Moxifloxacin (Vigamox®) Prophylaxis Prevents Endophthalmitis in a Rabbit Model Using a Contaminated Intravitreal Injection of Triamcinolone.


**Purpose.** The frequent intravitreal injection of triamcinolone for the treatment of macular diseases has resulted in increased instances of endophthalmitis. In this in vivo study, we investigated the use of topical moxifloxacin (Vigamox®) as a prophylactic measure to prevent endophthalmitis from a contaminated intravitreal injection of triamcinolone.

**Methods.** A rabbit model of contaminated intravitreal injection was developed by injecting triamcinolone into the vitreal cavity through a depot of subconjunctival Staphylococcus aureus (10^6 colony forming units) that was deposited under a 1-hour threat of clinical infection. Endophthalmitis was determined by typical clinical presentations and confirmed by a positive bacterial culture from the vitreous. The model was tested with 19 rabbits separated into two topically treated groups. Topical moxifloxacin (Vigamox®) or saline was administered QID over the next 72 hours. All rabbits were examined daily and were sacrificed and tested for viable intravitreal bacteria when clinical signs of endophthalmitis were observed. Remaining animals were sacrificed and tested for viable intravitreal bacteria at 72 hours.

**Results.** Antibiotic prophylaxis with topical Vigamox® (0.5%) prevented the development of endophthalmitis in comparison with topical saline (0.5% Piscesar, polar) in all animals.

**Conclusion.** Topical prophylaxis with Vigamox® prevented endophthalmitis in a rabbit model involving a contaminated intravitreal injection of triamcinolone. The clinical implication of this study is that Vigamox® may prevent endophthalmitis prior to any anterior chamber intraocular surgeries or may decrease the risks of endophthalmitis when used in conjunction with intracameral injection.

**文献引用:**

This abstract was approved by G. E. Romanowski, E. G. Romanowski, F. S. Mah, K. A. Yates, Y. J. Gordon, The Charite T. Campbell Laboratory, University of Pittsburgh, Pittsburgh, PA.

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**References:**


Does Cefuroxime Provide Better In Vitro Susceptibility Than The 4th Generation Fluoroquinolones and Ceftazolin?

Purpose: To compare the in vitro susceptibility of cefuroxime, a 2nd generation cephalosporin that is being used in Europe for prophylaxis as an intracameral injection, to moxifloxacin, gatifloxacin, and ceftazolin (1st generation cephalosporin).

Methods: The MICs were determined for 92 bacterial isolates from endophthalmitis (Mather Study) to cefuroxime and ceftazolin using E-tests. The in vitro susceptibility profiles were compared statistically (Monte-Carlo Randomization) to the previously determined moxifloxacin and gatifloxacin susceptibility results (determined from E-tests/Mather Study).

Results: In the in vitro susceptibility profile for the four antibiotics were statistically equivalent for Staphylococcus pneumoniae (NS), Coagulase-Negative Staphylococci (NS), Enterococcus faecalis (NS), Acinetobacter baumannii (NS), Klebsiella pneumoniae (NS), Escherichia coli (NS), Staphylococcus aureus (NS), and Staphylococcal ocular isolates and consider in relation to the recent ESCRS endophthalmitis prevention study.

Conclusion: The results of the ESCRS study suggest achieving higher antibiotic concentrations in the anterior chamber reduces the rate of endophthalmitis. This study suggests there may be alternatives to intracameral cefuroxime that are more efficacious over a wider spectrum of bacterial endophthalmitis pathogens.

Perspectives on Cefuroxime and the Recent ESCRS Postoperative Endophthalmitis (POE) Study

Terrence P. O’Brien, MD, Steve A. Arshinoff, MD, FRSCS, Francis S. Mah, MD, Beacon Palmer Eye Institute, University of Miami Miller School of Medicine, Palm Beach Gardens, FL; University of Toronto, Toronto, Canada; Department of Ophthalmology, University of Pittsburgh, Pittsburgh, PA

Purpose: Provide kinetics of kill (KK) data with cefuroxime against staphylococcal ocular isolates and consider in relation to the recent ESCRS endophthalmitis prevention study.

Methods: KK experiments were performed. Cefuroxime concentrations were 1000 and 100 µg/ml, concentrations approximately equivalent to 1:10 and 1:100 of the initial intracameral concentration in the aqueous humor.

Results: KK studies with 100 or 1000 µg/ml cefuroxime demonstrated, even in ocular staphylococcal isolates that were susceptible to β-lactams, less than 1 log kill was achieved in 3 hours. By comparison, moxifloxacin at 50 µg/ml (1:100 dilution of the commercial topical drops), killed >3 logs (>99.9%) in less than 2 hours for susceptible fluoroquinolones (FQ) even. Isolates resistant to cephaptanapin were not killed by cefuroxime at 100 or 1000 µg/ml whereas isolates resistant to FQ were killed >3 logs in less than 3 hours by moxifloxacin. Arshinoff reported no endophthalmitis with intracameral moxifloxacin as adjunct to topical dosing in >1000 surgical cases. Moxifloxacin dosed topically has been shown to achieve concentrations in the aqueous humor that exceed the minimum bactericidal concentration (MBC) for the most common ocular pathogens involved in endophthalmitis, including staphylococci.

Conclusion: The results of the ESCRS study suggest achieving higher antibiotic concentrations in the anterior chamber reduces the rate of endophthalmitis. This study suggests there may be alternatives to intracameral cefuroxime that are more efficacious over a wider spectrum of bacterial endophthalmitis pathogens.

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Cefuroxime vs. Moxifloxacin: Kinetics of Kill

Zimmett, A. D.; Zimmett, A. B. T.; Zimmett, A. B. C.

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