Secondary Angle Closure Glaucoma and Malignant Hypertension: A Rare Association

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Abstract

Malignant hypertension often presents with end organ damage. Eyes are usually involved in the form of papilledema and retinopathy. We report a case of secondary angle closure glaucoma associated with malignant hypertension. A previously healthy 30 year old man presented with painful loss of vision in his right eye associated with headache. He had raised intraocular pressure and shallow anterior chamber in his right eye, and grade four hypertensive retinopathy in both eyes. His blood pressure was 260/180 mm of Hg. There was complete visual recovery with reversal of angle closure once the blood pressure was brought under control.

Introduction

Malignant hypertension is a sudden and rapid development of extremely high blood pressure. It is often associated with end organ damage including central nervous system, cardiovascular system and renal system [1]. Prompt diagnosis and management of this condition, is essential to prevent ocular and systemic morbidities. Involvement of the eye in the form of papilledema and retinopathy, is quite often associated with malignant hypertension [2]. We report a case of acute angle closure glaucoma due to malignant hypertension, which recovered completely once the blood pressure was brought under control.

Case Presentation

A previously healthy, 30 years old, man presented to us, with painful loss of vision, associated with redness in his right eye, of 3 days duration. He also gave history of headache. He had no relevant medical history in the past, apart from intermittent headaches.

On examination his visual acuity was counting fingers at 3 feet in his right eye and 20/20 in his left eye. Anterior segment examination of the right eye (Figure 1) revealed, marked circum corneal congestion, sub conjunctival haemorrhage, corneal epithelial edema, shallow anterior chamber, 4 mm pupil with sluggish pupillary reaction, and clear lens. Left eye (Figure 1) was quiet and anterior chamber was of normal depth. Intraocular pressure (IOP), measured with applanation tonometry was 68 mm of Hg in the right eye and 20 mm of Hg in the left eye. Gonioscopy showed closed angles in the right eye (Figure 2) and wide open angles in the left eye. Fundus examination through undilated pupil, in the left eye revealed disc edema, splinter haemorrhages, and hard exudates in the macula. Undilated fundus evaluation of the right eye, through a hazy media, showed disc edema and splinter haemorrhages in the right eye. Ultra-sonogram, B scan of the right eye revealed choroidal effusion. His blood pressure reading was 260/180 mm of Hg.

With this picture, a diagnosis malignant hypertension with grade four hypertensive retinopathy in both eyes and secondary angle closure glaucoma in the right eye, due to posterior push mechanism was made. We started him on topical antiglaucoma medication, a fixed combination of beta blocker and alpha agonist. Since the renal status of the patient was not known, oral acetazolamide and intravenous mannitol were avoided. He was immediately shifted to emergency department, of local government hospital. He was admitted in the intensive care unit and was started on medications to lower his blood pressure. Complete systemic evaluation was done by the internist.

He reviewed with us 4 weeks from the initial visit. He was on beta blocker, calcium channel blocker and angiotensin II-receptor blocker. His renal parameters were found to be normal. He was diagnosed to have malignant hypertension, resulting from primary/essential hypertension, by the internist. His blood pressure reading was 130/80. His best corrected visual acuity was 20/20 in his right eye and 20/20 in his left eye. Anterior segment evaluation was found to be normal in both eyes. Anterior chamber was of normal depth in the right eye with wide open angles on gonioscopy.
Figure 1: Right eye showing ciliary congestion, sub conjunctival haemorrhage, corneal edema, shallow anterior chamber, and left eye showing normal anterior chamber depth.

Figure 2: Gonioscopy of the right eye showing closed angles. The view was hazy because of corneal edema.

Figure 3: Gonioscopy of the right eye at 4 weeks review visit, showing open angles.

Figure 4: Fundus photo taken at 4 weeks review visit showing resolution of disc edema. Right eye showing nerve fibre layer defects in the superotemporal quadrant (black arrow), few hard exudates and retinal pigment epithelial changes macula. Left eye showing hard exudates and cotton wool spots.

The probable cause of acute angle closure in this patient is a posterior push mechanism, as revealed by choroidal effusion in the B scan. Interference with the venous drainage, leading to choroidal effusion, swelling and anterior rotation of the ciliary body might have caused acute angle closure. Differential diagnosis considered were posterior scleritis, angle closure associated with central retinal vein occlusion (CRVO) and acute primary angle closure (APAC). Ultrasound, B scan was not consistent with posterior scleritis. Once the corneal edema cleared, fundus picture was very well co-related with the features of malignant hypertension, ruling out CRVO. The visual recovery was good, consistent with previous case report on malignant hypertension [4]. Examination of the fellow eye helped us to rule out APAC.

This case report highlights the importance of examination of the fellow eye, which helped us not only to rule out APAC, but also made us to think of malignant hypertension. Baseline systemic evaluation is a must, in all the patients presenting with such high intraocular pressure. Often we tend to bring down the IOP, with all the available antiglaucoma medications including intravenous mannitol and oral acetazolamide. Administering intravenous mannitol and acetazolamide might be fatal in such patients, since they can have impaired renal function [5]. Malignant hypertension has very poor prognosis in the absence of treatment. It needs to be managed by concerned specialist to limit the consequences.

Discussion

Malignant hypertension is a life threatening condition. Diagnosing this condition, in a previously normal patient, based on the fundus picture is not a rare phenomenon [3]. However acute angle closure glaucoma associated with malignant hypertension has not been reported so far. Our patient showed a complete recovery with reversal of angle closure once the blood pressure was normalised.

Conclusion

To conclude, malignant hypertension should be considered as one of the differential diagnosis in patients presenting with acute secondary angle closure. Conservative management and control of hypertension will be sufficient to reverse the angle closure.

References