Bilateral Transient Myopia with Sulfasalazine Treatment

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ABSTRACT

PURPOSE: Several case reports of transient drug-induced myopia have been reported, mainly due to sulfa drugs. We present a case of a sudden and significant increase in myopia associated with initiation of Sulfasalazine for long-standing ulcerative colitis in an adult Caucasian female.

CASE REPORT: Our patient presented to the emergency room with acute bilateral visual loss. Ocular examination was normal, except for myopia of −4 Diopters (D) in both eyes (BE). The patient was advised to stop the medication, and her vision improved within 4 days to best corrected visual acuity (BCVA) of 6/7.5 with a refractive correction of −0.75 D in her right eye (RE) and BCVA of 6/6 with a refractive correction of −0.50 D in her left eye (LE).

CONCLUSION: To the best of our knowledge, this is the second reported case of transient Sulfasalazine-induced myopia.

KEYWORDS: drug-induced myopia, acute myopia, transient, Sulfasalazine, ciliary body edema

Introduction

Transient drug-induced myopia has been previously reported by several case reports. Association with other ocular conditions has been found in some of these cases, including secondary angle closure glaucoma1-2 (Figure 1). This effect is primarily caused by sulfa drugs.2,4 Among these drugs are Topiramate,³,⁴-⁸ Acetazolamide,⁹ Co-trimoxazole,¹⁰ and Hydrochlorothiazide.¹¹ Other drugs have also been reported to induce transient myopia, such as Tetracycline,¹² Metronidazole,¹³ and Aspirin.¹⁴ Sulfasalazine, a sulfonamide, is used to treat medical conditions such as rheumatoid arthritis and inflammatory bowel disease. This drug is considered to be relatively safe and well-tolerated, and the reported ocular side-effects of this drug are scarce.⁴ To the best of our knowledge, there is only one single report of transient myopia induced by Sulfasalazine treatment.¹⁵

Here, we present a case of a sudden and significant increase in myopia, associated with initiation of Sulfasalazine for long-standing ulcerative colitis in a female patient with no previous ocular history and without any known documented refractive error.

Case Report

A 41-year-old Caucasian woman with a known ulcerative colitis presented to the emergency room with acute bilateral visual loss for the past 2 days. The patient was started on a new treatment with Sulfasalazine 2 weeks prior to her visual loss. Her uncorrected visual acuity (UCVA) was counting fingers (CF) in both eyes (BE), and her best corrected visual acuity (BCVA) was 6/15 in her right eye (RE) with a refractive correction of −4.75 Diopters (D) and BCVA of 6/12 in her left eye (LE) with a refractive correction of −4.50 D. Our patient presented to the emergency room with acute bilateral visual loss. Ocular examination was normal, except for myopia of −4 Diopters (D) in both eyes (BE). The patient was advised to stop the medication, and her vision improved within 4 days to best corrected visual acuity (BCVA) of 6/7.5 with a refractive correction of −0.75 D in her right eye (RE) and BCVA of 6/6 with a refractive correction of −0.50 D in her left eye (LE).

Figure 1. Ultra-biomicroscopy (UBM) image of a patient with drug-induced angle closure. The iris is pressed against the anterior chamber angle and the ciliary body is rotated anteriorly. The uveoscleral effusion seen here is typical of the idiosyncratic mechanism of adverse reactions that precipitate acute transient myopia and angle closure.³

Ocular examination was normal, including intraocular pressures, fundus examination, ocular motility, convergence, and pupillary response. Measured axial length was 21.89 mm in her RE and 22.26 mm in her LE. Past ocular medical history was unremarkable, and her UCVA has always been excellent without any known documented refractive error. Pregnancy was ruled out.

The patient was advised to stop the medication, and her vision improved within 4 days to 6/7.5 with a refractive correction of −0.75 D in her RE and 6/6 with a refractive correction of −0.50 D in her LE. Ultra-biomicroscopy (UBM) showed normal anatomy in BE (Figure 2). No change was observed in repeated axial length measurements, and consecutive ocular examinations were normal.

Discussion

We described here a rare case of a young female patient presenting with acute bilateral myopia following recent treatment...
with Sulfasalazine. According to review of the literature, this transient side-effect has been previously reported only once due to Sulfasalazine treatment, and therefore this is, to the best of our knowledge, the second reported case of transient Sulfasalazine-induced myopia.

A change in the refractive power of the eye may be induced by drugs in one of several mechanisms: (1) ciliary muscle spasm, increasing the refractive power of the lens; (2) swelling of the ciliary processes, displacing the lens forward; or (3) water imbibition in the lens, increasing the refractive power of lens contents. The mechanism may be explained by UBM, which demonstrates ciliochoroidal effusion (Figure 1). This causes forward displacement of the ciliary body-lens-iris block and relaxes the zonular fibers, and as a result can lead to anterior chamber shallowing, angle closure glaucoma, and myopia. Ultra-biomicroscopy can also demonstrate swelling of the ciliary body, further facilitating the diagnosis.

Patients presenting with this drug-induced side-effect may complain of headache and ocular pain, as well as sudden bilateral loss of distant vision with normal vision at near, representing the myopic shift. In addition, patients may also present with elevated intraocular pressure and features of bilateral acute angle closure glaucoma. Not all patients present with all these clinical features. Physical examination may show flat or shallow anterior chamber, as well as conjunctival injection, corneal edema, and inflammation of the anterior chamber.

Discontinuation of the medication may lead to complete resolution of the anatomic shift. Topical intraocular pressure-lowering medications may need to be considered if intraocular pressure remains uncontrolled.

In addition, in women of childbearing age, it is reasonable to rule out pregnancy-induced refractive error. In pregnant patients, choroidal effusive processes can be ruled out with enhanced depth imaging optical coherence tomography (EDI OCT).

In conclusion, transient myopia induced by Sulfasalazine is a well-documented phenomenon, and awareness of this side-effect is crucial for patients and clinicians. Discontinuation of the drug leads to complete resolution of the anatomic shift within days to weeks. Clinicians should be aware of this side-effect, and prompt recognition may lead to the appropriate management.

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Author Contributions
TP wrote the paper with input from all authors.

Informed Consent
Consent to publish the case report was obtained from the patient.

REFERENCES
1. Kaimbo DKW. Transient drug-induced myopia. S Afr Case Rep. 2014;1:105.
2. Pandey VA, Rhee DJ. Review of sulfonamide-induced acute myopia and acute bilateral angle-closure glaucoma. Compr Ophthalmol Update. 2007;8:271-276.
3. Subak-Sharpe I, Low S. Pharmacological and environmental factors in primary angle-closure glaucoma. Br Med Bull. 2010;93:125-143.
4. Peponis V, Kytarits V, Chalkiadakis SE, Bonovas S, Sitaras NM. Ocular side effects of anti-rheumatic medications: what a rheumatologist should know. Lupus. 2010;19:675-682.
5. Gubbay SS. The occurrence of drug-induced myopia as a transient side effect of aspirin. Epilepsia. 1998;39:451.
6. Muniesa Royo MJ, Travsetet Maeso A, Jurfo Campo C. Topiramate-induced bilateral acute angle closure glaucoma and myopia. Med Clin (Barc). 2012;138:368-369.
7. Van Issum C, Mavrakanas N, Schute JS, Shaarawy T. Topiramate-induced acute bilateral angle closure and myopia: pathophysiology and treatment controversies. Eur J Ophthalmol. 2011;21:404-409.
8. Safrin N, Smith SN, Seidman CJ. Topiramate-induced refractive change and angle closure glaucoma and its ultrasound biomicroscopy findings. BMJ Case Rep. 2012;2012:bcr2012006509.
9. Fan JT, Johnson DH, Burk RR. Transient myopia, angle-closure glaucoma, and choroidal detachment after oral acetazolamide. Am J Ophthalmol. 1993;115:813-814.
10. Kamath S, Acharya N, Nithyanandam S. Co-trimoxazole-induced myopia in an HIV-positive patient. Int J STD AIDS. 2012;23:71-72.
11. Roh YR, Woo SJ, Park KH. Acute-onset bilateral myopia and ciliochoroidal effusion induced by hydrochlorothiazide. Korean J Ophthalmol. 2011;25:214-217.
12. Edwards TS. Transient myopia due to tetracycline. JAMA. 1963;186:69-70.
13. Grinbaum A, Ashkenazi I, Avni I, Blumenthal M. Transient myopia following metronidazole treatment for Trichomonas vaginalis. JAMA. 1992;267:511-512.
14. Sandford-Smith JH. Transient myopia after aspirin. Br J Ophthalmol. 1974;58:699-700.
15. Santodomingo-Rubido J, Gilmartin B, Wolfsohn JS. Drug-induced bilateral transient myopia with the sulphonamide sulphasalazine. Ophthalmic Physiol Opt. 2003;23:567-570.
16. Pastel EA, Assalian A, Epstein DL. Drug-induced transient myopia and angle-closure glaucoma associated with supraciliary choroidal effusion. Am J Ophthalmol. 1996;122:110-112.