psychosis was suspected. The child was kept under observation, her family members were reassured and no pharmacological intervention was done .Her symptoms were resolved spontaneously by evening and she was discharged after 24 hours of observation.

DISCUSSION

Cyclopentolate is an anticholinergic, antimuscarinic tertiary amine with atropine-like actionswhose topical administration to eyes causes mydriasis and cycloplegia The advantages of this drug are rapid onset of action and recovery. Side effects are uncommon. It has gained widespread use as the cycloplegic drug of first choice for most children over the age of 1 year and allows many optometrists and ophthalmologists to carry out quick successful cycloplegic refractions with few complications.[5]

An absolute or relative reduction in cholinergic activity in the central nervous system (CNS) due to anticholinergic drugs can result in anticholinergic syndrome, which can manifest with a variety of signs and symptoms. Dryness of the skin and mouth, dermal flushing, fever, irritability, abdominal distention, urinary retention, feeding intolerance, psychosis, ataxia, hallucinations, convulsion, coma, tachycardia with normal blood pressure, arrhythmia, and death can be observed after multiple instillations of the eye drops or accidental ingestion by infants, children and patients with neurologic disorders.[6]

Children, particularly infants, are more prone to systemic adverse effects of topical eye drops because of their lower body mass and blood volume, immature metabolism, and immaturity of excretory, nervous, and cardiovascular systems.[7] The toxicity is dose related.[8]

In the prsented case , the 10 year old child had an acute CNS toxicity in the form of restlessness, hallucinations and altered behavior (Acute Psychosis) following intraocular instillation of 1%cyclopentolate eye drops. Her symptoms resolved spontaneously after few hours without any treatment.

Steps that can be taken to reduce systemic absorption and toxicity include using the lowest available concentration of the drug, not exceeding recommended number of drops (instill one drop of 0.5% or 1% in eye followed by one drop of 0.5% or 1% after five minutes, if necessary), occluding the lacrimal passage after topical administration, blotting away excess drops after administration and using micro drops (drops with volume of 5.6 microlitres as against volume of 35.4 microlitres of a standard drop). In neonates and infants cyclopentolate and phenylephrine combination is preferred due to lower cyclopentolate concentration and reduced risk for systemic reaction [9].

CONCLUSION

Present case highlights the important side effects of a topically administered drug. One should be aware of all adverse effects of the drugs which they are prescribing routinely so that optimum treatment can be given. The medical and paramedical staff should use the drug in the prescribed dose and methods to minimize systemic absorption.

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