Choroidal neovascular membrane associated with sildenafil

CHOROIDAL NEOVASCULAR MEMBRANE ASSOCIATED WITH SILDENAFIL

Erectile dysfunction is an important problem among men aged 40 years and older. More than half of all men in this broad age group experience some degree of erectile dysfunction. Thus, the provision of an orally administrated efficacious treatment in the form of sildenafil represents a major therapeutic advantage. (1)

Choroidal neovascular membrane (CNV) is ultimately the result of a break in a structural layer beneath the retina known as Bruch’s membrane, which separates the nourishing vascular layer called the choroid from the retina. A break in Bruch’s membrane may allow the ingrowth of vessels from the choroid to a position just beneath the retina. (2)

Ocular side effects are not uncommon when sildenafil is used. Minor side effects include pupillary dilation, conjunctival injection (redness), sensitivity to light (photophobia), and dryness. Visual function studies in healthy subjects and in patients with eye disease suggest that sildenafil does not affect visual acuity, visual fields, and contrast sensitivity. Transient, mild impairment of color discrimination can occur around the time of peak plasma levels. (3-7)

The purpose of the present case report is to describe a patient who developed CNV after ingestion of Sildenafil for erectile dysfunction.

CASE REPORT

The patient was a 53-year old male who presented with a blurred and loss of vision in the right eye. His physical examination did not reveal any significant signs. The patient was fit and healthy otherwise and had no history of glaucoma, diabetes, hypertension, or other systemic vascular disease. Visual acuity was 4/10 in the right eye and 10/10 in the left eye. Anterior segment examination was normal. Fundus examination of the right eye revealed that the macula upper temporal quadrant was characterized by hemorrhagia and an elevated area (Figure 1A), the left eye revealed an atrophic area outside the macula. The FA of the patient revealed an area of bright hyperfluorescence in the early phase and leaks in the late phase (Figure 1B). A diagnosis of CNV was made. Argon laser photocoagulation was applied on the right eye. The patient did not suffer until 6 months after the laser application and the visual acuity in the right eye had increased up to 9/10. However, 6 months after the laser application, the patient noted loss of vision in the right eye. Argon laser photocoagulation was applied again. The control FA of the patient did not reveal a leakage of the scar on the right eye (Figure 2). The visual acuity of the patient was 10/10 bilaterally and he didn’t reveal any complaints.

After 3 years, the patient was referred to our clinic with blurred and loss of vision in the left eye and when the patient underwent rigorous historical questioning, he noted that all his complaints were revealed with the use of 50 mg sildenafil. He said that he had taken 50 mg sildenafil before his complaints were revealed. His visual acuity was 10/10 in the right eye and 4/10 in the left eye. The FA revealed CNV and photodynamic therapy and intravitreal anti-VEGF injection were applied to his left eye (Figure 3).

DISCUSSION

In this study we present a patient with CNV associated with sildenafil use. CNV is ultimately the result of a break in a structural layer beneath the retina known as Bruch’s membrane, which separates the nourishing vascular layer called the choroid from the retina. A break in Bruch’s membrane may allow the ingrowth of vessels from the choroid to a position just beneath the retina . [2] These vessels may then leak fluid or blood, initially distorting or blurring vision, and may eventually lead to scarring in the macula and severe loss of central vision. CNV is associated with many diseases. The most common causes are age-related macular degeneration (AMD), presumed inflammatory and infectious conditions, myopic macular degeneration, trauma, angioid streaks and laser therapy, however many cases are idiopathic. [(2)]

Sildenafil is a potent and selective inhibitor of cyclic guanosine monophosphate (cGMP)-specific phosphodiesterase type 5 (PDE5), an enzyme expressed throughout the smooth muscle of the vasculature. [3] Through this mechanism, sildenafil potentiates the nitric oxide (NO)-cGMP pathway that mediates corpus cavernosum smooth muscle relaxation and thereby significantly improves penile blood flow. Basic science and clinical research have effectively documented the effects of sildenafil on the retinal and choroidal vasculature. Sildenafil also has a weaker inhibitory action on PDE6, located in the rod and cone photoreceptors.

Modest, transient visual symptoms, typically blue tinge to vision, increased brightness of lights, and blurry vision, have been reported with sildenafil use

and occur more frequently at higher doses. Visual function studies in healthy subjects and in patients with eye disease suggest that sildenafil does not affect visual acuity, visual fields, and contrast sensitivity. [5, 6] Transient, mild impairment of color discrimination can occur around the time of peak plasma levels. However, we were not able to find any case of CNV associated with sildenafil use in the literature. Sildenafil induces angiogenic response in human coronary arteriolar endothelial growth factor (VEGF). [7] The same mechanism may be available on the retina and sildenafil may increase the levels of VEGF. This issue requires further studies and patients with CNV should be questioned about the use of sildenafil.

Patients should consult with an ophthalmologist if there is any question about the health of their eyes prior to using sildenafil.

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FIGURE FOR LEGENDS

FIGURE 1A: Fundus examination of the right eye revealed that the macula upper temporal quadrant was characterized by hemorrhagia and an elevated area

FIGURE 1B: The FA on the right eye of the patient revealed an area of bright hyperfluorescence in the early phase and leaks in the late phase

FIGURE 2: The control FA of the patient did not reveal a leakage of the scar on the right eye after laser photocoagulation was applied.

FIGURE 3: The FA on the left eye of the patient revealed an area of bright hyperfluorescence in the early phase and leaks in the late phase