

Topiramate-induced acute angle closure with severe panuveitis: A challenging case report

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A 36-year-old female presented with the complaints of pain, photophobia, redness, and sudden diminution of vision in both the eyes following topiramate for migraine treatment. On examination, there was panuveitis with angle-closure glaucoma in both the eyes with fibrinous exudate with pigments in the anterior chamber of the left eye. B scan revealed increased choroidal thickness in both the eyes. Serial anterior segment optical coherence tomography scans were done in the left eye to demonstrate the gradual resolution of the fibrin material from the anterior chamber. There was complete resolution of inflammation in both eyes following discontinuation of topiramate and treatment with systemic and topical steroids. There was an improvement in visual acuity in the left eye following complicated cataract surgery.

Key words: Acute myopia, anterior segment optical coherence tomography, complicated cataract, panuveitis, posterior chamber intraocular lens, secondary angle closure, topiramate

Topiramate is part of a new generation of antiepileptic drugs that have been increasingly prescribed for various purposes including migraine, depression, weight loss, and neuropathic pain.^[1,2] Topiramate-induced bilateral acute angle-closure glaucoma^[3-7] is a well-known entity and it can be associated with anterior uveitis,^[8-10] hypopyon,^[11] panuveitis,^[12] and maculopathy with IgG4 disease.^[13] The role of anterior segment optical coherence tomography (AS-OCT) in diagnosis and management of acute angle-closure glaucoma with anterior uveitis following topiramate use have been studied.^[14]

We are herewith reporting a case of bilateral panuveitis with acute angle-closure glaucoma following topiramate use with serial AS-OCT documentation of fibrinous exudates in

the left eye with good visual outcome following medical and surgical management.

Case Report

A 36-year-old female presented to us with complaints of sudden diminution of vision in both the eyes for 2 days. She gave a history of taking topiramate for migraine 50 mg daily for 5 days, and when the dose was increased to 100 mg/day, she developed pain, redness, and photophobia in both the eyes. She was a known case of hypothyroidism on tablet Eltroxin 100 mg/day. There was no history of the similar event or using glasses in the past. On examination, she was found to have vision of counting fingers at 3 meters, improving to 6/9 with -4.75 DS-0.50 DC at 180 in the right eye and counting fingers at 2 meters in the left eye without any improvement. Intraocular pressure (IOP) by applanation was 28 mmHg in the right eye and 30 mmHg in the left eye. There was diffuse episcleral congestion in both the eyes [Fig. 1a and c] with subconjunctival hemorrhage in the left eye. Cornea showed pigments on endothelium in both the eyes [Fig. 1b and d] with microcystic edema in the left eye. Anterior chamber in the right eye revealed flare ++, cells++ and in the left eye showed both central and peripheral shallowing along with fibrinous exudates with pigments [Fig. 1c and d]. Iris in both the eyes showed altered pattern [Fig. 1a and c]. Gonioscopy revealed closed angles in both the eyes. There was no view of the posterior segment in the left eye. B scan of the right eye revealed vitritis [Fig. 1e] and left eye showed low-to-medium reflective vitreous echoes with retinochoroidal thickness of 1.83 mm [Fig. 1f].

A diagnosis of bilateral panuveitis with secondary angle closure due to topiramate was made. The patient was asked to discontinue topiramate. Left eye anterior chamber tap was taken for Gram and potassium hydroxide stain smears, culture and sensitivity, and polymerase chain reaction (PCR) for eubacterial and panfungal genomes. Smears, culture and sensitivity, and PCR for bacterial and fungal infections were negative, and endogenous endophthalmitis was ruled out, and then, the patient was started on topical and systemic steroids, cycloplegics, with continuation of empirical antibiotics. Along with this, she was also started on timolol + brimonidine combination drug. Detailed systemic workup was done. Laboratory investigations such as complete blood count, random blood sugar urine microscopy, Mantoux test, Chest X-ray posteroanterior view were normal. ANA, TPHA, HIV-I and HIV-II were negative. PCR analysis from the earlier anterior chamber tap DNA was negative for HSV -1 and II, VZV and CMV. One week later, the patient was symptomatically better. Her vision improved to 6/6 in the right eye and 6/9P in the left eye. IOP was within normal

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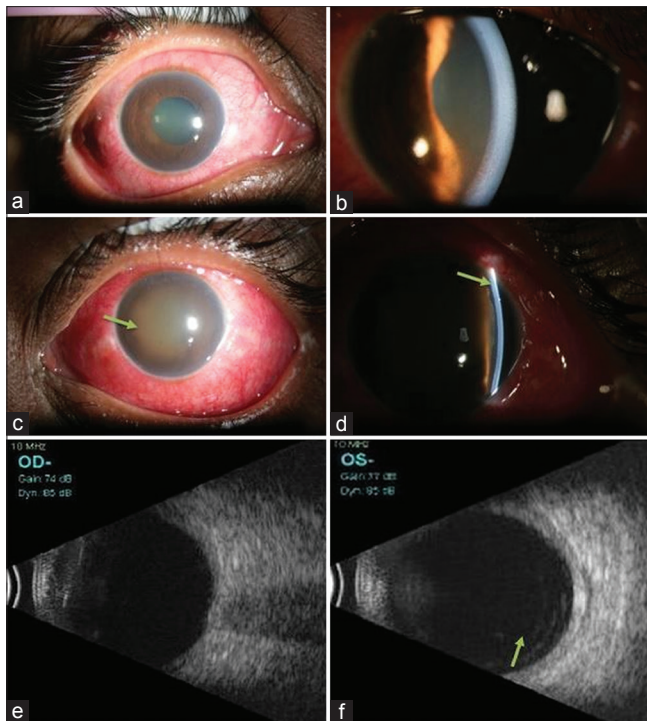


Figure 1: Clinical picture as seen at presentation. (a) Right eye diffuse anterior segment photograph revealed circum ciliary congestion with anterior chamber reaction. (b) Right eye slit view photograph revealed corneal edema and diffuse fine keratic precipitates on the cornea. (c) Left eye anterior segment photograph revealed fibrin exudates in the anterior chamber. (d) Left eye slit view anterior segment photograph arrow shows shallow peripheral anterior chamber. (e) Right eye B scan revealed vitritis. (f) Left eye B scan revealed vitritis with increased retinochoroidal thickening

limits. The conjunctival congestion and fibrin globule reduced in size revealing the lens to be cataractous in the left eye. We were able to capture serial AS-OCT demonstrating its gradual resolution of fibrin [Fig. 2a-c]. Gonioscopy revealed open angles with increased trabecular pigmentation in both the eyes. Fundus examination revealed hyperemic disc with a cup-disc ratio of 0.2 in the right eye. Repeat B scan of the left eye showed sub-Tenon's fluid and RCT of 1.76 mm. Ultrasound biomicroscopy showed suprachoroidal effusion, and topical and systemic steroid therapy was continued. The left eye of the patient developed multiple posterior synechiae with complicated cataract. Systemic and topical steroids were continued. Once the inflammation was under control, the patient underwent left eye clear corneal phacoemulsification within the bag intraocular lens implantation under cover of topical and systemic steroid therapy with continuation of topical antiglaucoma medications.

Postcataract surgery, antiglaucoma therapy was shifted to single drug therapy, i.e. brinzolamide, and then, it was discontinued as the IOP was normal. Postoperatively, systemic as well as topical steroids were tapered gradually.

Two months, following cataract surgery, the patient again had diminution of vision in the left eye. Left eye posterior segment OCT revealed subfoveal serous retinal detachment due to flare-up of inflammation. The patient was given

intravitreal dexamethasone injection along with continuation topical steroids and nonsteroidal anti-inflammatory drugs agent. Final follow-up best-corrected visual acuity was 6/6, N6 in both the eyes with complete resolution of inflammation in the both eyes [Fig. 3a-d].

Discussion

Topiramate use has been reported to have various ocular and nonocular adverse effects.^[13] Among the ocular adverse effects, there have been case reports of angle closure,^[3-7] acute rise in IOP, acute myopia, uveal effusion, macular striae,^[13] ciliary body swelling, diplopia, and nystagmus.^[15]

Angle-closure glaucoma and uveitis are a rare adverse effect following topiramate use. Goldberg *et al.* in their cumulative review reported seven cases of well-documented, potentially topiramate-associated uveitis.^[15] Uveal effusions have been reported in association with several sulfa-derived drugs, including topiramate,^[4] since the mechanism of angle closure and acute myopia was attributed to be due to the weak carbonic anhydrase activity of topiramate and uveal effusions with ciliary body swelling causing forward rotation of iris lens diaphragm.

Ocular features noted in our patient were bilateral panuveitis, acute myopia, acute angle closure, and complicated cataract and uveal effusion with vitritis in the left eye. Naranjo *et al.*^[16] proposed an adverse drug reaction probability score to establish causality of adverse events by drugs, where a score of 5–8 suggests probable causation. Our case met 5 out of 10 criteria.

Kawali *et al.* reported hypertensive uveitis and evolving Fuchs uveitis due to topiramate.^[17] Kamal *et al.* reported AS-OCT measurements such as angle opening distance and trabecular iris space area in the narrow angle at presentation and following treatment and discontinuation of topiramate.^[14] We have documented the case with AS-OCT after 5 days of therapy. During this time, angle structures were open with fibrin exudates in the anterior chamber. Subsequent scans were done at 10 days and 1 month. One month AS-OCT scan revealed complete resolution of fibrin in the anterior chamber. Our patient responded well to topical and systemic steroid therapy along with left eye cataract surgery.

Conclusion

Patients presenting with topiramate associated panuveitis with angle closure should be advised to discontinue topiramate along with aggressive management can prevent irreversible loss of vision. AS-OCT acts as a noninvasive technique to document the extent of involvement of anterior segment and is a useful tool for follow-up in such patients.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understand that name and initials will not be published and due efforts will be made to conceal identity.

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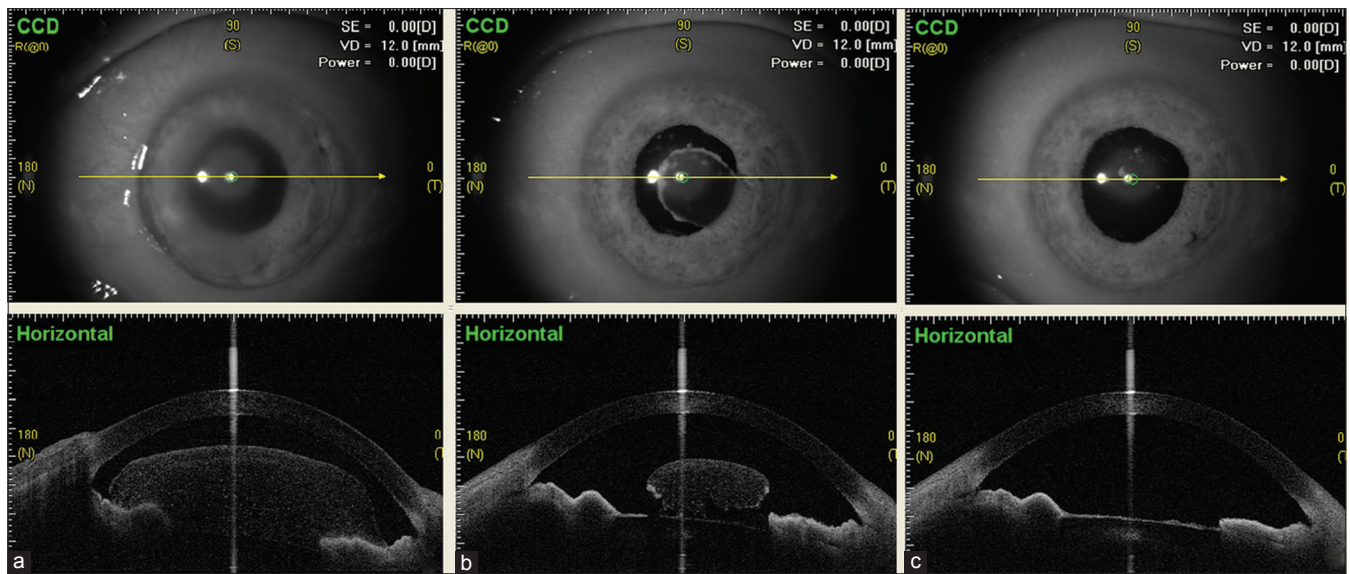


Figure 2: Serial anterior segment optical coherence tomography images showing resolution of fibrin globule in the anterior chamber. (a) 5 days after presentation. (b) 10 days after presentation. (c) Follow-up after 1 month

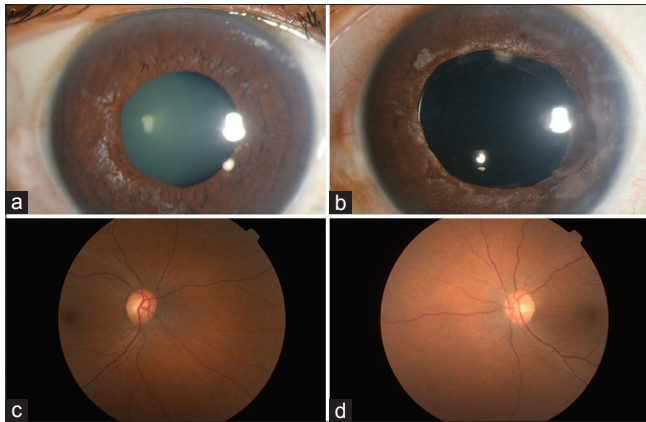


Figure 3: (a) Diffuse slit lamp photograph revealed the altered iris pattern in the right eye. (b) Diffuse slit lamp photograph showed atrophic patches on the iris and dilated pupil with posterior chamber intraocular lens in the bag. (c and d) Post treatment fundus photograph showed normal posterior segment in both eyes

Conflicts of interest

There are no conflicts of interest.

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