Topiramate Induced Secondary Acute Closed Angle Glaucoma: A Case Report

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Abstract

This is a case of a 28-year-old Caucasian female presenting to the Emergency Department (ED) with concerns of painless, bilateral blurry vision that began suddenly the prior day and had become notably worse overnight. This case is unusual because she did not list topiramate on her medication list and did not admit to taking the medication until specifically asked. On ocular examination the patient had a visual acuity of 20/200 in both eyes, slit lamp examination showed the cornea and anterior chamber appeared normal. The intraocular pressure (IOP) was elevated with a reading of >50 mmHg in both eyes. Based on the clinical findings a diagnosis of topiramate-induced acute closed angle glaucoma was made and she was referred to Ophthalmology. Subsequent follow up occurred at 4 months and the patient reported resolution of her symptoms and her visual acuity returned to baseline. This case highlights the importance in performing a thorough history with a patient, which includes asking about unprescribed substances.

Introduction

Topiramate is a sulfamate-substituted monosaccharide generally used as an antiseizure medication due to its ability to decrease GABA and glutamine which leads to a decrease in excitatory neurotransmitters.[1] It is commonly used to treat seizures, migraine headaches, and other conditions. This medication has experienced an increase in interest as it has a desired side effect of weight loss. However, it also has a less well-known side effect of increasing intraocular pressure, which can lead to secondary acute closed angle-closure glaucoma.[1] If left untreated, this disease can cause blindness due to irreversible damage of the optic nerves through degeneration of retinal ganglion cells.[2] Patients that are prescribed this medication should be educated by their provider on potential side effects; however, when a patient obtains this medication inappropriately they are not informed of what signs to look for. In this case study we will discuss a patient who developed glaucoma as a result of taking topiramate for its off-label use of weight loss.

Case Presentation

A 28-year-old Caucasian female presented to the Emergency Department (ED) with concerns of painless, bilateral blurry vision that began suddenly the prior day and had become notably worse overnight. She did not list topiramate on her medication list and did not admit to taking the medication until specifically asked. She then reported taking the medication for the past 6 days for weight loss.

On ocular examination the patient had a visual acuity of 20/200 in both eyes. There was no evidence of inflammation in the eyes and the optic discs were normal. There was no chemosis or conjunctival injection. On the slit lamp examination, the cornea and anterior chamber appeared normal. The intraocular pressure (IOP) was elevated with a reading of >50 mmHg in both eyes, the normal IOP ranges between 11 – 21 mmHg. Based on the clinical findings a diagnosis of topiramate-induced acute closed angle glaucoma was made. She was given timolol, dorzolamide,

and brimonidine and was advised to discontinue topiramate. The patient was discharged from the ED and seen same day in the office by ophthalmology who agreed that the topiramate likely led to ciliochoroidal effusion syndrome and was able to exclude other causes. She was prescribed topical antiglaucoma medication and sent home. She was seen once more by ophthalmology and IOP was found to have decreased to 20 mmHg in both eyes. Subsequent follow up occurred at 4 months and the patient reported resolution of her symptoms and her visual acuity returned to baseline.

Discussion

Topiramate is a sulfamate-substituted monosaccharide generally used as an antiseizure medication due to its ability to decrease GABA and glutamine which leads to a decrease in excitatory neurotransmitters.[1] A common side effect is weight loss, and topiramate is becoming more commonly used as an anti-obesity medication. Topiramate-induced glaucoma is another well-documented, although rare side effect of the medication. The exact mechanism by which topiramate increases intraocular pressure is not fully understood. It is thought to be related to the inhibition of carbonic anhydrase in the ciliary body of the eye, which leads to decreased aqueous humor outflow.[1] This can result in increased intraocular pressure and, ultimately, optic nerve damage if left untreated.

Admitting ED physicians should be aware of the potential side effects of topiramate-induced glaucoma and consider topiramate as the cause of glaucoma particularly in patients with an atypical presentation. The clinical presentation of topiramate-induced glaucoma can vary and could potentially present similar to primary closed-angle glaucoma. The diagnosis is made based on the presence of elevated IOP, open angles, and absence of other ocular pathologies. Treatment involves discontinuation of topiramate and initiation of topical antiglaucoma medications to lower the IOP. Regular follow-up visits are required to monitor the disease progression and to adjust the treatment plan accordingly. If left untreated, this disease can cause blindness due to irreversible damage of the optic nerves through degeneration of retinal ganglion cells.[2] Patients prescribed topiramate should be monitored closely for signs of increased intraocular pressure and regular eye examinations should be performed. If topiramate is suspected to be the cause of elevated intraocular pressure it should be discontinued. Alternative treatments should then be considered to prevent optic nerve damage and irreversible vision loss.

Clinical Bottom Line

In this case we found acute closed angle glaucoma in a 28-year-old female who was taking this medication without provider knowledge for weight loss. Our ED providers had to consider all potential causes of this glaucoma and specifically ask the patient if she was taking topiramate. This study highlights the importance of performing a thorough history with a patient which includes asking about unprescribed substances.

Informed Consent

Written informed consent for publication of this study was obtained from the patient in the ED. Oklahoma State University – Center for Health Sciences Institutional Review Board (IRB) reviewed this case and decided it does not require approval.

Key Words: Topiramate-induced glaucoma, Acute closed angle glaucoma, Case Report

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