

Case Report

Decompression Retinopathy Following Trabeculectomy: A Case Report

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Abstract

Introduction: Decompression retinopathy (DR) can have varied manifestations as retinal and vitreous hemorrhage, disc edema, and macular edema. Vein occlusion associated with choroidal detachment (CD) has not been reported so far as a feature of DR.

Case: We report a case of a 78 year old male with bilateral primary open angle glaucoma (POAG) on maximal topical medication with progressive field loss. Trabeculectomy with mitomycin C was done in the left eye, and the patient developed hypotony in the immediate postoperative period which was managed conservatively. After six weeks he developed CD, vein occlusion and macular edema. Thus, Anti VEGF was given and in other eye filtration surgery was done with all measures to avoid sudden hypotony. Patient still developed CD in the right eye. For which, he was given oral and topical steroids in tapering dose. After one month there was resolution of macular edema in the left eye and choroidal detachment resolved in both eyes and IOP was in lower teens in both eyes.

Conclusion: Venous stasis retinopathy and choroidal detachment can be the manifestations of decompression retinopathy following glaucoma filtering surgery. The advancement in imaging modalities now can help us find the pathogenesis of the condition and validation of previous hypothesis proposed. Early identification and management of retinopathy helps in resolution with good visual recovery.

Key words: Decompression retinopathy.

Introduction

We report this case as venous stasis with probable vein occlusion and choroidal detachment

following trabeculectomy surgery as a feature of ocular decompression retinopathy (ODR). The macular oedema responded well to anti-VEGF (vascular endothelial growth factor) and ODR resolved after 1 month post injection. Vein occlusion with choroidal detachment has not been reported so far in literature to the best of our knowledge.

Case history

We report a case of a 78 years old gentleman

Financial Interest: Nil

Conflict of Interest: Nil

Received: 21.04.2020

Accepted: 01.06.2020

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with primary open angle glaucoma (POAG) for 30 years, on 4 topical anti glaucoma medication and advanced field loss in both eyes. He presented with a history of gradual progression of blurry vision in both eyes from 2 months. He was a chronic smoker and gave a history of systemic hypertension for the last 40 years, controlled on calcium channel blocker drug. He underwent cataract surgery with intraocular lens (IOL) implantation in both eyes 22 years back. The highest intraocular pressure (IOP) was 34 and 42 mm Hg in the right and left eye respectively recorded 2 months back and he had a documented progression of visual field loss in both eyes. The best corrected visual acuity (BCVA) documented earlier was 20/30 in both eyes.

On examination, IOP by applanation was 24 and 22 mm Hg in the right and left eye respectively. Patient was on 3 antiglaucoma drugs (dorzolamide (2%), timolol (0.5%), and travoprost (0.004%) with cup-disc ratio(CDR) 0.9:1 and bipolar thinning of neuroretinal rim. Humphrey Visual field (HVF) showed advanced field loss in both eyes. As target IOP was not met, topical brimonidine tartrate (0.1%) eye drops were added.

The patient underwent uneventful trabeculectomy surgery with Mitomycin C (0.4 mg/ml) in the left eye. There was a diffuse filtration bleb on the first postoperative day and the IOP was 6mm Hg with no leak and well-formed anterior chamber. Patient developed a severe cough and wheezing on the second day and was found to have Chronic obstructive pulmonary disease and was started on inhalers and systemic steroids. On the fourth post-operative day, the IOP was 4 mm Hg and the patient developed peripheral shallow serous choroidal detachment. There was still no leak and the anterior chamber was well formed. He came back after 6 weeks with BCVA of 20/40 in the right eye and 20/80 in the left eye

respectively. The IOP was 28mm Hg in the right eye and 12mm Hg in the left eye respectively. There was a diffuse bleb with a deep anterior chamber and no evidence of inflammation in the left eye. The fundus examination of left eye (Figure 1 a-d) revealed superficial retinal hemorrhages in all quadrants with dilated tortuous retinal veins with macular edema (Figure 2a) and a mound of persisting choroidal detachment in the superior midperiphery(Figure 2c). Fundus fluorescein angiography (FFA) of the left eye was suggestive of delayed venous filling along a superotemporal arcade with blocked fluorescence due to hemorrhages and late pooling of dye in the macular area(Figure1 f-h). OCT left eye confirmed the cystoid macular edema with diffuse retinal thickening and thickness of 300 microns. Hence, the diagnosis of left eye decompression retinopathy with branch retinal vein occlusion (BRVO) was made and the patient underwent intravitreal Injection Ranibizumab (0.5mg). The injection was given under topical anaesthesia in the inferotemporal quadrant to avoid site of choroidal detachment in the routine way as the IOP was near normal. Patient was followed up the next day, IOP was 14 mm Hg in left eye.

Following which patient underwent trabeculectomy with Mitomycin C in the right eye. Intraoperative very slow decompression was done, preplaced sutures were taken, small trabeculotomy made to avoid sudden decompression. Next day his IOP was 8 mm Hg and the patient developed inferior choroidal detachment(Figure 1 e). He was advised to continue topical and oral steroids (started at 50 mg per kg per day) and tapered over a week interval in 10g fraction . Patient was advised for a regular follow up. At one month follow-up left eye responded well to injection and the edema reduced drastically (Figure 2 b) and the height of choroidal detachment also decreased subsequently (Figure 2 d)in both eyes.

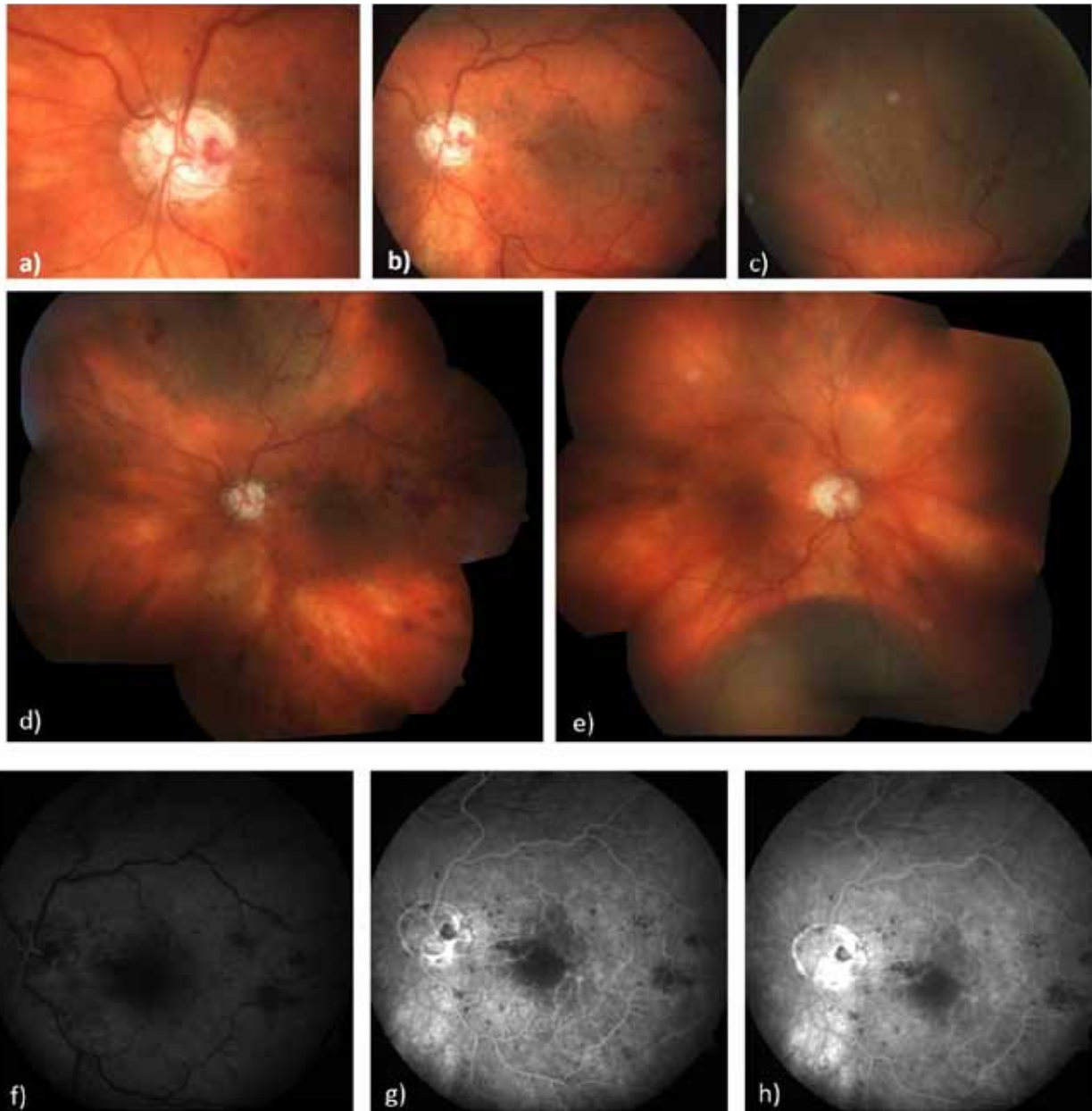


Figure 1: Color fundus photo left eye a) Disc showing haemorrhage. b) Posterior pole showing hemorrhages with dilated vessels more along the superotemporal arcade with glaucomatous disc. c) Choroidal detachment. One month after surgery d) eye showing resolving superior choroidal detachment with decrease in hemorrhages. e) Right eye day 1 after trabeculectomy has inferior choroidal detachment. Fundus fluorescein angiography f) Arterial phase, slightly delayed. g) Increase Arterio Venous transit time(19.3 seconds) and h) Late phase showing staining along the vessel wall with collaterals.

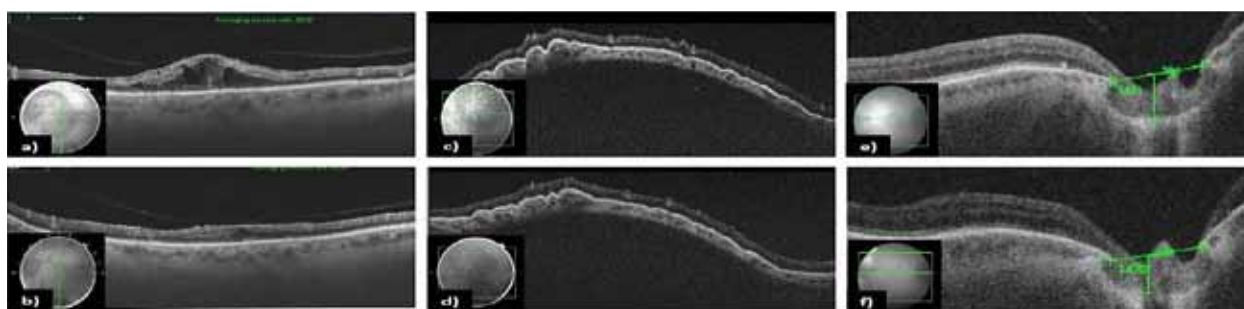


Figure 2: SS-OCT a) Left eye: cystoid macular edema with diffuse retinal thickening, b) Resolution of macular edema after single injection AntiVEGF(Ranibizumab). c) SS-OCT through the area of choroidal detachment in right eye. d) Line scan through the choroidals after 3 weeks showing the reduction in height of detachment e&f)To document movement of lamina cribrosa, horizontal vector was drawn at the level of RPE at approximately the same disc level, then a vertical line was drawn down to lamina cribrosa. Showing forward movement of lamina cribrosa as the vertical distance changes from 286 to 235 microns.

Discussion

ODR occurs due to abrupt iatrogenic lowering of intraocular pressure after glaucoma filtering surgery. In the described patient the IOP change of 20 mm Hg occurred following surgery in both eyes.

Ocular decompression retinopathy was first described by Fechtner et al.(1992) Two theories have been postulated in the pathogenesis of ODR as described by the major review of 32 published articles on ODR by Mukkamala et al. (2013), mechanical and vasogenic. Mechanical theory hypothesizes acute lowering of IOP, which leads to sclera deformation, ruptures fragile capillaries or anterior movement of lamina cribrosa leads to axoplasmic stasis and disc edema. In our case, we documented the forward movement of lamina cribrosa on SS-OCT for the right eye as images were available both pre and post operatively. There was a change in this distance from 286 to 235 microns, which validates the forward movement of lamina cribrosa (Figure 2 e and f). The Vasogenic theory proposes that in glaucomatous eyes there is compromised autoregulation and sudden lowering of IOP decreases the vascular resistance and subsequent leakage.

Initially described only in the context of complication of glaucoma filtering surgery, but now various other surgical and medical procedures are recognized to be associated with it. These include orbital decompression surgeries, cataract surgery, vitrectomy, and silicone oil removal. Trabeculectomy is responsible for about 50% of the cases reported to develop ODR as discussed by Mukkamala et al.(2013).

It is bilateral in about 16% of cases, with mean age of presentation 44.2 ± 23 years and a slight male preponderance. Patients are mostly asymptomatic and most commonly present as decreased vision, central scotoma or floaters. Retinal hemorrhages are more commonly distributed at the posterior pole, and often white centred. Subhyaloid hemorrhage, blot hemorrhages and vitreous hemorrhages are also seen.(Mukkamala et al.,2013) Optic disc changes include hyperemia, hemorrhages and disc edema. Choroidal detachment and macular edema has been reported in two cases each (Arevalo et al.,2008) and serous macular detachment in three cases so far (Nonoyama et al.,2009).

Fluorescein angiography characteristically shows normal filling of the vessels with blocked fluorescence due to hemorrhages. This feature, characteristically differentiates it from venous occlusions (Saricaoglu et al., 2009). OCT features are neurosensory detachment and cystoids macular edema in 3-5% of cases.

We report this case as venous occlusion and bilateral choroidal detachment, which have not been reported together in literature to the best of our knowledge. Thus, while operating these cases one should keep in mind these probable consequences and keep the patient under regular follow up. As, if identified on time and managed these patients do well and the feature of decompression retinopathy slowly resolves.

Conclusion

With an increase in the number of glaucoma surgeries being performed nowadays one needs to be aware of this complication. Early identification and treatment leads to good visual recovery in the majority of cases. The advancement in imaging modalities now can help us find the pathogenesis of the condition and validation of previous hypothesis proposed.

Acknowledgement: OCT and Photography services at Sankara Nethralaya.

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