Postoperative Hemorrhagic Occlusive Retinal Vasculitis with Intracameral Vancomycin

Dear Editor,

Endophthalmitis following cataract surgery is the one of the most serious complications of ocular surgery [1]. To minimize the risk of postoperative endophthalmitis, many ophthalmologists have performed routine use of intracameral antibiotics during cataract surgery [2]. However, recent reports have demonstrated development of hemorrhagic occlusive retinal vasculitis (HORV) following administration of intracameral vancomycin for endophthalmitis prophylaxis after cataract surgery [3-5]. In 2014, Nicholson et al. reported severe bilateral ischemic retinal vasculitis after cataract surgery in two patients (four eyes) for the first time [3]. In 2015, in 11 eyes (six patients) that had undergone uncomplicated cataract surgery with prophylactic injection of

intracameral vancomycin, there was a delay of 1 to 14 days before the onset of severe ischemic hemorrhagic retinal vasculitis [4]. The American Society of Retina Specialists formed a task force to define the characteristics of HORV and suggested that it is caused by a delayed hypersensitivity reaction to vancomycin [5]. We present two cases of ischemic retinal vasculitis following uneventful cataract surgery with intracameral vancomycin prophylaxis. To our knowledge, these are the first documented cases of postoperative HORV associated with intracameral vancomycin in Asia.

Case 1. An 86-year-old male developed severe visual loss in his left eye 12 days after uneventful phacoemulsification using an infusion bottle (500 mg balanced salt solution) mixed with 10 mg vancomycin (Vancorin; CJ Healthcare, Seoul, Korea). His best-corrected visual acuity (BCVA) was 20 / 200 with mild corneal edema, moderate anterior chamber, and anterior vitreous inflammation. Fundus examination showed multiple retinal hemorrhages following the retinal venules (Fig. 1A). Wide-field fluorescein angiography (FAG) showed perivascular leakage in the periphery and retinal vascular occlusions with capillary non-perfusion

Fig. 1. Wide-field fundus photograph, wide-field fluorescein angiograph, optical coherence tomography and anterior segment photograph images of (A-F) case 1, (G-I) case 2 right eye, and (J-L) case 2 left eye. (A) Wide-field fundus photograph showing multiple patch patterned retinal hemorrhages along venules. The retinal veins are not tortuous or dilated. (B) Wide-field fluorescein angiograph showing multiple vessel occlusion with non-perfusion area (early flame angiogram). (C) Wide-field fluorescein angiograph demonstrating diffuse retinal perivascular leakage and cuffing. (D) Optical coherence tomography showing macular edema with subretinal fluid. (E) Wide-field fundus photograph showing the improved retinal hemorrhages after 8 months of treatment with intravitreal bevacizumab, topical and systemic corticosteroid. (F) Optical coherence tomography showing the absorbed subretinal fluid in the right eye. (G) Anterior segment photograph of the right eye demonstrating iris neovascularization. (H) Wide-field fundus photograph showing the multiple patch patterned retinal hemorrhages. The retinal veins are not tortuous or dilated. (I) Wide-field fluorescein angiograph demonstrating perivascular leakage and peripheral vascular occlusion with extended area of non-perfusion. (J) Anterior segment photograph of the left eye showing the severe neovascularization of iris at the inferonasal aspect of the iris. (K) Wide-field fundus photograph showing multiple scattered intraretinal and perivascular hemorrhages occurred faster than the fellow eye. The retinal veins are not tortuous or dilated. (L) Wide-field fluorescein angiograph showing perivascular leakage with non-perfusion areas in the peripheral retina.

(Fig. 1B, 1C). Optical coherence tomography showed subretinal fluid (Fig. 1D). The patient was managed with intravitreal bevacizumab (1.25 mg; Avastin, Genetech, San Francisco, CA, USA) combined with an oral prednisolone (0.5 mg/kg/day, total 30 mg). After 8 months, BCVA improved to 20 / 50, and multiple retinal hemorrhages had decreased (Fig. 1E, 1F)

Case 2. A 50-year-old male noted decreased vision in his right eye 4 weeks following uneventful cataract surgery with prophylactic intracameral vancomycin. The BCVA was 20 / 125, and intraocular pressure (IOP) was 32 mmHg. Slit-lamp examination revealed mild corneal edema and anterior chamber inflammation with mild neovascularization of the iris (NVI) (Fig. 1G). Fundus examination showed multiple peripheral retinal hemorrhages (Fig. 1H). Wide-field FAG showed peripheral vascular occlusion with non-perfusion area and perivascular leakage (Fig. 1I). He was treated with topical IOP lowering drugs with intravitreal bevacizumab plus systemic corticosteroid. After 2 weeks, his BCVA improved to 20 / 40. One year later, he visited our clinic complaining of a decrease in vision in the left eye. BCVA was 20 / 50, and IOP was 24 mmHg with severe NVI (Fig. 1J). He had undergone cataract surgery 3 weeks prior in the same manner as his right eye. Fundus examination showed several scattered intraretinal and perivascular hemorrhages (Fig. 1K). Wide-field FAG demonstrated perivascular leakage in the periphery (Fig. 1L). The patient was managed with topical IOP lowering drugs, intravitreal bevacizumab, and oral prednisolone (0.5 mg/kg/day, total 30 mg). After 6 months, BCVA improved to 20 / 25, and retinal hemorrhages and edema were decreased.

We present two cases of HORV associated with administration of intracameral vancomycin during uneventful cataract surgery for prophylaxis of postoperative endophthalmitis. Our first case experienced delayed onset of sudden painless decreased vision, moderate anterior chamber and vitreous inflammation, retinal hemorrhage in the area of non-perfusion along venules, and peripheral retinal vasculitis with vascular occlusion corresponding to areas of hemorrhage. There was no significant venous dilation or tortuosity, which are typical in retinal vein occlusion. The clinical features of case 1 meet the diagnostic criteria of HORV [5]. In our second case, HORV in the left eye occurred more rapidly than in the follow eye, and NVI progression was faster and more severe. This may represent

sensitization of the immune system to vancomycin between the bilateral eye surgeries. The management recommendations of HORV involve aggressive systemic and topical corticosteroids and early anti-vascular endothelial growth factor treatment [4,5]. In our cases, early treatment with intravitreal anti-vascular endothelial growth factor and topical and systemic corticosteroids helped to improve visual acuity and reduce the inflammatory response. In conclusion, we suggest that surgeons be cautious about using routine prophylactic intracameral vancomycin during cataract surgery.

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Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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