

## Editorial

# Intracameral antibiotic: the Vancomycin conundrum

Delayed complications of cataract surgery are uncommon. Where previously endophthalmitis was the most feared complication now there is a new contender- Haemorrhagic Occlusive Retinal Vasculitis (HORV). These two complications can present a week after surgery and result in no perception of light.

Vancomycin has been used extensively as a prophylaxis against endophthalmitis, and is now thought to be associated with HORV.<sup>1</sup>

In this issue, Au *et al.* present the impact of prophylactic Vancomycin on the incidence of endophthalmitis at Westmead hospital, a major teaching hospital in Sydney.<sup>2</sup> This retrospective review of more than 12 000 cases shows that the introduction of Vancomycin during cataract surgery reduced the rate of endophthalmitis from 0.43% to 0.045%. Interesting, three of the six patients between 2004 and 2014 who developed endophthalmitis did not receive intracameral antibiotics, suggesting the rate should perhaps be 0.023% with intracameral antibiotics. This is a significant achievement for Westmead hospital as it is a major teaching hospital for ophthalmology in NSW, and trainee registrars perform majority of cataract surgery. Over the 14 years, a number of registrars including myself were trained at Westmead. As a trainee, I recollect that Vancomycin was introduced originally after there was a cluster of endophthalmitis cases in the Ambulatory Surgical Unit (ASU) in 2002. The microbiology team audited ASU, and no obvious source was found. Subsequently, approval was granted for intracameral use of Vancomycin as prophylaxis. The concern was that it would lead to increase in the prevalence of antibiotic resistance. Au *et al.* demonstrate that there has been no significant increase in antibiotic resistance to Vancomycin over that period.

This early decision at Westmead Hospital to use intracameral antibiotic has since been supported by the findings of the ESCRS Endophthalmitis Study Group.<sup>3</sup> The question of the antibiotic choice, however, remains controversial. Vancomycin only provides gram-positive cover, and therefore, Cefuroxime, which provides both Gram +ve and -ve

cover is thought to be more suitable. It is important to note that the majority of endophthalmitis cases are due to Gram +ve organisms. Westmead Hospital had one gram -ve case over the 14 years.

HORV is a devastating complication, which presents a week after surgery with painless loss of vision. It characterised by anterior chamber and vitreous cells, extensive retinal haemorrhages and ischaemic vasculitis. This ophthalmic complication has come to light since 2013.<sup>4-6</sup> Vancomycin use is common to all the HORV cases. The outcome in the majority of cases was 6/60 or worse with 8 out of the 36 eyes in 22 cases becoming NPL. There is only one report of good visual recovery in the literature.<sup>6</sup> The mechanism is uncertain. Vancomycin has been documented as causing lycocytoclastic vasculitis in the skin along a similar time frame and therefore it is postulated that the retinal vasculitis of HORV is a similar lycocytoclastic vasculitis.<sup>7</sup> Based on the time of onset, it is believed that the vasculitis is a type III hypersensitivity reaction, in which immune complexes are deposited intra-vascularly. It is unclear at this stage why suddenly there are so many new HORV cases. Many of the reported HORV cases were thought to have endophthalmitis and retreated with Vancomycin. Unfortunately, their outcome was often NPL. Is it that HORV in the past was unrecognised and incorrectly treated as endophthalmitis? Is this a product related issue? Or is it caused by something other than Vancomycin? Au *et al.*, do not report any cases of HORV during this period. Since 2004 to 2014, in the 12 000 cases, there were only three cases of endophthalmitis. Two of these were culture positive, and the third was in an immunosuppressed patient with relapsing polycondritis. It seems unlikely that a case of HORV was misdiagnosed in this cohort. This complication is so rare that it is difficult to formulate policy even in large institutions. A registry has been setup by ASCRS to collect more information about these cases and must be encouraged.

ASCRS does not offer explicit guidelines regarding the use of Vancomycin in cataract surgery. It recommends that surgeons reconsider Vancomycin prophylaxis. For individual surgeons, the decision

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may be difficult as there are not enough numbers to formulate a plan to change. In considering alternative antibiotics the surgeon's choice includes antibiotics such as Cefuroxime as recommended by the ESCRS or Cefazolin as used in many other countries. Although Cefuroxime or Cefazolin has not been associated with HORV, both, like Vancomycin, have been associated with leukocytoclastic vasculitis in the skin.<sup>8,9</sup> It would appear that intracameral prophylaxis is worthwhile; however, there is no guarantee that there will never be another case of HORV even if the antibiotic is not Vancomycin.

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