

## **Intravitreal vancomycin and amikacin versus intravenous imipenem in the treatment of experimental *Staphylococcus aureus* endophthalmitis.**

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### **Abstract**

**BACKGROUND:** Controversy still surrounds the intravenous (IV) treatment of endophthalmitis. The purpose of this study was to compare IV and intraocular (IO) treatment in experimental *Staphylococcus aureus* endophthalmitis: intravitreal injection of vancomycin and amikacin (VA/AN) in comparison with IV imipenem (IPM) and a combination of IV and IO (IV+IO) therapy. **METHODS:** The right eyes of 27 rabbits were injected with 25000 *S. aureus*. After 24 h, animals were either treated with IO VA/AN ( n=5; 1.0 mg/0.4 mg in 0.1 ml saline), or IV IPM ( n=9; 37 mg/kg body weight 3x daily), or IV+IO therapy ( n=7), or served as untreated controls ( n=6). Clinical appearance was evaluated daily and vitreous aspirates were obtained for bacterial culture 24 h and 6 days after therapy, when the eyes were enucleated for histopathologic examination. **RESULTS:** Eyes in the IO or IO+IV treatment group had a significantly better appearance clinically and histologically than did eyes in the IV or untreated control group. Eyes in the IO+IV group had a similar appearance to the IO-treated eyes. All aspirates from the IO and IO+IV groups were culture-negative 24 hours after therapy, whereas only five of nine in the IV-treated group were culture-negative. Aspirates from all treatment groups were culture-negative by day 6 after the initiation of therapy. Untreated control eyes were culture-positive at all times. **CONCLUSION:** IO therapy with VA/AN proved more effective in treating experimental *S. aureus* endophthalmitis than did IV therapy with IPM alone. IV+IO treatment was not superior to IO treatment alone.