

Acute Unilateral Myopia Induced by Add-On Aripiprazole: A Case Report

Mehmet Gunes¹, Suleyman Demir¹, Mahmut Bulut², Mehmet Cemal Kaya², Abdullah Atli², Aslihan Okan Ibiloglu¹, Harun Yukse³

ABSTRACT:

Acute unilateral myopia induced by add-on aripiprazole: a case report

The partial agonist aripiprazole is a novel atypical antipsychotic with a relatively safer side effect profile. Acute unilateral myopia is a very rare condition that is commonly associated with drug use. Here, we present a woman diagnosed with obsessive-compulsive disorder (OCD) and major depressive disorder (MDD) who have been treated for two years in our clinic. She was on fluoxetine (Prozac) 80 mg/day when adding aripiprazole (Abilify) 10 mg/day as an augmentation agent has triggered unilateral myopia. After cessation of aripiprazole her myopia has disappeared. Psychiatrists should keep in mind that unilateral myopia as a side effect may develop after combining aripiprazole with fluoxetine in patients with OCD and MDD.

Keywords: aripiprazole, drug-induced unilateral myopia, drug side effects

Klinik Psikofarmakoloji Bulteni - Bulletin of Clinical Psychopharmacology 2016;26(1):68-71



¹Assist. Prof., ²Assoc. Prof., Dicle University, Faculty of Medicine, Department of Psychiatry, Diyarbakir - Turkey
³Assoc. Prof., Dicle University, Faculty of Medicine, Department of Ophthalmology, Diyarbakir - Turkey

Corresponding author:

Dr. Mehmet Gunes,
Dicle Üniversitesi Hastanesi, 1. Kat, Psikiyatri
Anabilim Dalı, 21280, Diyarbakir, Türkiye

E-mail address:

m63gunes@gmail.com

Date of submission:

January 08, 2015

Date of acceptance:

August 13, 2015

Declaration of interest:

M.G., S.D., M.B., M.C.K., A.A., A.O.I., H.Y.: The authors reported no conflicts of interest related to this article.

INTRODUCTION

Aripiprazole is a novel atypical antipsychotic drug commonly used for the treatment of schizophrenia, schizoaffective disorder, bipolar disorder, treatment-resistant depression, and obsessive-compulsive disorder. It operates as a partial agonist at the dopamine D₂, D₃ and serotonin 5HT_{1A} receptors and as an antagonist at the serotonin 5HT_{2A} receptor. This new-generation antipsychotic also has weak alpha-1 adrenergic, M1 muscarinic cholinergic, and H1 histaminergic antagonist effects^{1,2}. It has been known that aripiprazole is an effective and safe drug with a low possible risk for parkinsonism, weight gain, prolactin increase, QTc

prolongation, and sedation³. Acute acquired myopia is a rare condition mostly encountered secondary to drug use. Some drugs are accused for blurred vision, double vision or reduced accommodation. Among the prescription drugs frequently causing acute acquired myopia are sulfate analogues, carbonic anhydrase inhibitors, hydrochlorothiazide, and corticosteroids⁴. Among psychotropic drugs, topiramate⁵, oxcarbamazepine, lamotrigine⁶, citalopram⁷, and sertraline⁸ have been reported to cause double vision, myopia, or bilateral maculopathy. However, to the best of our knowledge, there is no data in the PUBMED literature about unilateral myopia developed after aripiprazole use. Here, we present

a case of acute transient unilateral myopia related to the add-on use of aripiprazole to fluoxetine.

CASE

A 34-year-old female patient, a nurse, has been followed up in our clinic for two years with the DSM-5 diagnoses of obsessive-compulsive disorder (OCD) and major depressive disorder (MDD). The patient underwent treatment with fluoxetine, risperidone, and quetiapine during his follow up visits. She refused to use quetiapine because of excessive weight gain and risperidone because of its extrapyramidal side effects and remained on fluoxetine 80 mg/day which has yielded partial clinical response. Hence, treating psychiatrist decided to add aripiprazole 10 mg/day as an augmentation agent. Three days after the addition of aripiprazole the patient complained about visual acuity impairment that was not present previously. Due to her painless blurred vision, the words were sliding over one another when reading a book. Her vision of distance also became difficult. Because of the visual problems the patient decided to stop taking aripiprazole on her own, without consulting her doctor. After resolution of her visual problems in a couple of days she resumed to use aripiprazole, which has led to the same visual problems once again. Upon re-emergence of same visual problems the patient was admitted to our inpatient unit. The patient underwent all necessary physical examinations and laboratory tests. Neurological examination did not yield any pathological abnormalities. The comprehensive ophthalmological assessment showed visual acuity of 20/20 in her right eye and 20/40 in her left eye. The refractive error test established myopia of -2.00 diopters in the left eye using a standard Snellen chart. The patient's remaining anterior and posterior segment examinations were normal. The optical coherence tomography did not show any retinal pathology. The intraocular pressure was within the normal range. As it was assumed that the visual disturbance was related with the use of aripiprazole, the drug was discontinued and the patient was advised to

continue fluoxetine 80 mg/day treatment. The patient's visual complaints improved in 3-4 days after stopping fluoxetine. She was again assessed ophthalmologically. Visual acuity was 20/20 bilaterally. Anterior and posterior segment examination was unremarkable. The refractive error test revealed that the both eyes were emmetropic. Intraocular pressure was within the normal range. The Naranjo probability scale has shown a score of 9 points. Finally, the treating physicians concluded that add-on aripiprazole to fluoxetine was the cause of her unilateral acute transient myopia episode.

DISCUSSION

Side effects often reported with aripiprazole use are insomnia, tremor, akathisia, nausea, and vomiting². Some case presentations also reported rare side effects such as persistent hiccups (singultus), tardive dyskinesia, paroxysmal supraventricular tachycardia, and myopia^{9,10}. What distinguishes our case from other reports of acute myopia related to aripiprazole is that the transient myopia occurred in one eye, not in both eyes¹¹⁻¹³. Higher score obtained in the Naranjo probability scale was interpreted as the adverse effect was most probably related to the aripiprazole use in this case. To our knowledge, this is the first case that has developed unilateral acute transient myopia, which was triggered by add-on aripiprazole use.

The drugs used in psychiatry, especially the antipsychotics, may sometimes cause blurred vision due to their anticholinergic activity that is known to result in dilation of pupils and eventually closed-angle glaucoma¹⁴. Lacking any dilations of the pupils and normal intraocular pressure draw away us to presume a tentative closed-angle glaucoma diagnosis in our case.

The most important known cause for acute transient myopia is drug use⁴. Several different drugs may cause acute transient myopia¹². It is suggested that drug-induced acute myopia is more related with lenticular changes. Studies of the mechanisms of acute myopia generally emphasize

on the spasms of accommodation, changes in the structure of the lens, effusion of the ciliary body, ciliary spasm, peripheral uveal effusion, and serotonergic ocular effects^{15,16}. It has also been reported that acute myopia may occur secondary to edema and forward rotation of the ciliary body with the displacement of iris, lens, and diaphragm¹⁵. However, information about drug-induced unilateral myopia is very scarce in the literature. In a case report, shallow anterior chamber, detachment of the ciliary body, and unilateral transient myopia has been reported after excessive red wine consumption¹⁷. In fact, unilateral myopia is a condition rarely observed in adults¹⁸. A number of factors have been found to affect the development of unilateral myopia; 31.3% for optic nerve disorders, 20.8% for abnormality of the central nervous system, 12.5% for lens abnormality, 10.4% for retinopathy of prematurity, 6.3% for a family history of high degree myopia, 6.3% for buphthalmos (enlargement of the eyeball), 4.1% for macula scar/ chorioretinal coloboma, 2.0% for congenital ptosis, and 6.3% for unexplained reasons¹⁹.

Besides prescription drugs (e.g., indapamide, topiramate, acetazolamide and chlortalidomide) many other reasons may lead to acquired unilateral myopia such as blunt trauma, senile lenticular changes, tumors (metastases ocular, orbital pseudotumor), ecstasy abuse, and systemic tuberculosis²⁰. Acquired unilateral myopia observed in this present case was evaluated to be secondary to drug use. One possible mechanism might be accommodation spasm (AS). Both drugs may lead accommodation spasm in the ciliary muscle via muscarinic M3 receptors involved in muscle contractions. In accommodation process, parasympathetic activation of the M3 muscarinic receptors cause ciliary muscle contraction, which results with the decreased diameter of the ring of

ciliary muscle. Then the zonule fibers relax and the lens becomes more spherical, increasing its power to refract light for near vision²². Accommodation spasm, creating pseudomyopia, is generally associated with miosis and excess convergence as part of spasm of the near reflex. AS more commonly occurs as an isolated functional entity, usually attributed to psychogenic causes²³. AS can be caused by emotional problems, head trauma and other causes. Other causes of AS are drugs (certain ocular or systemic pharmacological agents), intraocular some inflammations, some infections, trigeminal neuralgia, multiple sclerosis, and laser-assisted in situ keratomileusis (LASIK)²⁴. On the other hand, increased plasma levels of aripiprazole due to the inhibition of Cytochrome P450 2D6 enzyme by fluoxetine might have contributed to this side effect of aripiprazole²¹.

Interestingly, one may expect that aripiprazole should affect both eyes, but unilateral myopia was occurred in our case. Nair et al.¹² suggested that this might be due to differences between the drug sensitivity of both eyes¹⁴. In such cases, some ciliary body changes may be seen with ultrasound biomicroscopy (UBM). Unfortunately, we were unable to perform it since it was not available in our hospital. Instead, we followed up the patient and confirmed complete resolution of unilateral myopia even 2 months after stopping her aripiprazole.

In conclusion; the patients who are under treatment of aripiprazole and fluoxetine should be closely monitored for acute unilateral myopia. Ophthalmologists as well as psychiatrists must be aware of this transient myopic shift and should also ask patients about medications such as aripiprazole. Further studies are needed to elucidate the relationship between myopia and drug interactions between aripiprazole and fluoxetine.

References:

1. Burris KD, Molski TF, Xu C, Ryan E, Tottori K, Kikuchi T, et al. Aripiprazole, a novel antipsychotic, is a high affinity partial agonist at human dopamine D2 receptors. *J Pharmacol Exp Ther* 2002;302(1):381-9. [\[CrossRef\]](#)
2. Gupta S, Masand P. Aripiprazole: review of its pharmacology and therapeutic use in psychiatric disorders. *Ann Clin Psychiatry* 2004;16(3):155-66. [\[CrossRef\]](#)
3. DeLeon A, Patel NC, Crismon ML. Aripiprazole: a comprehensive review of its pharmacology, clinical efficacy, and tolerability. *Clin Ther* 2004;26(5):649-66. [\[CrossRef\]](#)
4. Bovino JA, Marcus DF. The mechanism of transient myopia induced by sulfonamide therapy. *Am J Ophthalmol* 1982;94(1):99-102. [\[CrossRef\]](#)
5. Gubbay SS. The occurrence of drug-induced myopia as a transient side effect of topiramate. *Epilepsia* 1998;39(4):451. [\[CrossRef\]](#)
6. Brunton L, Chabner B, Knollman B. Goodman and Gillman's The Pharmacological Basis of Therapeutics. 12th ed. New York: Mc Graham-Hill Companies; 2011. p. 583-607.
7. Dorell K, Cohen MA, Huprikar SS, Gorman JM, Jones M. Citalopram-induced diplopia. *Psychosomatics* 2005;46(1):91-3. [\[CrossRef\]](#)
8. Sener EC, Kiratli H. Presumed sertraline maculopathy. *Acta Ophthalmol Scand* 2001;79(4):428-30. [\[CrossRef\]](#)
9. Marder SR, McQuade RD, Stock E, Kaplita S, Marcus R, Safferman AZ, et al. Aripiprazole in the treatment of schizophrenia: safety and tolerability in short-term, placebo-controlled trials. *Schizophr Res* 2003;61(2-3):123-36. [\[CrossRef\]](#)
10. Pigott TA, Carson WH, Saha AR, Torbeyns AF, Stock EG, Ingenito GG. Aripiprazole for the prevention of relapse in stabilized patients with chronic schizophrenia: a placebo controlled 26-week study. *J Clin Psychiatry* 2003;64(9):1048-56. [\[CrossRef\]](#)
11. Selvi Y, Atli A, Aydin A, Yener HI. Aripiprazole-related acute transient myopia and diplopia: a case report. *J Clin Psychopharmacol* 2011;31(2):249-50. [\[CrossRef\]](#)
12. Nair AG, Nair AG, George RJ, Biswas J, Gandhi RA. Aripiprazole induced transient myopia: a case report and review of literature. *Cutan Ocul Toxicol* 2012;31(1):74-6. [\[CrossRef\]](#)
13. Atli A, Selvi Y, Yildiz A, Kaya MC. Aripiprazole-Induced diplopia: a case report. *Klinik Psikofarmakoloji Bulteni - Bulletin of Clinical Psychopharmacology* 2013;23(4):353-6. [\[CrossRef\]](#)
14. Shah P, Dhurjon L, Metcalfe T, Gibson JM. Acute angle closure glaucoma associated with nebulised ipratropium bromide and salbutamol. *BMJ* 1992;304(6818):40-1. [\[CrossRef\]](#)
15. Krieg PH, Schipper I. Drug-induced ciliary body edema: a new theory. *Eye* 1996;10(Pt 1):121-6. [\[CrossRef\]](#)
16. Soylev MF, Green RL, Feldon SE. Choroidal effusion as a mechanism for transient myopia induced by hydrochlorothiazide and triamterene. *Am J Ophthalmol* 1995;120(3):395-7. [\[CrossRef\]](#)
17. Liu Z, Wang W. Acute transient myopic shift induced by red wine: a case report. *Cutan Ocul Toxicol* 2015;34(3):245-7. [\[CrossRef\]](#)
18. Sperduto RD, Seigel D, Roberts J, Rowland M. Prevalence of myopia in the United States. *Arch Ophthalmol* 1983;101(3):405-7. [\[CrossRef\]](#)
19. Weiss AH. Unilateral high myopia: optical components, associated factors, and visual outcomes. *Br J Ophthalmol* 2003;87(8):1025-31. [\[CrossRef\]](#)
20. Ikeda N, Ikeda T, Nagata M, Mimura O. Pathogenesis of transient high myopia after blunt eye trauma. Pathogenesis of transient high myopia after blunt eye trauma. *Ophthalmology* 2002;109(3):501-7. [\[CrossRef\]](#)
21. Waade RB, Christensen H, Rudberg I, Refsum H, Hermann M. Influence of comedication on serum concentrations of aripiprazole and dehydroaripiprazole. *Ther Drug Monit* 2009;31(2):233-8. [\[CrossRef\]](#)
22. Kaufman PL, Levin LA, Alm A. Adler's Physiology of the Eye. Elsevier Health Sciences; 2011. p. 508.
23. Chan RV, Trobe JD. Spasm of accommodation associated with closed head trauma. *J Neuroophthalmol* 2002;22(1):15-7. [\[CrossRef\]](#)
24. Rutstein RP. Accommodative spasm in siblings: a unique finding. *Indian J Ophthalmol* 2010;58(4):326-7. [\[CrossRef\]](#)