

Ocular Manifestations of Sildenafil citrate: A Rare Case Report

Santosh Kumar Singh^{1*}, (Col). Zahiruddin Khan²

¹Post Graduate Resident, ²Professor & Head,
Department of Ophthalmology, HI-TECH Medical College and Hospital, Pandra, Bhubaneswar, Odisha, India.

ABSTRACT

Sildenafil citrate a Phosphodiesterase type-5 (PDE-5) inhibitor is well tolerated and efficacious treatments for male erectile dysfunction that currently rank among the best-selling drugs worldwide. Non-arteritic anterior ischemic optic neuropathy (NAION), a cause of decreased vision including permanent loss of vision, has been reported rarely post-marketing in temporal association with the use of phosphodiesterase type 5 (PDE5) inhibitors, including MANFORCE. Most, but not all, of these patients had underlying anatomic or vascular risk factors for developing NAION, including but not necessarily limited to: low cup to disc ratio ("crowded disc"), age over 50, diabetes, hypertension, coronary artery disease, hyperlipidemia and smoking. It is not possible to determine whether these events are related directly to the use of PDE5 inhibitors, to the patient's underlying vascular risk factors or anatomical defects, to a combination of these factors, or to other factors.

It also exerts a minor inhibitory action against PDE6, which is present exclusively in rod and cone photoreceptors. At higher doses, sildenafil causes mild and transient visual symptoms in a minority of patients (mainly blue tinge to vision, increased

brightness of lights) causing definite effect in transient, mild impairment of colour discrimination.

But in this case, rare types of allergic ocular manifestations are mentioned below, which are not reported before.

Key Words: PDE-5, PDE-6, Colour Vision, Sildenafil Citrate.

*Correspondence to:

Dr. Santosh Kumar Singh,
Post Graduate Resident,
Department of Ophthalmology,
HI-TECH Medical College and Hospital,
Pandra, Rasulgarh, Bhubaneswar, Odisha, India

Article History:

Received: 15-11-2016, Revised: 23-11-2016, Accepted: 28-01-2017

Access this article online

Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2017.3.1.039	

INTRODUCTION

Sildenafil citrate a Phosphodiesterase type-5 (PDE-5) inhibitor is well tolerated and efficacious treatments for male erectile dysfunction that currently rank among the best-selling drugs worldwide.¹

Sildenafil enhances the effect of NO by inhibiting phosphodiesterase type 5 (PDE-5), which is responsible for degradation of cGMP in the corpus cavernous. Sildenafil has no direct relaxant effect on isolated human corpus cavernous. When sexual stimulation causes local release of NO, inhibition of PDE-5 by sildenafil causes increased levels of cGMP in the corpus cavernous, resulting in smooth muscle relaxation and inflow of blood to the corpus cavernosum.²

In addition to human corpus cavernosum smooth muscle, PDE-5 is also found in other tissues including platelets, vascular and visceral smooth muscle and skeletal muscle, brain, heart, liver, kidney, lung, pancreas, prostate, bladder, testis and seminal vesicle. The inhibition of PDE-5 in some of these tissues by sildenafil may be the basis for the enhanced platelet antiaggregatory activity of NO observed *in vitro*, an inhibition of platelet thrombus formation *in vivo* and peripheral arterial-venous dilatation *in vivo*.³

Non-arteritic anterior ischemic optic neuropathy (NAION), a cause of decreased vision including permanent loss of vision, has been

reported rarely. Most, but not all, of these patients had underlying anatomic or vascular risk factors for developing NAION, including but not necessarily limited to: low cup to disc ratio ("crowded disc"), age over 50, diabetes, hypertension, coronary artery disease, hyperlipidemia and smoking.^{4,5}

It also exerts a minor inhibitory action against PDE-6, which is present exclusively in rod and cone photoreceptors.⁹ At higher doses, sildenafil causes mild and transient visual symptoms in a minority of patients (mainly blue tinge to vision, increased brightness of lights) causing definite effect in transient, mild impairment of colour discrimination. Sildenafil does not affect visual acuity, visual fields, and contrast sensitivity.¹⁰

CASE REPORT

A 35-year old young male patient come to our department with complaining of sudden onset of pain, foreign body sensation, watering, and diminution of vision OS since 04 days back.

He was apparently alright 04 days before, and started with sudden onset of loss of vision both eyes for a half an hour at early morning, but gradually improved vision in right eye and remain diminution of vision in left eye. Subsequently developed, pain, lid oedema, redness, watery discharged photophobia to left eye. He reported to an ophthalmologist elsewhere and diagnosed as a

whole corneal epithelial defect OS, VA was 6/9 OD, 6/36 OS, normal colour vision and was treated by putting banded contact lens OS, topical antibiotics, topical NASID, in both eyes.

On history, first time he had taken a tab. of sildenafilcitrate 100 mg at that night.

On examination, general condition was good, vitals parameters were within normal limit, he had best corrected visual acute, 6/6 OD, 6/12 OS normal colour vision, IOP within normal limit. Mild lid edema, mild both superficial and deep mixed conjunctiva congestion (fig: A), banded contact lens in place (fig: B, black arrow mark), fundoscopically mild hypermia of the disc (papilitis) both eyes and rest feature are within normal limit.

The patient was admitted with prescribing tab. prednisolone 30mg bid after food with PPI for five days and gradually tapering the doses of 10mg up to 10 mg once daily and advice to continuing the rest drugs.

Next follow up day (fig:C), decrease of both sign and symptom and removing the banded contact lens found filling of epithelial defect, decrease of hypermic disc, improved BCVA up to 6/6 OD,6/9 OS and advice to continue the same medicine.

On 7th follow up day, improved all sign, symptom, optic disc normal, with BCVA 6/6 OD,6/6 OS normal colour vision, advise to continue the medicine and ask to report after 15 days then discharged the patient from hospital.



Fig A:(4th day of onset) Lid edema, Conjunctival congestion;



Fig B: (4th day of onset) Banded contact lens (arrow);



Fig C: (5th follow up day) Decreased congestion;



Fig D: (7th follow up day) Normal Quite eye.

DISCUSSION

Sildenafil works by inhibiting the enzyme PDE-5 by occupying its active site. This means that cGMP is not hydrolysed as fast and this allows the vascular smooth muscle to relax and get dilated. Sildenafil is a potent and highly selective inhibitor of PDE-5. So it may affect the conjunctival vessels and get congested.^{6,7} The common ocular side effect of sildenafil citrate is Non-arteritic anterior ischemic optic neuropathy (NAION) ever been reported frequently, a cause of decreased vision including permanent loss of vision.⁹ In this case the transient loss of vision for a half an hour may due to Non-arteritic anterior ischemic effect to the disc which is an evidence of hypermia of the discs (papilitis). Associated with other allergic Ocular involvements were, lid edema, mixed

superficial and deep conjunctival congestion, corneal epithelial defect, those are reflected in this case thought to be rare not reported before. Allergic reactions occur within 12 hrs by drug sildenafil citrate (100mg) induced late onset type-1 hypersensitivity reaction. Corneal epithelial defect may be due to erosion by swollen congested lid rubbing and associated infection. Banded contact lens was used for healing epithelial defect by reducing the friction of congested lids along with topical antibiotic and NASID relieving pain.

Tab prednisolone 30 mg bid with PPI prescribed for reducing papilitis (hypermia disc) and tapering the doses resulting good response of increase VA up to 6/6 both eyes.

CONCLUSION

The cases like young male patient with acute onset of transient loss of vision, corneal epithelial defect associated with lid oedema redness of eyes at early morning suggesting to take history of any drugs to take at night.

REFERENCES

1. Laties A and Sharlip I. Ocular safety in patients using sildenafil citrate therapy for erectile dysfunction. *J Sex Med* 2006; 3:12–27.
2. Text book of pharmacology K D Tripathy.
3. RX List the international drug index.
4. Hattenhauer MG, Leavitt JA, Hodge DO, et al. Incidence of nonarteritic anterior ischemic optic neuropathy. *Am J Ophthalmol.* 1997; 123:103–7. [PubMed]
5. Johnson LN, Arnold AC. Incidence of nonarteritic and arteritic anterior ischemic optic neuropathy. Population-based study in the state of Missouri and Los Angeles County, California. *J Neuroophthalmol.* 1994; 14:38–44. [PubMed]
6. Rucker JC, Biousse V, Newman NJ. Ischemic optic neuropathies. *Curr Opin Neurol.* 2004; 17:27–35. [PubMed]
7. Newman NJ, Scherer R, Langenberg P, et al. The fellow eye in NAION: report from the ischemic optic neuropathy decompression trial follow-up study. *Am J Ophthalmol.* 2002; 134:317–28. [PubMed]
8. The Ischemic Optic Neuropathy Decompression Trial Research Group. Characteristics of patients with nonarteritic anterior ischemic optic neuropathy eligible for the Ischemic Optic Neuropathy Decompression Trial. *Arch Ophthalmol.* 1996; 114:1366–74. [PubMed]
9. Burde RM. Optic disk risk factors for nonarteritic anterior ischemic optic neuropathy. *Am J Ophthalmol.* 1993; 116:759–64. [PubMed]
10. Seftel AD, Sun P, Swindle R. The prevalence of hypertension, hyperlipidemia, diabetes mellitus and depression in men with erectile dysfunction. *J Urol.* 2004; 171:2341–5. [PubMed].
11. Hayreh SS, Joos KM, Podhajsky PA, et al. Systemic diseases associated with nonarteritic anterior ischemic optic neuropathy. *Am J Ophthalmol.* 1994; 118:766–80. [PubMed]
12. Boshier A, Wilton LV, Shakir SA. Evaluation of the safety of sildenafil for male erectile dysfunction: experience gained in general practice use in England in 1999. *BJU Int.* 2004; 93:796–801. [PubMed]

Source of Support: Nil. **Conflict of Interest:** None Declared.

Copyright: © the author(s) and publisher. IJMRP is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882.

This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Santosh Kumar Singh, (Col). Zahiruddin Khan. Ocular Manifestations of Sildenafil citrate: A Rare Case Report. *Int J Med Res Prof.* 2017; 3(1):197-99.
DOI:10.21276/ijmrp.2017.3.1.039