Deepinder K. Dhalival, MD, LAc
Vishal Jhanji, MD
Regis P. Kovalski, MS, M(ASCP)
Alex Mammen, MD
Eric G. Romanowski, MS
Robert M.Q. Shanks, PhD
Pittsburgh, Pennsylvania, USA

REFERENCES
2. Kovalski RP, Romanowski EG, Shanks RMQ, Mammen A, Dhalival DK. Posturgical cataract prophyllaxis with intravitreal “triamcinolone-moxifloxacin” may not be optimal for preventing endophthalmitis. Eye Contact Lens 2018; 44:3338–3343

OTHER CITED MATERIAL

Reply: The experimental study of rabbit eyes showing the lack of effectiveness of commercial triamcinolone-moxifloxacin formulation after intravitreal inoculation of S aureus resistant to moxifloxacin should come as no surprise. However, the apparent effectiveness of this formulation after intravitreal inoculation of S aureus sensitive to moxifloxacin (MIC = 0.032 μg/mL) deserves further analysis. Bacteria enter the eye through the anterior segment during or after cataract surgery, and the animal model of intravitreal inoculation of S aureus might not accurately represent modern temporal clear corneal phacoemulsification surgery. Although a 500 μg dose of intracameral moxifloxacin could, at least theoretically, be expected to kill Staphylococcus species with the MIC ranging from 8 to 16 μg/mL introduced during surgery, the same might not be true for 200 micrograms of moxifloxacin given intravitreally.

For every antimicrobial agent being considered for postoperative endophthalmitis prophylaxis, the following questions must be answered: Is it effective against the most common causative organisms? Is the dose adequate? How long does it maintain therapeutic concentration in the anterior chamber? And, last but not least, how is it eliminated from the eye? Unfortunately, intravitreal moxifloxacin fails each of these tests. First, the most common causative organism for postoperative endophthalmitis, coagulate-negative Staphylococcus, is widely resistant to moxifloxacin, with resistance rates approaching 60% in the United States, making this agent a poor choice for postoperative endophthalmitis prophylaxis.

Second, the dose of intravitreal moxifloxacin in 0.2 mL of commercial triamcinolone-moxifloxacin formulation is only 200 μg, 40% of the usual 500 μg intravitreal dose used for bacterial endophthalmitis. Third, moxifloxacin is actively pumped out from the vitreous cavity by monocarboxylate transporter–mediated uptake by the retinal pigment epithelium. Therefore, unlike vancomycin, which exits the eye via the trabecular meshwork, moxifloxacin’s direction of flow is posterior, away from the anterior chamber, which is the site of entry of bacteria into the eye during or after cataract surgery. Given its high lipid solubility, which allows it to rapidly diffuse into surrounding tissues, and its predominantly posterior route of exit, it is unlikely that moxifloxacin would achieve a therapeutic concentration in the anterior chamber at any timepoint after intravitreal administration.

An incidence of zero of a rare event; such as postoperative endophthalmitis in a relatively small sample of 2300 can be easily misinterpreted. A more appropriate method is to report the lower and upper limits of the 95% confidence interval, which for this sample would be 0% and 0.21%. The topic of postoperative endophthalmitis prophylaxis is of vital importance and continues to generate passionate debate. However, 200 μg of intravitreal moxifloxacin is the wrong drug administered in the wrong space in suboptimum dosage and is unlikely to provide effective prophylaxis against postoperative endophthalmitis.—Kamal Kishore, MD

REFERENCES

OTHER CITED MATERIAL

Test to predict the risk for postoperative diplopia after refractive surgery

I read with high interest the case of diplopia after laser refractive surgery in a child, presented by Rudy M.M.A. Nuijts et al.1

My comment is aimed to remind us of a tip on how it is possible to prevent postoperative diplopia in patients with a history of heterotropia. This topic was widely treated by de Faber in his workshop "How to prevent diplopia after refractive surgery," but it is worth remembering how a basic and easily performed test can predict the risk for postoperative diplopia. This test is also useful when operating on adult patients with manifest squint for aesthetic reasons;
in these cases, it is very important to know which antidioplic mechanism has been set up during the patient’s life. In low-angle esotropia, anomalous retinal correspondence is frequent, while in large-angle esotropia, suppression is the rule. In exotropia, suppression is the most frequent antidioplic mechanism.

The test must be performed in free space, having first corrected the squinting angle by prisms and inviting the patient to fix on a spot of light, which aims to stimulate fusion in binocular vision conditions. It is necessary to place on the trial frame two Bagolini striated glasses that allow us to ensure that single vision is due to a real fusion and not to suppression. After surgery the antidioplic mechanisms may be interrupted, so we must understand how deeply rooted is either fusion or suppression.

Placing the Bagolini red glass bar before the non-fixing eye, we can introduce a dissociating element of increasing power to evaluate the depth of binocular vision. In particular, if diplopia appears with lighter red filters, it means that binocular vision is not rooted and there is a high risk of postoperative diplopia. On the contrary, if diplopia appears with darker filters only, it means that the binocular vision state is deeply rooted. In that case, postoperative diplopia can be ruled out and surgery can be performed safely.

It is a very simple test and it is advisable to refractive surgeons to use it when not confident with binocular vision problems.

Giuseppe Ravalico, MD
Trieste, Italy

REFERENCE


Disclosures: The author has no financial or proprietary interest in any material or method mentioned.

Calculating prediction errors of different biometric methods

We read with interest the study on intraoperative aberrometry (ORA System, Alcon Laboratories, Inc.) by Cionni et al. They calculated the prediction error with the ORA as the difference between the manifest refraction spherical equivalent (MRSE) predicted intraoperatively for the intraocular lens (IOL) implanted and the MRSE postoperatively achieved with the IOL implanted, which is basically the standard definition, differing only in the order. But the authors calculated the preoperative formula–estimated prediction error as the difference between the MRSE predicted by the IOL formula used for the preoperatively planned IOL and the MRSE that would have been achieved if the preoperatively planned IOL had been implanted. This is not the conventional way to calculate a prediction error. This is simply because there is no direct method to establish with certainty what the refraction of a pseudophakic eye could have been if another IOL had been implanted. Any calculation that is made will assume that a change of 1.0 diopter (D) in the IOL plane will cause around 0.7 D of change in the spectacle plane, but it depends, of course, on the actual pseudophakic anterior chamber depth, which is variable. The differences will not be very significant in most eyes, but it is important that the concept be clear.

The appropriate way to calculate the prediction error of any biometric method always uses as a reference the actual postoperative refraction of the pseudophakic eye with the lens that was implanted, and compares it with the prediction that the biometric method would do for the lens that is inside the eye. That way, no assumptions are required. In addition, when calculating the prediction error in the proper way, it is not really important if the IOL of the power indicated by the ORA System was or was not implanted, or if the one that had been calculated with a biometric formula in the preoperative examination was used, and this much facilitates the understanding of the results by the reader, because the performance of the biometric method is more clearly indicated. With this prediction error, all statistical measures of central tendency, position, and dispersion (including the mean, the median, the percentage of eyes within ± 0.50 D, the maximum error) can be determined using either arithmetic or the absolute value, depending on the particular purpose of a given analysis, without the need to divide the data into subgroups according to whether the IOL agreed or not with what was planned preoperatively.

Another great advantage of this standardized approach, based on real measurements, is that any biometric formula can be evaluated, whether or not the surgeon actually used it, because knowing the preoperative biometric data of a given eye (axial length, keratometry, phakic anterior chamber depth, corneal diameter, and lens thickness), knowing the type and power of the implanted IOL, and having the data of the postoperative spherical equivalent, the prediction error can be calculated for any biometric formula without difficulty.

Virgilio Galvis, MD
Alejandro Tello, MD
Paul A. Camacho, MD
Pablo D. Cabal, MD
Gabriel A. Frederick, MD
Jose I. Sacoto, MD
Jessica L. Lapuente, MD
Sergio E. Serrano, MD
Floridablanca and Bucaramanga
Colombia

REFERENCES


Disclosures: None of the authors has a financial or proprietary interest in any material or method mentioned.