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TOPIRAMATE-INDUCED ACUTE, BILATERAL MYOPIA IN A MIGRAINE PATIENT

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Abstract:
Topiramate is an anticonvulsant drug and is used to prevent migraine headache. We report here an unusual presentation of topiramate-associated adverse effects. A 30-year-old female patient presented with a migraine and no report of eye disease. Ten days after taking topiramate, her visual acuity was suddenly reduced. On examination, she was found to have bilateral acute myopia that was later attributed to topiramate. Therefore, the medication was discontinued. A week later, the visual acuity of the patient returned to normal (6/6) in both eyes, with no other visual complaints. In conclusion, physicians prescribing topiramate should observe their patients for any visual complaints, as this would prevent subsequent permanent visual impairment.
Keywords: Topamax, Topiramate, Myopia, Migraine, Saudi Arabia

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INTRODUCTION:

Topiramate is an anticonvulsant medication that is used as a migraine prophylaxis. Topiramate is a sulfa-derivative monosaccharide, related to fructose. It blocks voltage-dependent sodium and calcium channels, inhibits excitatory pathway of glutamate, enhances inhibitory effects of GABA, and inhibits the activity of carbonic anhydrase. [1] Topiramate has numerous side effects, including dizziness, ataxia, and renal stones. The present case, we report a rare incident of acute reversible myopia after taking topiramate. To the best of our knowledge, this is the first case of its kind reported from Saudi Arabia.

CASE REPORT:

A 30-year-old Saudi female patient, who was diagnosed with migraine four years before here presentation, was referred to our ophthalmology clinic in 2008 due to sudden progressive visual acuity reduction. Ten days before presentation, she was seen by a neurologist and prescribed 25 mg of topiramate twice a day to treat her migraine headaches. On initial examination, she could only count fingers using her right eye (OD), visual acuity was 6/60 in her left eye (OS), and her extraocular muscle function and her intraocular pressure (IOP) were both normal. Fundus examination did not reveal any abnormality. The gonioscopy exam showed an open angle (360°), and a B-scan was performed, but came back normal. A refractive error of -3.00 OD and -3.50 OS was noted. Therefore, topiramate-induced acute myopia was suspected. After discussion with the neurologist, the patient was advised to discontinue the medication. One week after ending the medication, the patient presented with improved bilateral visual acuity (6/36) and discomfort around her left eye. The patient was reassured and was observed the following week. By the end of the follow-up period, the patient's visual acuity was back to normal in both eyes (6/6 OU), and she exhibited no other visual complaints. As a result, a diagnosis of resolved acute myopia secondary to topiramate was made.

DISCUSSION:

We report the first Saudi case of topiramate-induced myopia and topiramate-induced ocular disorder. The current patient had not complained of any type of ocular disease before taking topiramate. The onset of myopia was sudden and progressive after starting the medication and improved completely following drug discontinuation, which was similar to other previous cases reported in the literature. [2,3]

Topiramate is sulfamate-substituted monosaccharide that is used to treat seizure disorders and prevent migraine headache. In addition, it is used as a weight-reducing agent and to treat some psychiatric illnesses, such as alcohol dependence and bulimia nervosa. The major adverse effects of the drug are non-ocular, which include dizziness, ataxia, and nephrolithiasis. Topiramate-induced ocular diseases have been described in the literature, including myopic shift, [4-6] elevated IOP, [3,7] retinal striae, [8] and visual loss. [9] Acute myopia and elevated IOP have also been reported in pediatric age groups. [10,11]

The exact mechanism by which myopia occurs in patients ingesting topiramate is not clearly understood. One of earliest reports describing ocular side effects related to topiramate hypothesized that myopic shift occurs due to lenticular osmotic state disturbance with alteration of refractive index, opposing a previous hypothesis, which attributed the cause to a spasm in accommodation. [11] Newer concepts proposed that myopia might be related to increased choiroidal thickness, which leads to displacement of the lens and iris anteriorly, making the anterior chamber shallower, which results in acute myopia and angle-closure glaucoma. [12]

The onset of symptoms is usually sudden, but generally disappear upon early discontinuation of topiramate. Gradual manifestation of the disease with subsequent visual impairment has been reported. [2] Therefore, it is key for clinicians who prescribe topiramate to their patients to be completely attentive concerning any ocular involvement that results from this drug, and to promptly discontinue the therapy with referral to an ophthalmology clinic.

CONCLUSION:

Patients with topiramate-induced myopia often experience sudden and progressive reduction in visual acuity after commencement of the drug. In the majority of cases, symptoms have mostly disappeared if the drug therapy was stopped early. Therefore, it is important for ophthalmologists, neurologists, and other clinicians prescribing topiramate to be aware of ocular adverse effects and to inform their patients that they need to discontinue the medication and be referred to an ophthalmology clinic if they experience any blurring of vision or ocular pain.

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