

## Haemorrhagic occlusive retinal vasculitis caused by intravitreal vancomycin

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### Abstract

Intraocular Vancomycin is used as a treatment as well as prophylaxis of endophthalmitis, but in rare instances it can cause serious ischaemic vasculitis. The most salient features of the disease include painless visual loss after cataract surgery, mild to moderate inflammation in the anterior chamber and peripheral retinal involvement with patchy haemorrhages and ischaemic vasculitis. We present case reports of two such patients who were identified with ischaemic vasculitis when they were given intravitreal Vancomycin for treatment of suspected endophthalmitis after complicated phacoemulsification surgery. Both developed profound visual loss with typical signs of haemorrhagic occlusive retinal vasculitis (HORV). 25 gauge 3 ports pars plana (25G 3 PPV) vitrectomy was performed on both the patients and dropped lenticular matter were removed from the vitreous cavity. Topical antibiotics and steroids were given. There was no significant visual improvement in both the cases which illustrates the toxic potential of intraocular use of Vancomycin.

**Keywords:** Retinal vasculitis, Vancomycin, vitrectomy

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### Introduction

Intraocular Vancomycin during eye surgery has gained worldwide acceptance as prophylaxis against postoperative endophthalmitis.<sup>1,2</sup> Despite overall very good results with intraocular use in prophylaxis of postoperative endophthalmitis after cataract surgery, few cases of haemorrhagic occlusive retinal vasculitis (HORV) have been reported.<sup>3-5</sup> The cause of this clinical entity is still unknown.<sup>1,6</sup> There are few case reports and studies that have shown development of HORV related to intracameral Vancomycin.<sup>2-8</sup> We report two cases that developed HORV related to intravitreal use of Vancomycin in suspected endophthalmitis.

### Case Report

These patients were seen at SHIFA INTERNATIONAL HOSPITAL H-8/4 ISLAMABAD, on following dates:

Case 1: 12th April, 2016.

Case 2: 27th April, 2016.

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### Case 1

A 64-year-old woman underwent complicated phacoemulsification surgery in the left eye (LE) at a hospital in March 2016. Past medical history (PMH) revealed hypertension, though it was controlled. After the surgery she complained of pain, redness and reduced vision; and acute endophthalmitis was suspected. She was given intravitreal injection Vancomycin (1mg/0.1ml) and Ceftazidime (2mg/0.1ml). After the injections, her vision didn't get better and she came to us for second opinion with complaints of painless decreased vision and floaters in the left eye (LE) for the past 18 days. On examination, her visual acuity was hand movements (HM) in the LE with no improvement on pinhole examination and 6/15 in the right eye (RE), which with pinhole was 6/12. Her intraocular pressures (IOP) were within normal limits in both eyes (BE). On slit lamp examination there were a few corneal epithelial defects, +2 cells with no fibrin in the anterior chamber (AC), sulcus placed intraocular lens (IOL) with posterior capsular defect in the LE. She had cataract in the RE. Fundus details were not clear but showed retained cortical lens matter and epinuclear lens fragment in the LE. On optical coherence tomography (OCT), there was intra-retinal oedema with central retinal thickness of 474 microns with taut posterior hyaloid face.

25G 3 PPV was performed and retained lens matter were removed. During the operation, we noticed ischaemic, pale looking swollen retina with vascular sheathing and narrowing along the temporal arcade and multiple retinal haemorrhages. Her blood pressure was normal on each visit and she continued with her antihypertensive regimen throughout the course of treatment. Detailed systemic workup for haematological, immunological, rheumatological and infectious cause was negative. After one week, there was slight improvement in the vision and fundus examination showed oedematous macula and improved retinal haemorrhages. OCT was repeated, which showed a slight decreased intra-retinal oedema as compared to preoperative scan. She was on topical Prednisolone 1% four hourly and Moxifloxacin six hourly throughout the course of management. After three months her best corrected visual acuity (BCVA) in LE was counting fingers (CF) and oedema resolved completely.

### Case 2

A 68-year-old woman underwent complex cataract surgery

at a hospital in April 2016. PMH showed diabetes mellitus and hypertension. Her right eye was phakic. She was referred to us with painful reduced vision in LE one week after surgery. On examination her VA was CF at one foot in the LE and 6/12 in the RE. IOP were within normal range in BE. On slit lamp, there was significant inflammation in AC (cells +3) and cloudy vitreous in the LE. The retinal details were not clear and on B-scan dense vitreous echoes were seen in the LE. Diagnosis of left postoperative endophthalmitis was made. We performed her 25G 3PPV and gave her intravitreal Vancomycin 1 mg/0.1 ml and Ceftazidime 2 mg/ 0.1ml. During operation epinuclear fragment and dense vitreous opacities were removed. On first postoperative day AC cells were +1 in the LE. IOP was 8 mmHg and fundus examination showed air in the vitreous cavity. She was given 40 mg oral Prednisolone for five days, oral Ciprofloxacin 500 mg twice daily for one week, topical 1% cyclopentolate twice daily, Moxifloxacin two hourly and Dexamethasone 1% two hourly. After two days her VA improved to 6/60 unaided (UA) and 6/45 with pinhole. On examination, AC cells were +1, IOP was 10, and fundus examination did not show inflammation. All systemic workup was negative, including complete blood count, C reactive protein, erythrocyte sedimentation rate, antinuclear antibody, rheumatoid factor, antineutrophil cytoplasmic antibodies and tuberculosis quantiferon gold. During the course of treatment her blood glucose levels and blood pressure remained within normal ranges with her antihypertensive and antidiabetic regimen. Her fundus photo of LE is shown in figure 1. Her OCT was done which showed hyporeflective intra-retinal spaces signifying intraretinal oedema with thickness of 579microns.

Her Fundus Fluorescein Angiography (FFA) showed capillary dropouts with significant macular and peripheral retinal ischaemia.(Figure 2)



Figure-1: Fundus photo of patient's LE showing narrowing and sheathing of superotemporal vascular arcade, pale oedematous retina and exudation at macula.

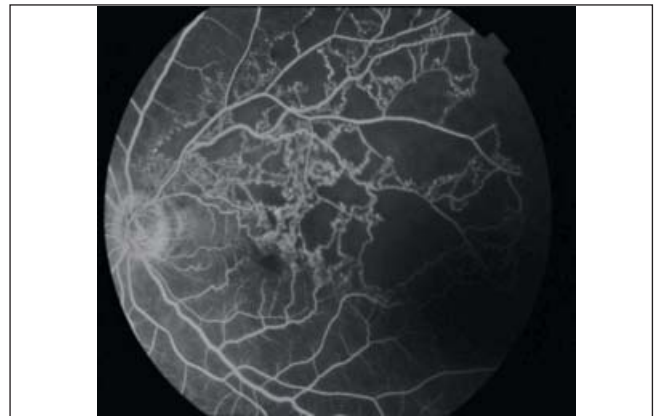


Figure-2: FFA of the LE of patient showing multiple areas of capillary dropouts along the superotemporal arcade with macular and peripheral retinal ischaemia.

Her LE panretinal photocoagulation (PRP) was done and intravitreal injection of Triamcinolone 2mg/0.05ml was given. Her BCVA improved to 6/60 in the LE and 6/18 in the right eye.

## Discussion

Literature review of HORV includes its link with cataract surgery (complicated and uncomplicated), use of intracameral Vancomycin, haemorrhagic and non-haemorrhagic types, having spectrum of severity, the different duration of onset of the disease and prognosis which varies from case to case but is generally poor because of development of neovascular glaucoma.<sup>1-4,6,8</sup> Hsing et al described an isolated case of postoperative HORV after uncomplicated cataract surgery which was managed with antivirals, steroids and high dose steroid sparing agents with good visual recovery.<sup>5</sup> Goldberg et al reported a form fruste variant in which Vancomycin was given intracamerally through irrigation solution which led to the development of classic picture of occlusive vasculitis of HORV on FFA post operatively but the visual acuity remained normal in both eyes in this case till one year.<sup>9</sup> Contrary to all these previously reported cases, the cases we describe here developed the disease after two to three weeks of complicated cataract surgery and were given intravitreal Vancomycin injection. Management was different in our reported cases. Neither of our patients was given antivirals or steroid sparing agents nor did they develop neovascular glaucoma till date. As the second case also received oral steroids, oral antibiotics and PRP other than the management which we gave to the first patient, this intense treatment resulted in a slightly better outcome in case 2.

Although it is difficult to tell that Vancomycin was the causative agent for this entity all other possibilities were excluded as the systemic workup of both the patients were

negative and their co-morbidities were well under control. The onset of painless deteriorating vision once the vision had improved after PPV and emergence of intraretinal haemorrhages with ischaemic retina shows the presence of HORV. Endophthalmitis was ruled out because of the typical signs of sectoral vasculitis and improved anterior chamber signs.

The possible mechanism of retinal toxicity of Vancomycin and the role of antivirals and steroid sparing agents in the management of HORV still needs to be sorted out as well as the development of complications like neovascular glaucoma in such patients.

### Conclusion

HORV may be more common than it is reported worldwide. It can occur after complicated cataract surgeries too and is synched with the use of any sort of intraocular Vancomycin whether intravitreal or intracameral. As in these two cases, who presented to us with the suspicion of endophthalmitis, were given Intravitreal Vancomycin injection that led to the development of ischaemic vasculitis and patchy peripheral retinal haemorrhages. Case 2 was treated more aggressively with oral antibiotics, oral steroids and PRP which proves that early and aggressive treatment can slightly improve the final outcome and prevent the development of disastrous complications like neovascular glaucoma. OCT is an important tool which is helpful in the diagnosing and monitoring the disease activity as well as the response to treatment.

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