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Case report

Topiramate-induced bilateral secondary angle closure and myopia shift☆

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ABSTRACT

A 41-year-old female with a history of migraine had no previous ocular problems except myopia with spherical refraction of −2.25 D OD and −1.75 D OS. She experienced sudden onset of bilateral blurred vision, ocular fullness sensation, and headache after undergoing topiramate therapy for 7 days (50 mg/day). Her visual acuities with the presenting glasses were 20/200 OD and 20/50 OS. Intraocular pressures (IOPs) were 44 mmHg OD and 49 mmHg OS, respectively. Autorefraction measurement showed spherical refraction of −5.25 D OD and −4.75 D OS. Best-corrected visual acuities were 20/20 for both oculus dexter (OD) and oculus sinister (OS). Slit-lamp examination revealed bilateral conjunctival chemosis, very shallow anterior chambers, forward displacement of lens–iris diaphragm, round and sluggishly reacting pupils, and closed angles on gonioscopy. A B-scan ultrasound displayed choroidal thickening in both eyes. An ultrasound biomicroscopy demonstrated bilateral 360° ciliochoroidal effusions with forward rotation of ciliary body but no pupillary block. Impression of topiramate-induced bilateral angle-closure glaucoma and acute myopic shift was recorded. She was advised to discontinue topiramate immediately and was administered antiglaucoma medication and mydriatics. Two days later, IOP returned to normal limits and myopic shift resolved after 1 week. Her visual acuity with previous glasses improved to 20/20 OU. In addition, choroidal effusions also subsided gradually. The presented case highlights the possible side effects of topiramate, offers management and suggestion for such a condition, and brings awareness to sulfa drug complications.

1. Introduction

Topiramate, a sulfamate-substituted monosaccharide, is generally prescribed as an antiepileptic and antidepressant medication. Several mechanisms elicit its antiseizure effect. For example, the drug serves as a state-dependent blocker of sodium channels, enhances γ-aminobutyric acid (GABA)-mediated chloride fluxes across the postsynaptic membrane, provides positive modulation of GABA-A receptors, and produces a mild effect by inhibiting the activity of carbonic anhydrase. Treatment with topiramate is found to be useful in migraine, bipolar disorder, weight loss, and neuropathic pain.[1] However, in July 2001, Banta et al. first reported a case of secondary angle-closure glaucoma associated with topiramate use. Thereafter, several cases of ocular adverse reaction related to topiramate administration have been published.[2] During the past 10 years, there were 39 case reports throughout the world. Although few cases were published in Chinese population, few such case reports were proposed in Taiwan population as well. Therefore, we herein present a case to highlight the possible side effects of topiramate, offer management and suggestion for such condition, and bring awareness to sulfa drug complications.

2. Case report

A 41-year-old healthy female presented to our hospital with sudden onset of bilateral ocular pain, ocular fullness sensation, blurred vision, and headache. On initial examination, her visual acuity with presenting glasses was 20/200 in the right eye and 20/50 in the left eye. Intraocular pressures (IOPs) as measured using an air puff tonometer were 44 mmHg OD and 49 mmHg OS. Central corneal thickness of both eyes was 540 μm (oculus dexter or OD)

☆ This case was presented as a poster at the Asia-Pacific Joint Glaucoma Congress, Taipei, Taiwan (December 2010).

Conflicts of interest: The authors have no conflicts of interest relevant to this article.

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and 530 μm (oculus sinister or OS). Autorefraction measurement showed spherical refraction of −5.25 D OD and −4.75 D OS with acute myopic shift of 3.00 D in both eyes. The best-corrected visual acuity (BCVA) was 20/20 for both eyes. A slit-lamp examination revealed bilateral conjunctival chemosis and injection. Shallow anterior chambers measured using a Zeiss IOLMaster were 2.20 mm OU (average anterior chamber depth of adults: 3.15 mm) with iridocorneal touch for 360° and forward displacement of lens–iris diaphragm. Round and sluggishly reacting pupils without dilatation was also observed (Fig. 1A and B). Axial length was 23.80 mm (OD) and 23.78 mm (OS). Average corneal curvature measured 44.23/44.82 D (OD) and 43.60/44.94 D (OS). Cystic corneal edema, peripheral anterior synechiae, or cellular inflammation in the anterior chambers was not detected. Gonioscopy showed closed angles in both eyes (Fig. 1C). A fundus photograph revealed normal retina and cup-disk ratio of 0.4 in both eyes.

Her medical history showed no previous ocular problems except myopia with spherical refraction of −2.25 D OD and −1.75 D OS. Shallow anterior chamber depth was noted due to forward displacement of lens–iris diaphragm during the slit-lamp examination. She had a past history of migraine under medication control. One week before her presenting symptoms, she was administered 50-mg topiramate daily for her migraine headache. She claimed no trauma history recently. There was no family history of glaucoma and her visual field was within normal limit. A B-scan ultrasound (SONOMED, B-5500) was performed, which revealed annular peripheral choroidal effusions in both eyes (Fig. 2A), while the lens thickness of both eyes was about 4.0 mm. At the same time, no characteristic T sign was demonstrated, and posterior scleritis (PS) is unlikely. Ultrasound biomicroscopy (UBM) (SONOMED, VuMAX) was arranged, which showed closed iridocorneal angles, bilateral 360° ciliochoroidal effusions, swelling and forward rotation of ciliary body; however, no pupillary block was seen (Fig. 2B).

She was advised to discontinue topiramate immediately and was prescribed antiglaucoma medication including intravenous infusion of mannitol, topical antiglaucoma eye drops, and mydriatics with 1% tropicamide b.i.d. (twice a day). Initial antiglaucoma eye drops were 0.5% timolol b.i.d. and 1% brinzolamide t.i.d. (thrice a day). The following day, much severe conjunctival chemosis and

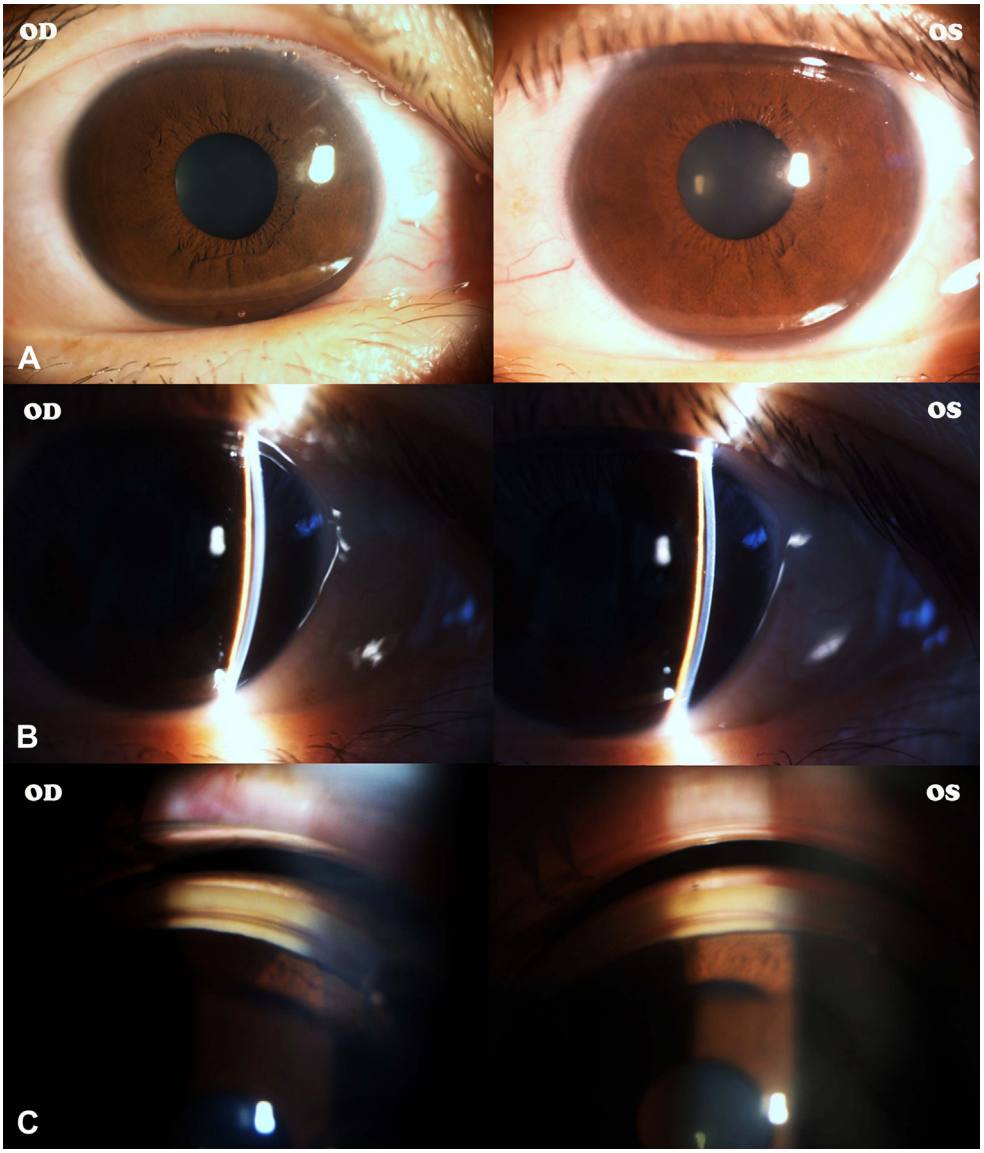

Fig. 1. At presentation, slit-lamp photograph revealed (A) shallow anterior chamber and forward displacement of the lens–iris diaphragm, (B) severe conjunctival chemosis, and marked shallow anterior chamber depth (2.20 mm) in both eyes, and (C) bilateral closed angles on gonioscopy. OD = oculus dexter; OS = oculus sinister.