Macular cytomegalovirus retinitis following dexamethasone intravitreal implant combined with phacoemulsification

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A 60-year-old diabetic patient, who had undergone a renal transplant 2 years earlier, presented with sudden decrease in vision in his left eye (LE). He had undergone phacoemulsification combined with intravitreal dexamethasone implant injection in his LE 2 months earlier, for coexistent cataract and diabetic macular edema. Examination revealed necrotizing retinitis with hemorrhages in the macula. A diagnosis of cytomegalovirus retinitis was made, which was confirmed on vitreous polymerase chain reaction. Intravitreal and systemic ganciclovir led to the resolution of retinitis and improvement of visual acuity over a follow-up of 9 months.

Key words: Cytomegalovirus retinitis, diabetic macular edema, intravitreal Ozurdex, phacoemulsification

Ozurdex implant (DEX implant 0.7 mg, Allergan Inc., Irvine, CA, USA) is a intravitreal sustained-release dexamethasone device that is generally used to treat diabetic macular edema (DME), retinal vein occlusion associated with macular edema, and noninfectious posterior uveitis.[1,2] Its role as an adjunct during cataract surgery in patients of DME, in order to improve morphological and functional outcomes, is well established.[3,4] Although no cases of inflammation or infectious retinitis were reported after intravitreal Ozurdex (IO) injection in the GENEVA study,[1] one case report of reactivation of toxoplasmosis retinitis, one case of varicella zoster virus (VZV)-induced acute retinal necrosis, and two cases of cytomegalovirus retinitis (CMVR) exist in literature.[5-8] We hereby report a postrenal transplant patient who developed macular CMVR, 2 months after IO combined with phacoemulsification for DME with visually significant cataract.

Case Report

A 60-year-old male patient presented to the retina clinic with sudden painless diminution of vision in his left eye (LE) for 2 days. There was no associated redness or photophobia. He was a known diabetic for 20 years and had undergone allogenic-related renal transplant for chronic renal failure 2 years back. Currently, he was on oral azathioprine 150 mg and oral tacrolimus 6 mg for the same. Both eyes had received panretinal photocoagulation for proliferative diabetic retinopathy 6 months ago [Fig. 1]. Right eye (RE) had undergone uneventful phacoemulsification with posterior chamber intraocular lens (PCIOL) implantation 4 months ago. His LE was subjected to phacoemulsification with PCIOL implantation along with IO injection for DME and Grade 3 posterior capsular cataract, 2 months ago. His preoperative best-corrected visual acuity (BCVA) was 6/18 in the RE and counting fingers at 3 m in the LE. Optical coherence tomography revealed epiretinal membrane with lamellar macular hole in his RE and cystoid macular edema with subfoveal serous fluid in the LE.

On ocular examination, he had a BCVA of 6/18 and counting fingers close to face in his RE and LE, respectively. The intraocular pressure was 20 mmHg in his RE and 22 mmHg in his LE. Anterior segment examination of the LE revealed conjunctival congestion, clear cornea, 1+ cells and flare, well-centered PCIOL, and no evidence of neovascularization of the iris. Fundus examination of the LE revealed 1+ vitreous cells with media clarity of Grade 1, laser photocoagulation scars in the retinal periphery, and yellowish white area of necrotizing

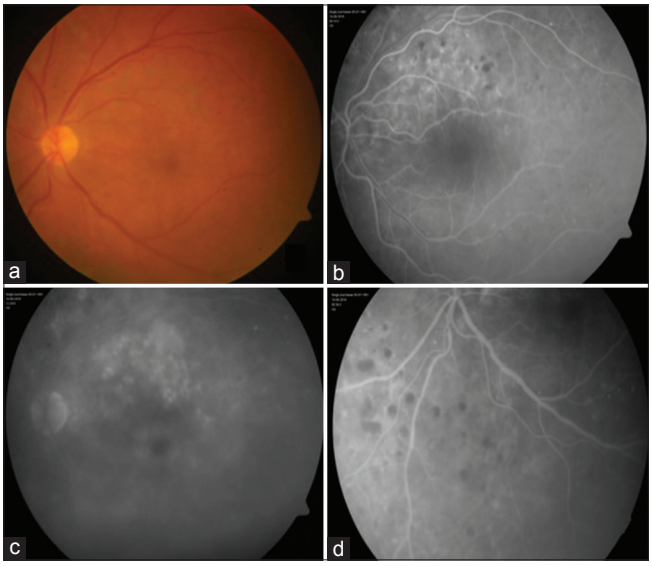

Figure 1: Fundus (a) and fluorescein angiogram photographs (b-d) of the left eye 1 month before cataract surgery, showing media clarity of Grade 1 with grid laser scars superior to the fovea and pan retinal photocoagulation scars in the periphery with cystoid macular edema in the late phase

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retinitis with retinal hemorrhage involving the fovea [Fig. 2]. Anterior segment examination of the RE was unremarkable and fundus examination showed media clarity of Grade 1 with laser photocoagulation scars in the retinal periphery with no evidence of DME.

A clinical diagnosis of CMVR was made, and a vitreous tap was taken from the LE to test for CMV, herpes simplex virus, and VZV. Qualitative polymerase chain reaction (PCR) confirmed the presence of CMV and the patient received intravitreal ganciclovir (2 mg/0.1 ml) along with topical steroids. Blood sample for quantitative CMV DNA-PCR revealed 1.6×10^6 copies of CMV DNA. The patient was started on 175 mg intravenous infusion of ganciclovir by the renal transplant department. The patient showed healing of CMVR lesion and received three additional intravitreal ganciclovir injections over the following 2 weeks. The macular retinitis lesion healed over the ensuing 2 weeks with BCVA improving to 6/60 [Fig. 3a]. Intravenous ganciclovir was continued for 14 days, following which a repeat blood sample for CMV DNA revealed undetectable copies. Oral valganciclovir (450 mg once a day) was started. Over the course of 3 months, CMVR lesion healed completely and the BCVA improved to 6/24 [Fig. 3b]. Oral valganciclovir was stopped after 3 months. Over a follow-up of 9 months, the patient maintained BCVA of 6/24 in his LE and had no recurrence of the infection [Fig. 4].

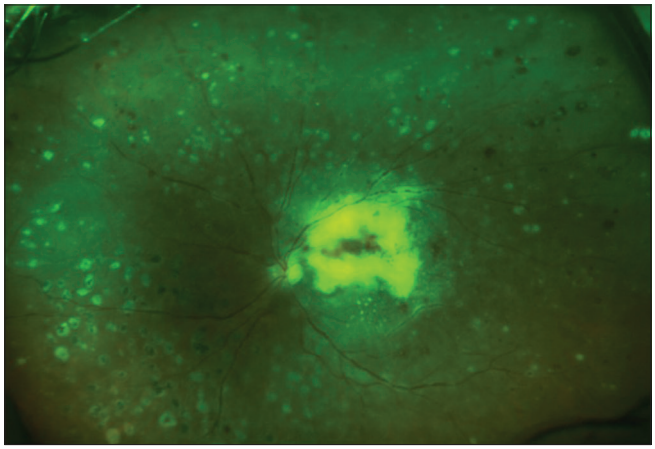

Figure 2: Ultrawide field fundus photograph of the left eye showing media clarity of Grade 1 with a 8–10 disc diameter yellowish white area of necrotizing retinitis in the macula with irregular margins and panretinal photocoagulation scars in the periphery

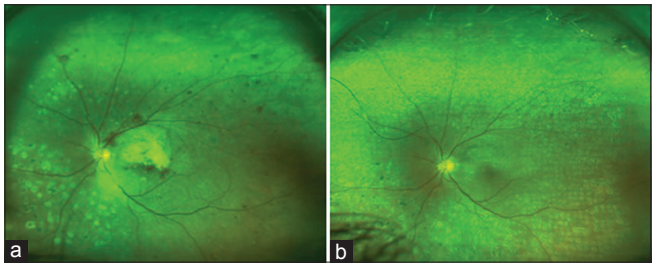

Figure 3: Ultrawide field fundus photograph of left eye, (a) at 2 weeks showing media clarity of Grade 1 with decrease in size of the macular retinitis lesion, (b) at 3 months showing media clarity of Grade 1 with completely healed macular retinitis lesion

Discussion

Viral retinitis has been reported to occur in about 0.41% patients after intravitreal triamcinolone (IVT) administration.[9] Sustained-release intraocular steroids, namely fluocinolone acetonide implant and IO, have also been reported to predispose to viral retinitis.[6,7,10] CMV is implicated in about 76% of patients who develop viral retinitis after IVT injections.[10] Of the three reported cases of viral retinitis following IO injection, two were due to CMV and one was attributed to VZV.[6-8] Our patient developed macular CMVR 2 months after being subjected to IO combined with phacoemulsification with PCIOL implantation. Diabetes mellitus, immunosuppressed state, and a history of viral retinitis are said to predispose patients to develop CMVR after IVT injections.[9] Our patient was a diabetic for 20 years and was on immunosuppressive therapy because of his renal transplant. Shah *et al*. and Takakura *et al*. have postulated that diabetic vasculopathy predisposes to CMVR.[9,10] Low systemic immunity due to long-standing diabetes and oral immunosuppressive agents coupled with ocular immunosuppression due to sustained-release dexamethasone along with cataract surgery resulted in the patient developing CMVR. The mean time to the development of viral retinitis after IVT is 3–4 months.[9,10] However, the time to detection of CMVR after IO injection in the two reported cases were 1 month and 1.5 months, respectively.[7,8] Our patient had a latent period of 2 months between IO injection and detection of macular CMVR.

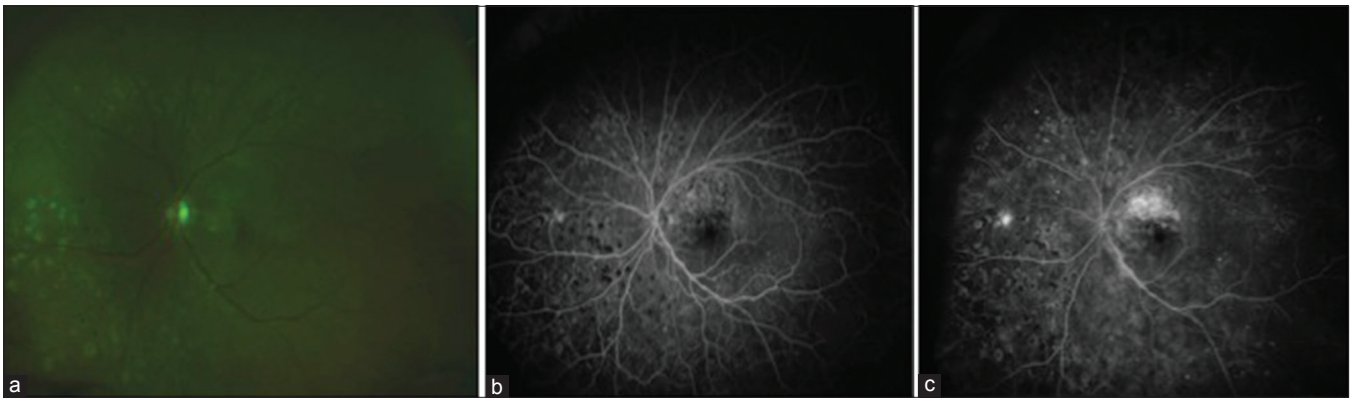

Figure 4: Ultrawide field fundus (a) and fluorescein angiography (b and c) photographs of the left eye at 6 months showing media clarity of Grade 1 with healed macular retinitis lesion, retinal pigment epithelium changes in the area of the healed retinitis, panretinal photocoagulation changes in the periphery and a small neovascularization of the retina elsewhere nasal to the disc

Conclusion

To the best of our knowledge, this is the first report of a postrenal transplant diabetic patient who contracted CMVR after IO injection combined with phacoemulsification and PCIOL implantation. Our case highlights two important issues. First, diabetic patients with a history of renal transplantation who receive IO are predisposed to develop viral retinitis, particularly CMVR. Caution with a high index of clinical suspicion and frequent follow-up is advised for these patients. Second, with the increasing use of IO as an adjunct to cataract surgery in patients with DME, one must be cognizant of the rare but potentially devastating complication of viral retinitis that may occur in these patients.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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