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Case report

Topiramate-induced macular neurosensory retinal detachment

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ABSTRACT

Purpose: To present a previously unreported retinal side-effect from topiramate use in two cases.
Observations: Macular neurosensory retinal detachments were seen in two patients shortly after beginning oral topiramate. The macular detachments resolved shortly after discontinuing this medication.
Conclusions and importance: As these two cases represent the first reports of topiramate-induced macular neurosensory retinal detachment, clinicians should be aware of this potential ocular side effect when administering this medication.

1. Introduction

We present the first two cases of presumed topiramate-induced macular neurosensory retinal detachment with optical coherence tomography (OCT) and fluorescein angiography(FA) documentation. Topiramate is a sulfa-derivative monosaccharide with protean clinical indications including infantile seizures, migraine prophylaxis, depression, obsessive compulsive disease, and appetite suppression.[1] Its mechanisms of action include sodium channel blockade, potentiation of γ-aminobutyric acid–mediated inhibition, antagonism of a subtype of *N*-methyl-D-aspartate–activated neuronal excitation, and carbonic anhydrase inhibition.[2] Topiramate has well documented ocular side-affects, including acute myopia, angle closure glaucoma, ciliochoroidal effusion, and retinal striae, whose precise underlying mechanism remain unknown.

2. Findings

2.1. Case 1

A 29 year old female presented to us upon referral by her local emergency department. The patient had presented with sudden onset painless blurry vision for three days with nausea and vomiting for one day. Her past medical history included depression, anxiety, obesity, and migraine headaches. She denied past ocular issues. Her lone medication was oral topiramate (exact dose unknown) begun one week prior to presentation.

Upon review of the transfer note, ocular examination on presentation demonstrated closed angles with intraocular pressures of 40 mmHg. She was diagnosed with angle closure glaucoma and admitted for treatment with IV mannitol and solumedrol, an enoxaparin injection, and topical phenylephrine, timolol, apraclonidine, and prednisolone acetate 1%. The topiramate was discontinued.

Although intraocular pressures decreased to 22, visual acuity worsened to hand motions in each eye over 48 h. Bilateral laser iridotomies were performed and the next day vision improved to 20/60 bilaterally with open angles to the trabecular meshwork; intraocular pressures were 10. The topical aqueous supressants were discontinued. Routine blood work obtained at admission revealed thrombocytopenia (platelets 38,000) and anemia (hemoglobin 10.5 gm/dl, hematocrit 31.2%).

The following day, she again experienced decreased vision with visual acuities of 20/400 and 20/320 respectively, with intraocular pressures of 6 mmHg. The anterior segments were normal excepting patent peripheral iridotomies in each eye. Although the vitreous cavities were quiet, there was edema of the nasal peripapillary nerve fibers, bilateral peripheral choroidal effusions, and macular folds with subretinal fluid bilaterally. The retinal vessels were of normal caliber, but with some dot-and-blot hemorrhages in each retinal periphery (Fig. 1). Fluorescein angiography showed peripheral leakage (Fig. 1). Optical Coherence Tomography demonstrated submacular fluid (Fig. 2). Ultrasound biomicroscopy demonstrated anterior rotation of the ciliary body with choroidal

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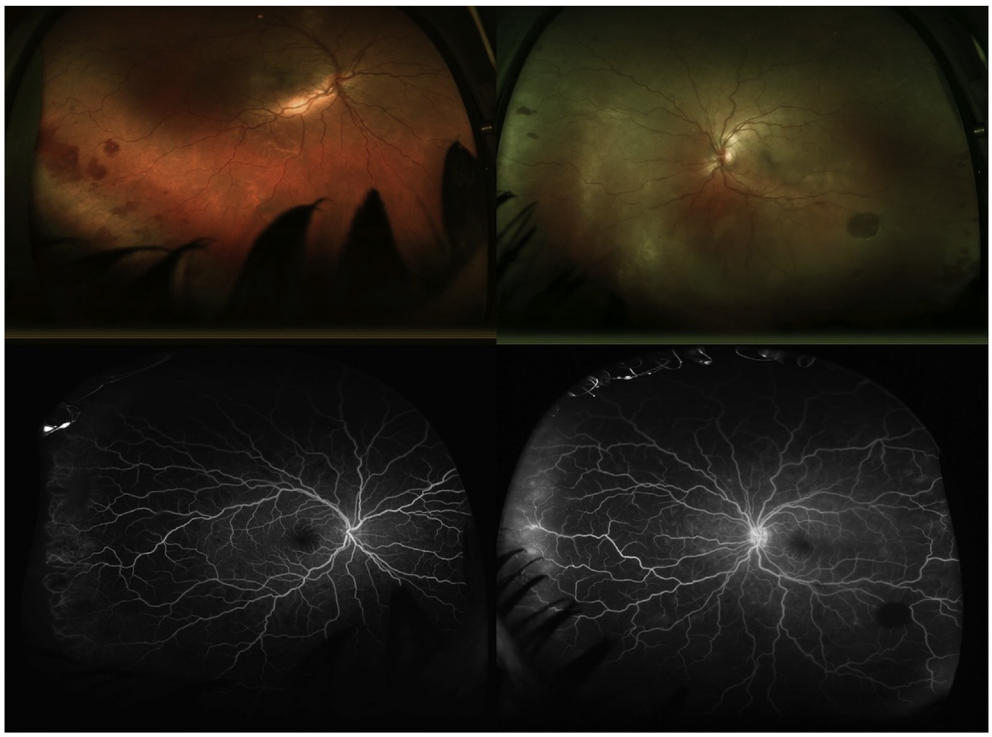

Fig. 1. Dot and blot hemorrhages seen in each retinal periphery with peripheral leakage.

effusion, but no ciliary body detachment (Fig. 3). No new intervention was initiated. The patient's platelets improved to 78,000 and the patient was discharged on topical steroids.

Three days later, vision improved to 20/70 and 20/60 respectively. The intraocular pressures were 9 and 12. The anterior chambers were deep, the macular sub-retinal fluid less (Fig. 4), and

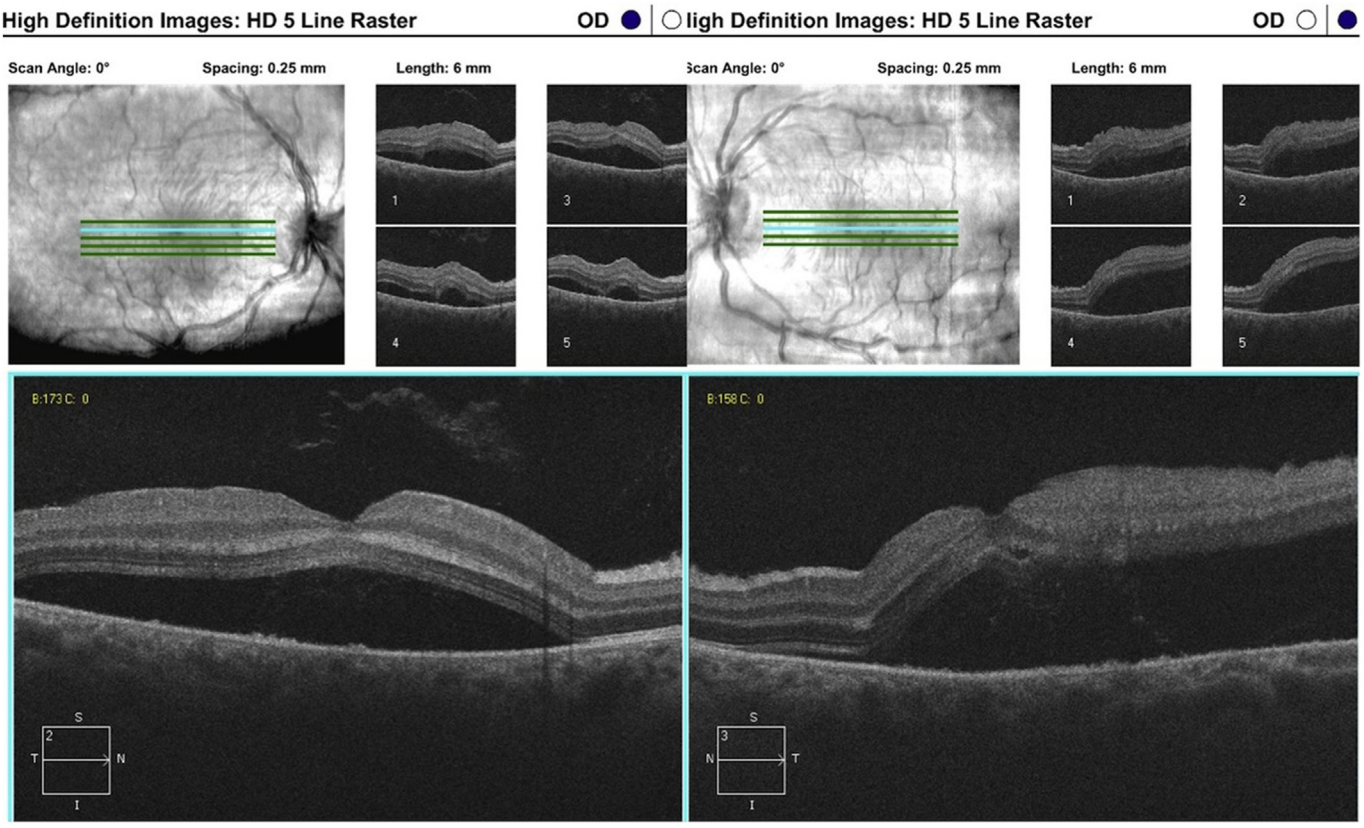

Fig. 2. Ocular Coherence Tomography demonstrates submacular fluid OU.