

## Case Report

# Mydriasis induced hyphema in a patient with rubeosis iridis

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### ABSTRACT

Hyphema is the presence of blood in the anterior chamber of the eye. The blood may completely or partially cover the pupil and cause decrease in visual acuity. Other signs and symptoms of hyphema include visible blood in the front of the eye, pain, and sensitivity to light. The most common cause of hyphema is ocular trauma, usually a blunt or lacerating one. Other causes of hyphema include intraocular surgery, eye infections caused by herpes virus, cancer of the eye, artificial lens implants and blood clotting problems such as hemophilia, sickle cell anemia and von Willebrand disease. Hyphema may also occur spontaneously in conditions such as rubeosis iridis, juvenile xanthogranuloma, myotonic dystrophy and iris melanoma. The purpose of this case report is to point to the management of hyphema which occurs after administration of mydriatic drugs.

**Keywords:** Hyphema, Spontaneous hyphema, Rubeosis iridis, Mydriatic, Ranibizumab

### INTRODUCTION

Hyphema is the collection of blood in the anterior chamber of the eye, in the space between the cornea and the iris. Hyphema is one of the common manifestations of ocular trauma.<sup>1,2</sup> It is usually a benign condition which resolves quickly with no serious sequels. In some patients, recurrent bleeding or elevated intraocular pressure may develop which can lead to significant loss of vision. Loss of vision is mostly associated with glaucomatous optic atrophy, retinal artery occlusion, corneal blood staining or injury. However, hyphema is usually related to trauma and can occur spontaneously with rubeosis iridis, juvenile xanthogranuloma, myotonic dystrophy, iris melanoma or clotting disorders.<sup>3,4</sup>

Rubeosis iridis is a neovascularization of the iris characterized by irregular vessels on the surface and stroma of the iris.<sup>5,6</sup> These new blood vessels may cover the trabecular meshwork, causing peripheral anterior synechiae which may lead to secondary glaucoma.

Diabetes mellitus and Central Retinal Vein Occlusion (CRVO) are the most common causes of rubeosis iridis. In this study, we report an interesting case of unilateral rubeosis iridis, predisposing hyphema after administration of mydriatic drugs.

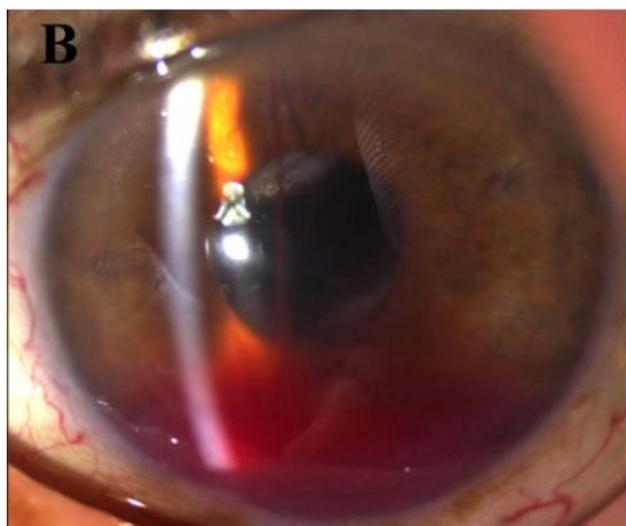
### CASE REPORT

A 68-year-old man, who was admitted to our retina department, had complaints of decreased visual activity. The patient's Best Corrected Visual Acuity (BCVA) was 3/10 OD and 0.05/10 OS according to Snellen chart. While the slit lamp examination was not remarkable on the right eye, it revealed rubeosis iridis in all four quadrants of the left eye iris (Figure 1A). Fundus examination through a non-dilated pupil revealed a bilateral non-proliferative retinopathy (NPDR), bilateral stage 2 hypertensive retinopathy and CRVO in the left eye. In order to perform a detailed examination, we administered a drop of %1 tropicamide for pupil dilation. 15 minutes after the administration of the mydriatic drug,

the patient notified worsening of vision in the left eye. Slit lamp examination revealed active bleeding in the anterior chamber (Figure 1B). We applied a light compress bandage on the left eye in order to elevate the intraocular pressure and stop the bleeding. Within 1 hour, slit lamp examination revealed a grade 2 hyphema.

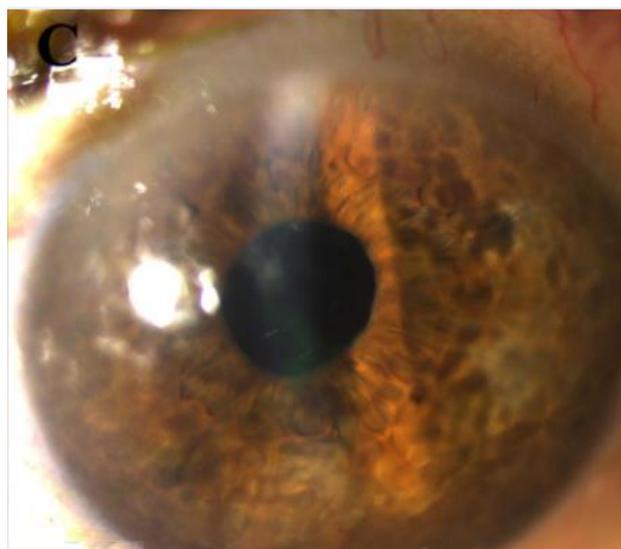


**Figure 1A: Slit lamp examination of the left eye revealed neovascularization of the iris.**



**Figure 1B: Bleeding from the iridocorneal angle of the patient after the administration of mydriatic drops.**

Topical hyphema treatment included prednisolone acetate 1%, dorzolamide hydrochloride 2% and bed rest in a sitting position. On the second day of the therapy, an intravitreal injection of anti-Vascular Endothelial Growth Factor (anti VEGF) (Lucentis, ranibizumab 0.5 mg/0.05 ml) was performed. In the first month follow up visit, the hyphema and the inflammation of the left eye were completely resorbed (Figure 1C). The left eye was stable. Treatments for CRVO and diabetic retinopathy still continue in our department.



**Figure 1C: The 1<sup>st</sup> month follow up visit of the patient shows total regression of the neovascularization and recovery of the hyphema.**

## DISCUSSION

Rubeosis iridis is a well-known severe complication of occlusive diseases of retinal vessels associated with retinal hypoxia.<sup>3,7</sup> Chronic retinal hypoxia leads to production of the vasoproliferative substances. These vasoproliferative factors induce the formation of new blood vessels on the retina, the optic disc, the iris and the anterior chamber angle. In our case, rubeosis iridis was related to diabetes mellitus and central venous occlusion.

Hyphema after pharmacologic dilation has been described in eyes with exfoliation syndrome.<sup>8</sup> Neovascularization on the anterior chamber angle may cause peripheral anterior synechiae and elevation of intraocular pressure. Although most of the reported hyphema cases are related to a trauma in our case we revealed it 15 minutes after the installation of the mydriatic eye drops.<sup>4</sup> We think that mydriasis changes the angle configuration which may lead to breaking and bleeding of the fragile neovascular vessels.

Eye patch, bed rest, limited eye movements, elevated head while sleeping at 40 degrees, daily check up of intraocular pressure are parts of the treatment.<sup>1,3</sup> It is very important to check the intraocular pressure, because the blood from the hyphema may clog the draining canals of the eye, causing long term damages of the eye associated with glaucoma. Current treatment methods of rubeosis iridis include retinal photocoagulation, cyclodestructive or drainage procedures and intraocular anti-vascular endothelial growth factor injections. We applied an anti VEGF and prescribed topical steroid eye drops and anti-glaucomatous agents. After the resolution of hyphema and rubeosis iridis, panretinal photocoagulation was performed, and in the follow up visits, no development of rubeosis iridis or rebleeding was observed.

Clinicians should be aware that spontaneous hyphema occurs in patients with rubeosis iridis and the administration of mydriatics may increase the risk of hyphema.

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