Case Report

Acute secondary angle closure glaucoma following topiramate

A Ghosh[1], A K Thakkar[2], R Y S Yadav[3], Shikha Singh[4], Amit Patel[5]

Use of topiramate is associated with a rare syndrome which includes acute myopia along with secondary angle closure glaucoma. It occurs within a month of initiation of therapy. Exact incidence of this syndrome is not known however glaucoma was diagnosed in 0.36%, 0.05% and 0.66% of the study cohort during the first month,second to third month, and fourth to twelfth month in a population based study[8]. Topiramate is an antiepileptic drug which is used as an anti migraine drug also. A patient on anti migraine therapy with topiramate was referred to our department by the neurologist. At the time of presentation she had high myopia of -7 dioptres in both eyes with raised intraocular tension of 42.1mmhg in right eye and 38.8mmhg in the left eye. Patient responded very well to antiglaucoma medications-systemic-carbonic anhydrase inhibitors, hyperosmotic agents and topical drops. Failure to recognize the ocular side effects and to institute treatment as soon as they manifest may lead to permanent damage to vision.

[*J Indian Med Assoc* 2018; **116:** 24-5]

Key words **: Secondary angle closure glaucoma, topiramate, myopia.**

Topiramate is a newer antiepileptic drug with a broad pharmacological profile. Its exact mode of action is not known. Probably it has multiple mechanisms of action which include blockage of voltage sensitive calcium channels potentiating of GABAa evoked chloride flux and reduction of type L-calcium channel activity[1,2]. It also inhibits carbonic anhydrase[7]. Of late its established efficacy in patients with migraine as a prophylactic therapy, has led to its wide spread use in common practice. Adverse effects to topiramate are usually mild and they do not need drug withdrawal. Limb parasthesia, dizziness, somnolence along with weight loss[3] and renal calculi are common side effects and they usually subside on continued use. A rare syndrome of acute myopia associated with secondary angle closure glaucoma has been reported in patients within one month of initiation of therapy[7]. Though rare it is a serious and important side effect, which needs early discontinuation of topiramate therapy[4,5]. We document a case who developed topiramate induced acute myopia and glaucoma, which resolved on discontinuation of topiramate.

Case Report

A 24 year old lady, being treated for migraine by the neurologist at BRD Medical College was started on topiramate 50mg at bedtime, since she was not responsive to other prophylactic therapy. Within two weeks of starting this drug patient developed severe headache, s marked blurring of vision, redness, discomfort and photophobia in both eyes and was referred to department of ophthalmology.

Department of Ophthalmology, BRD Medical College, Gorakhpur 273013
[1]MS (Ophthalmology), Professor and Head and Corresponding author
[2]DM (Neurology), Professor of Medicine, BRD Medical College, Gorakhpur 273013
[3]MS (Ophthalmology), Assistant Professor, BRD Medical College, Gorakhpur 273013
[4]MS (Student 2nd year), Resident, BRD Medical College, Gorakhpur 273013
[5]MS, Senior Resident (Ophthalmology), BRD Medical College, Gorakhpur 273013

Examination **—** Her general and systemic examinations revealed no abnormalities. A detailed ocular examination revealed-VA RE 3/60,LE 2/60,Near vision N6 both eyes.

Both eyes showed lid edema, severe bulbar conjunctival congestion (Figs 1 & 2) minimal corneal edema, shallow anterior chamber with lens iris diaphragm pushed forwards.pupils were middilated (4-5mm) not reacting to light and accommodation in both eyes. Lens was clear in both eyes. Retinoscopy revealed 7 diopters of myopia which did not improve following correction with minus lenses.

Investigation **—** Intraocular pressure(IOP) was 42.1mmhg and 38.8mmhg in RE and LE respectively by schiotz tonometry. Angles were closed in both eyes on gonioscopy. Slit lamp examination showed bowing of lens-iris diaphragm forward. B-scan did not reveal any posterior segment pathology.

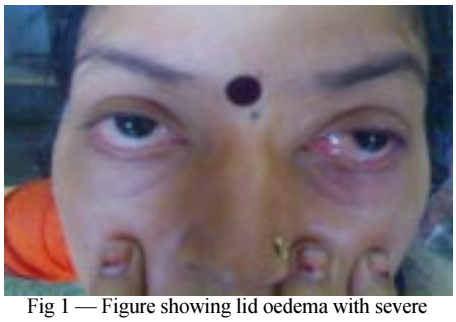

Fig 1 — Figure showing lid oedema with severe bulbar conjunctival congestion in both eyes

Fig 2 — Figure showing conjunctival chemosis laterally in LE with bulbar congestion

Management **—** A diagnosis of secondary angle closure

glaucoma was made on the basis of above findings. Topiramate was immediately withdrawn. She was treated with IV Mannitol 20% 300ml stat,acetazolamide 250mg QID, timolol maleate 0.5% BD and topical steroids. Examination on 2nd day showed a comfortable patient with markedly decreased congestion and chemosis. Iop recorded was 17.3mm of hg both eyes.

Follow-up — On follow up 1week later, her visual acuity was 6/6 in both eyes without correction. Her IOP was normal in both eyes (20.6 mmhg in right and 17.3mmhg in left). Anterior chamber depth was normal and pupils were normal in reaction and size. Visual field assessment by Humphrey field analyzer was normal after the treatment. Gonioscopic findings revealed open angles in both eyes.

Discussion

Topiramate is a sulfamate substituted monosaccharide being used widely because of its anticonvulsant and antimigraine property. Most of the side effects of topiramate therapy are mild, however a syndrome of acute myopia with secondary angle closure glaucoma may have a serious consequence if not suspected and treated in time. Our case had features of acute myopia with secondary angle closure glaucoma which developed within 2 weeks of initiation of topiramate therapy and it resolved on drug withdrawal and conservative antiglaucoma therapy.

There are 115 case reports with ocular side effects[4] due to topiramate therapy of which 86 had secondary angle closure glaucoma[5]. Seven patients had permanent visual loss following topiramate therapy. Most the ocular complications developed within a month of initiation of therapy. Ophthalmological findings include myopia, anterior chamber shallowing, ocular hyperaemia and increased intraocular pressure. Mydriasis may be present. The syndrome may be associated with supraciliary effusion resulting in anterior displacement of lens and iris with secondary angle closure glaucoma[6].

Topiramate may lead to idiosyncratic ciliochoroidal detachments and ciliary body oedema leading to anterior displacement of lens-iris diaphragm, lens thickening and acute angle closure glaucoma[6]. This probably happened in our case as well. The patient responded dramatically with conservative management alone after discontinuation of topiramate.

References

1 RB — Topiramate:Preclinical evaluation of a structurally novel anticonvulsant. *Epilepsia* 1994; **35:** 450-60.

2 Mei D, Shank RP, Gardocki JF, Vaugth JL,Davis CB, Schupsky JJ, Raffa Capuano A, Vollono C, *et al* — Topiramate in migraine prophylaxis:a randomised double blind versus placebo study. *Neurol Sci* 2004; **25:** 245-50.

3 Topomax. Raritan, NJ: Ortho-McNeil Pharmaceutical Inc; 2001.

4 Fraunfelder FW, Fraunfelder FT, Edwin U Keats — Topiramate-Associated Acute, Bilateral, Secondary Angle-Closure Glaucoma. *Ophthalmology* 2004; **111:** 109-11.

5 Fraunfelder FW, Fraunfelder FT — Adverse Ocular Drug Reactions Recently Identified by the National Registry of Drug Induced Ocular Side Effects. *Ophthalmology* 2004; **111:** 1275-9.

6 Kramer MS, Leventhal JM, Hutchinson TA, Feinstein AR — An algorithm for the operational assessment of adverse drug reactions. I. Background, description, and instructions for use. *JAMA* 1979; **242:** 623-32.

7 Sankar PS, Pasquale LR, Grosskreutz CL — Uveal effusion and secondary angle closure glaucoma associated with topiramate use. *Arch Ophthalmol* 2001; **119:** 1210-1.

8 Jau-Der-Ho,Herng-Ching Lin —Topiramate use and the risk of glaucoma development:A population based follow-up study. *American Journal of Ophthalmology* 2013; **155:** 336-41.e1