Brinzolamide Lowers IOP at Night Better Than Timolol

Comparing Diurnal and Nocturnal Effects of Brinzolamide and Timolol on Intraocular Pressure in Patients Receiving Latanoprost Monotherapy.

Liu JHK, Medeiros FA, et al:

Ophthalmology 2009; 116 (March): 449-454

Brinzolamide is more effective than timolol during sleep in reducing intraocular pressure.

Objective: To compare the 24-hour effect of brinzolamide and timolol on intraocular pressure (IOP) in patients receiving monotherapy with latanoprost.
Design: Prospective, cross-over clinical trial.
Participants/Methods: 26 patients with a history of primary open-angle glaucoma or ocular hypertension between the ages of 44 and 79 years who were already receiving once-daily treatment with latanoprost 0.005% were enrolled. Patients underwent a 24-hour cycle of IOP measurement in a sleep lab using latanoprost alone. IOP measurements were made every 2 hours, both in the supine position and in the patient's habitual body position, sitting during daytime hours and supine at night. Patients were randomly assigned to receive additional therapy with either 1% brinzolamide 3 times daily or 0.5% timolol gel-forming solution once every morning for 8 weeks. Afterward, a repeat 24-hour IOP measurement cycle was performed. Patients were then crossed over to receive the other add-on therapy, following which a final 24-hour IOP data collection cycle was completed. Statistical analysis included the comparison of IOP both during daytime and nighttime hours to baseline IOP on latanoprost alone.
Results: A similar reduction in IOP was seen during the diurnal period in patients using either brinzolamide or timolol as adjunctive therapy. A mean IOP reduction of approximately 3 mm Hg was seen during all daytime measurements with either of these drugs. During the nocturnal period, however, a mean IOP reduction of approximately 2 mm Hg was seen in association with the use of brinzolamide, while no reduction in IOP was seen with timolol.
Conclusions: During sleep, brinzolamide is more effective than timolol in reducing IOP in patients receiving latanoprost monotherapy.
Reviewer's Comments: In order for timolol to exert an effect on IOP, blockade of beta-adrenergic receptors must have physiologic relevance. Since the adrenergic innervation to the eye is inactive at night, as demonstrated by multiple previous studies, beta-blockade has no effect on IOP during sleep. Given the increasingly recognized importance of 24-hour control of IOP, brinzolamide appears to be a more rational choice for adjunctive therapy than timolol in patients whose IOP is not adequately controlled with a prostaglandin analog. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Glaucoma, Medical Treatment

Print Tag: Refer to original journal article

Is Bevacizumab Useful in Managing NVG?

Outcomes of Treatment of Neovascular Glaucoma With Intravitreal Bevacizumab.

Moraczewski AL, Lee RK, et al:

Br J Ophthalmol 2009; 93 (589-593):

Intravitreal bevacizumab can induce regression of anterior segment neovascularization, which is beneficial prior to the performance of anterior segment surgery for neovascular glaucoma.

Objective: To evaluate the clinical outcomes of neovascular glaucoma (NVG) in patients treated with intravitreal bevacizumab.
Design: Retrospective, noncomparative, consecutive, interventional clinical case series.
Methods: Medical records were reviewed of a consecutive series of 56 eyes of 52 patients who were treated with intravitreal bevacizumab for a diagnosis of NVG. Review of records allowed the documentation of patient demographics, intraocular pressure, visual acuity, and treatment provided for the management of NVG. In addition, the etiology of NVG was noted.
Results: The mean patient age was 65 years. The most common causes of NVG were proliferative diabetic retinopathy and retinal vein occlusion. Intravitreal injection of bevacizumab 1.25 mg/0.05 mL was given under sterile conditions. Multiple injections were required in 52% of patients for recurrence of anterior segment neovascularization. In spite of treatment with bevacizumab and panretinal photocoagulation, 61% of patients required the placement of a glaucoma drainage device. Visual outcomes tended to be poor, based on the severity of retinal pathology underlying the development of NVG.
Conclusions: Clinical outcomes of the treatment of NVG remain poor in spite of the introduction of bevacizumab as a supplemental therapy for the management of this complication of retinal ischemia.
Reviewer's Comments: Intravitreal bevacizumab is useful in the management of patients with NVG by inducing regression of anterior segment neovascularization. However, the underlying retinal pathology must be addressed with panretinal photocoagulation in order to prevent recurrence of neovascularization. In spite of the supplemental use of bevacizumab, clinical outcomes can be poor due to the severity of the underlying retinal pathology in many cases. Bevacizumab is useful in reducing preoperative inflammation and reducing the risk of surgical complications of glaucoma drainage implant surgery, but cannot be considered as a revolutionary advance in the management of this difficult disease. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Secondary Glaucoma, Proliferative Retinopathy

Print Tag: Refer to original journal article

Optical Treatment in Preschool Reduces Amblyopia in Astigmatic Children

Optical Treatment Reduces Amblyopia in Astigmatic Children Who Receive Spectacles Before Kindergarten.

Dobson V, Clifford-Donaldson CE, et al:

Ophthalmology 2009; 116 (May): 1002-1008

Refractive correction prescribed in preschool reduces amblyopia in astigmatic children, resulting in improved vision by the time of school age compared to children who do not receive refractive correction.

Objective: To evaluate the effect of spectacle correction of astigmatism during preschool on visual acuity and meridional amblyopia once children reach school age.
Design: Cross-sectional, comparative clinical case series.
Methods: 73 Native American children with astigmatism ≥1.50 diopters were enrolled in the study. All children had with-the-rule astigmatism, with 28 having myopic or mixed astigmatism and 45 having hyperopic astigmatism. Thirty-nine children had received prior spectacle correction of refractive error during preschool, between 1 and 2 years before testing. Thirty-four children had no prior refractive correction. Children underwent a comprehensive examination, which included measurement of visual acuity using the ETDRS logMAR eye chart, the Lea Symbols chart, grating visual acuity measured with a modified Teller visual acuity card, and measurement of meridional amblyopia.
Results: Children who had received prior spectacle correction had a mean ETDRS visual acuity that was significantly better than those who had received no prior refractive correction (20/33 vs 20/48; P <0.0003). No significant differences in Lea symbols visual acuity, grating acuity, or meridional amblyopia were seen between groups.
Conclusions: Spectacle correction during preschool results in improved best-corrected letter recognition visual acuity in children with astigmatism by the time they reach school age.
Reviewer's Comments: This study illustrates the importance of early detection of astigmatism and other refractive errors that are amblyogenic. This study did not involve intervention at an earlier age; therefore, further research is needed to determine whether even earlier intervention at optical correction of astigmatism may further improve visual outcome in astigmatic children. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Amblyopia, Astigmatism

Print Tag: Refer to original journal article

Small Histologic Safety Margin May Prevent BCC Recurrence

Histologic Safety Margin in Basal Cell Carcinoma of the Eyelid: Correlation With Recurrence Rate.

Auw-Haedrich C, Frick S, et al:

Ophthalmology 2009; 116 (April): 802-806

Sclerosing or fibrous basal cell carcinoma must be re-resected if tissue margins are positive, even if the tumor is in an easily accessible location since clinical evidence of recurrence can be difficult to discern.

Objective: To evaluate the relationship between the minimum histologic safety margin (HSM) and recurrence rate of periorbital basal cell carcinomas (BCC).
Design: Prospective cohort study.
Participants/Methods: 101 patients with periorbital BCC who were managed surgically at a single referral center were included in the study. The mean postoperative follow-up was 7 years. The HSM of each tumor resection specimen was measured retrospectively from photographs of hematoxylin and eosin-stained paraffin slides using a digital measurement system. Kaplan-Meier survival analysis was performed to compare the rate of recurrence according to the magnitude of the HSM.
Results: Tumor recurrence was observed in 6.9% of patients after a mean follow-up of 35 months. Recurrence was found in only 1 patient with a HSM >0.2 mm. The recurrence rate was significantly higher in those with HSM less than this amount (17%; *P* =0.03) and in those with positive tissue margins (27.3%; *P* =0.01).
Conclusions: Extremely small tumor-free tissue margins of >0.2 mm demonstrate an extremely low rate of recurrence of periorbital BCC.
Reviewer's Comments: Recurrence of solid BCC is easier to discern clinically. At critical locations such as the lacrimal puncta where surgical excision may result in morbidity to the patient, the authors of this study suggest that careful observation may be an acceptable alternative to immediate re-resection if tissue margins are positive, since clinical detection of recurrence is reliable. Re-resection may then be performed on the basis of clinically apparent recurrence. If the tumor is located at sites that are not accessible to clinical examination, such as around the medial canthus, minimum tumor-free tissue margins >0.2 mm are important to achieve to reliable prevent recurrence. In addition, if the histology of the initial resection indicates sclerosing or fibrous BCC, immediate re-resection is also necessary if tissue margins are positive, since reliable detection of recurrence by clinical examination is not possible. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Eyelid, Basal Cell Carcinoma

Print Tag: Refer to original journal article

Know Risk Factors for Endophthalmitis After Cataract Surgery

Risk Factors for Acute Endophthalmitis After Cataract Surgery: A Population-Based Study.

Hatch WV, Cernat G, et al:

Ophthalmology 2009; 116 (March): 425-430

The risk of endophthalmitis after cataract surgery is ten times greater in those who require anterior vitrectomy for posterior capsule rupture.

Objective: To identify risk factors for acute endophthalmitis after cataract surgery.
Design: Population-based, retrospective cohort study.
Methods: Data for this study were derived from the Ministry of Health and Long-Term Care Ontario Health Insurance Plan physician claims database in Ontario, Canada. All cases of cataract surgery performed within that province are included in these databases, and data were analyzed during a 4-year period between 2002 and 2006. Billing claims for other procedures including vitrectomy and vitreous aspiration, dislocated lens extraction, and anterior vitrectomy were used as surrogate markers for intraoperative and postoperative complications, including retinal detachment, loss of lens fragments into the posterior segment, and posterior capsule rupture. In addition, demographic information was also available for analysis. Using all of these data, a multivariate statistical analysis was performed to identify independent predictors of the development of acute endophthalmitis. Cases of endophthalmitis were identified by the reporting of a vitreous aspiration or injection within 2 weeks after cataract surgery. Data were available for 442,177 cataract surgeries during the 4-year study period.
Results: 617 cases of suspected acute endophthalmitis were identified, yielding an overall rate of endophthalmitis of 1.4 per 1000 cataract surgeries. Independent risk factors for the occurrence of endophthalmitis identified in the multivariate analysis included male gender, age >85 years, and having an anterior vitrectomy performed at the time of cataract surgery.
Conclusions: Older age and surgery complicated by vitreous loss increase the risk of endophthalmitis after cataract surgery.
Reviewer's Comments: Studies of this type, which use billing records as surrogates for the actual factors under investigation, have some limitations. However, the very large sample size and the relatively short study period required to obtain such a large sample size are clear strengths, lending support to the conclusions. Knowledge of the risk factors identified in this study may be helpful in informing patients of the risks of surgery, in identifying individuals who require closer surveillance following surgery, and as benchmarks for quality improvement initiatives. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Cataract Surgery, Complications, Infection

Print Tag: Refer to original journal article

Reducing Risk of Endophthalmitis in Ruptured Globe Injuries

Low Rate of Endophthalmitis in a Large Series of Open Globe Injuries.

Andreoli CM, Andreoli MT, et al:

Am J Ophthalmol 2009; 147 (April): 601-608

Intravenous antibiotics for 48 hours may reduce the incidence of endophthalmitis following a ruptured globe repair.

Background: Ruptured globes are often repaired, but they then face the risk of endophthalmitis postoperatively. In many large series, the rates vary between 3% and 17%.
Objective: To describe the rate of endophthalmitis after an open globe injury using a standardized protocol.
Design: Retrospective noncomparative case series.
Participants: 558 patients with a history of a ruptured globe from a single institution in Boston, MA.
Methods: Charts were reviewed from January 1, 2000, to July 31, 2007. Patients with enucleatation within 30 days, who did not undergo surgery for their injury, who underwent surgery at an outside institution, or who were lost to 30-day follow-up were excluded. During the 7.5-year period, a standard management protocol was followed. Intravenous vancomycin and ceftazidime (fluoroquinolone in penicillin allergy) were begun immediately and continued for 48 hours. Outside referring institutions were asked to begin IV antibiotics, avoid eye drops, and put a shield on the eye. All patients underwent a CT scan and a tetanus update. Surgical repair occurred within 24 hours of injury. Clean uveal tissue was reposited, and dirty tissue was excised. Lensectomy was performed if the capsule was ruptured. Anterior foreign bodies were removed by a trauma surgeon, and posterior foreign bodies by a vitreoretinal surgeon. Postoperatively, topical antibiotics 4 times daily, topical steroids 4 to 12 times daily, and topical cycloplegia 2 to 3 times daily were administered.
Results: A total of 675 globes were repaired; 117 patients were excluded for enucleation (n=39) or were lost to follow-up (n=78). Approximately 80% of the patients were men with a mean age of 40 years. Mean follow-up was 11 months. Five patients (0.9%) developed endophthalmitis. The time from injury to presentation and time from injury to surgery did not affect the risk of endophthalmitis. Extrusion of uvea and vitrectomy did not affect the risk of endophthalmitis. Intraocular foreign body substantially increased the risk of endophthalmitis. Lensectomy alone did not affect the risk, but placement of an intraocular lens at the time of lensectomy increased the risk of endophthalmitis.
Conclusions: The standardized protocol, including IV antibiotics for 48 hours, resulted in a posttraumatic endophthalmitis rate of <1%. Intraocular foreign body and primary intraocular lens placement at time of ruptured globe repair increased the risk of endophthalmitis.
Reviewer's Comments: The authors' rate of endophthalmitis is much lower than those of other large studies of ruptured globes. This suggests that this protocol has merit and deserves consideration in other institutions. (Reviewer-Michael S. Lee, MD).

Keywords: Endophthalmitis, Open Globe Injuries

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Face-Down Positioning for Macular Hole Closure--How Long?

Sustained Postoperative Face-Down Positioning Is Unnecessary for Successful Macular Hole Surgery.

Mittra RA, Kim JE, et al:

Br J Ophthalmol 2009; 93 (January 23): 664-666

Successful macular hole closure can be achieved with as little as 1 day of face-down positioning postoperatively.

Background: The typical postoperative course of a patient after macular hole surgery is to remain face down for up to 2 weeks to allow a gas bubble to tamponade the macular region. The authors identified a postoperative hole closure rate of >95% using pars plana vitrectomy, internal limiting membrane (ILM) peel, and face-down positioning for 1 week. Several patients with successful hole closure admitted to shorter duration of positioning, and the authors chose to change their technique.
Objective: To determine the rates of successful macular hole closure with only 1 day of face-down positioning.
Design: Retrospective, multicenter, noncomparative, consecutive case series.
Participants: 53 patients with a stage 3 or 4 macular hole were identified from 3 vitreoretinal practices in the upper Midwest.
Methods: All size and stage macular holes were eligible for inclusion. Each eye underwent a 3-port pars plana vitrectomy and ILM peeling. SF6 or C3F8 was introduced into the eye at completion of the procedure. Patients remained face down for 1 day and were asked to avoid the supine position for 2 weeks.
Results: 56 eyes of 53 patients were included. More than 75% of the patients were women with a mean age of 69 years. Stage 3 holes were seen in 80%, and stage 4 holes in 20%. At baseline, 30% of the eyes were pseudophakic. Almost 85% of the eyes received SF6, and the rest received C3F8. Ninety-five percent of the patients had an ILM peel. The mean preoperative acuity improved from 20/100 at baseline to 20/50 postoperatively. Hole closure was successful in 93% of eyes. The 4 patients who did not enjoy hole closure admitted not positioning at all.
Conclusions: 1 day of postoperative face-down positioning is highly successful for macular hole closure.
Reviewer's Comments: This paper adds to the growing literature that a patient with a macular hole does not need to be face down for 2 weeks in order to experience successful hole closure. (Reviewer-Michael S. Lee, MD).

Keywords: Macular Hole, Face-Down Positioning

Print Tag: Refer to original journal article

Thyroid Eye Disease or Dry Eye?

Occult Thyroid Eye Disease in Patients Presenting With Dry Eye Symptoms.

Gupta A, Sadeghi PB, Akpek EK:

Am J Ophthalmol 2009; 147 (May): 919-923

A patient presenting with dry eye symptoms and localized chemosis and injection over the extraocular muscle insertion may have occult thyroid eye disease.

Background: Among other symptoms, patients with thyroid eye disease (TED) often complain of ocular irritation, redness, and epiphora. Occasionally, these dry eye symptoms may be the only complaint.
Objective: To describe the findings of patients with occult TED who initially presented to a dry eye clinic.
Design: Retrospective, observational chart review.
Participants: 21 patients with occult TED referred for dry eye consultation at a single institution in Baltimore, MD.
Methods: All patients presenting to a dry eye clinic underwent a complete history and physical examination. The evaluation included Schirmer tear testing, tear break-up time, and fluorescein staining. In the appropriate setting, patients were tested for thyroid function, anti-thyroglobulin antibodies, and anti-thyroid peroxidase antibodies. Orbital echography was also used. The echography was consistent with TED if the A-scan showed high internal reflectivity of the extraocular muscle (EOM), irregular internal structure, thickened muscle bellies, and normal tendon insertions. Only the 4 rectus muscles were evaluated.
Results: Of 539 patients seen for dry eye over a 2-year period, 32 were sent for orbital echography. Among these patients, 21 had findings consistent with TED. Most patients (86%) were female with a median age of 57 years. Half the patients had a known diagnosis of a thyroid disorder such as Graves' disease (10%), Hashimoto thyroiditis (10%), or idiopathic hypothyroidism (29%). Sjögren's disease was present in 15%, and rheumatoid arthritis in 5%. All patients experienced irritation, foreign body sensation, redness, and epiphora for >1 year. Almost half the patients had a wide palpebral fissure and eyelid retraction. All patients had either chemosis and/or conjunctival hyperemia over the EOM insertions. Punctate corneal changes were seen in 60%, and early tear break-up time in 30%; 20% had an abnormal Schirmer test. Abnormal echographic findings were found in all patients except one. In addition, all patients except one were treated with topical cyclosporine or topical steroids, and 70% enjoyed improvement in symptoms.
Conclusions: Patients with occult TED may present with dry eye symptoms alone. Clinicians should consider this diagnosis if localized chemosis or injection over the EOM insertions is present.
Reviewer's Comments: The authors did not find substantial exposure to account for the dry eye symptoms and suggest that the symptoms may be due to inflammation. (Reviewer-Michael S. Lee, MD).

Keywords: Dry Eye, Thyroid Eye Disease

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Diphenhydramine as Topical Ocular Anesthetic

Diphenhydramine as a Topical Ocular Anesthetic.

Suffridge PJ, Wiggins MN, et al:

Can J Ophthalmol 2009; 44 (2): 181-184

Topical diphenhydramine may be a future alternative for corneal anesthesia for patients with a proparacaine allergy.

Background: Diphenhydramine can act as a topical cutaneous anesthetic. Other antihistamines have been shown to result in corneal anesthesia. Currently available corneal anesthetics result in corneal epithelial toxicity with recurrent use. These agents are also in the same pharmaceutical family, and an allergic patient has limited options.
Objective: To study the anesthetic effect of topical 5% diphenhydramine.
Design: Prospective, controlled animal study involving 20 white New Zealand rabbits.
Methods: After the rabbits were restrained, 1 drop of preservative-free 5% diphenhydramine solution with a pH of 6.9 was placed on the left eye of all rabbits. A drop of balanced salt solution was placed on the right eye. A Cochet-Bonnet esthesiometer was used to identify a blink reflex. The esthesiometer applies a controlled pressure to the cornea. The pressure was increased until the blink reflex was elicited. Blink reflexes were measured at 30, 60, and 90 minutes after drops were placed. After the 90-minute measurement, fluorescein was instilled and a slit-lamp examination was performed. Twenty-four hours later, the rabbits were examined using Rose Bengal stain.
Results: Diphenhydramine showed an anesthetic effect compared to the balanced salt solution in 90%, 95%, and 70% of animals at 30, 60, and 90 minutes, respectively. The greatest difference in mean pressure tolerated was at 30 minutes, and this difference declined at 60 and 90 minutes as expected. All rabbits experienced mild conjunctival hyperemia in the diphenhydramine eye and no adverse effects in the balanced salt solution eye. There was punctate staining of all corneas in this study, thought to be consistent with esthesiometer use and not due to corneal toxicity. Rose Bengal staining was negative at 24 hours.
Conclusions: Topical 5% diphenhydramine has an anesthetic effect on rabbit corneas compared to salt solution. This may represent a future alternative for patients with allergy to the currently available topical anesthetics.
Reviewer's Comments: Patients who are allergic to the "caines" may have a new alternative. The authors used commercially available diphenhydramine, making this an easier avenue to explore in humans. (Reviewer-Michael S. Lee, MD).

Keywords: Diphenhydramine, Topical Anesthetic

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Consider Botox for Painful Diabetic Neuropathy

Botulinum Toxin for Diabetic Neuropathic Pain: A Randomized Double-Blind Crossover Trial.

Yuan R-Y, Sheu J-J, et al:

Neurology 2009; 72 (April 28): 1473-1478

Intradermal botulinum toxin type A can improve painful diabetic neuropathy.

Background: A recent report described a beneficial effect of botulinum toxin type A on neuropathic pain due to trauma and shingles. Patients with diabetes can also develop neuropathic pain. Many treatment options exist, but they have poor efficacy and numerous adverse effects.
Objective: To study the effect of intradermal botulinum toxin type A on painful diabetic neuropathy.
Design: Prospective, double-masked, cross-over trial.
Participants: 18 patients from Taiwan with painful diabetic neuropathy.
Methods: Patients had stable pain for at least 3 years without change to their medications for at least 1 month. Each patient underwent a validated diabetic neuropathy questionnaire and nerve conduction velocity testing for confirmation. Patients with peripheral arterial disease, sacral radiculopathy, alcoholism, renal insufficiency, or motor deficits were excluded. Patients were randomly assigned to receive botulinum toxin A or saline injections to both feet. After 12 weeks, they received the other treatment. After application of topical Xylocaine, the intradermal injections were given along the dorsal surface in a 3 x 4 grid. Aliquots were 0.1 cc of 4 units of botulinum toxin type A or 0.9% saline. Patients completed a visual analog scale (VAS) at 1, 4, 8, and 12 weeks.
Results: 20 patients started the study and 18 completed 6 months. The baseline VAS was 6.36 for all participants. There was a significant drop in VAS in the botulinum toxin group at 4, 8, and 12 weeks from baseline and placebo. There was no difference in VAS for the botulinum group at 1 week. Overall, 44% of botulinum toxin patients achieved a good response (VAS reduction of ≥3) at 3 months. None of the placebo group enjoyed a good response. There were no significant differences between groups in quality-of-life questionnaires at all time points and quality of sleep at 1, 8, and 12 weeks.
Conclusions: Intradermal botulinum toxin type A can improve diabetic neuropathic pain.
Reviewer's Comments: It is not clear how botulinum toxin type A improves pain. Although the design for the study is good, I would caution that it is possible that the botulinum toxin burns compared to the saline, and that patients conceivably are not truly masked. From this and one other study, it may be reasonable to consider intradermal botulinum toxin type A for the truly miserable patient. (Reviewer-Michael S. Lee, MD).

Keywords: Botulinum Toxin A, Neuropathy

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Does Prior Bevacizumab Injection Mean Future Intraocular Inflammation?

Acute Intraocular Inflammation After Intravitreous Injections of Bevacizumab for Treatment of Neovascular Age-Related Macular Degeneration.

Wickremasinghe SS, Michalova K, et al:

Ophthalmology 2008; 115 (November): 1911-1915

Bevacizumab injections may cause acute, sterile intraocular inflammation.

Background: Bevacizumab, an anti-VEGF antibody used for the treatment of wet age-related macular degeneration (AMD), is injected into the vitreous at monthly intervals. Endophthalmitis is a risk with any intraocular injection and may be difficult to distinguish from an acute inflammatory reaction.
Objective: To describe clinical characteristics of acute intraocular inflammation secondary to bevacizumab injections.
Design: Retrospective, noncomparative case series.
Participants: 19 patients from 2 centers in Australia.
Methods: The records of patients with wet AMD who received bevacizumab injections from June 2006 to May 2007 were reviewed. All injections were performed in a designated room using a standard protocol. Bevacizumab was processed by accredited pharmacies and transported to the various clinics on ice. Each intravitreal bevacizumab injection consisted of 1.25 mg in 0.05 mL. After injections, the patients began topical chloramphenicol 0.5% 4 times daily for 3 days.
Results: Of 1278 injections given in the 1-year period, 19 (1.5%) developed acute intraocular inflammation. Five patients presented with severe vitritis and underwent anterior chamber and vitreous taps with concomitant injection of antibiotics. Three patients showed microbial growth. Infectious disease consultation determined that these cases were likely due to contaminants; however, the authors chose to exclude all 5 patients from analysis. There were 11 women and 3 men, with a mean age of 84 years. Patients had received between 0 and 5 previous injections. Presenting symptoms included reduced vision (n=13), floaters (n=4), and photophobia (n=4). None of the patients noted significant pain. Examination revealed more cellular reaction in the anterior compared to the posterior chamber. The majority of patients (70%) presented within 2 days, and all presented within 1 week of the injection. Acuity was reduced among all patients initially. Visual acuity improved over 1 month in all but 2 patients and, in some cases, was better than pre-injection acuity.
Conclusions: While infectious endophthalmitis is possible and requires differentiation, acute intraocular inflammation can occur within a few days of intravitreous injections of bevacizumab, even among patients who have previously received injections.
Reviewer's Comments: One of the key issues is that most endophthalmitis patients typically experience pain, while these patients did not. It is also curious as to why patients develop inflammation even though they have had injections before and why the inflammation tends to be greater in the anterior chamber when the injection is given posteriorly. (Reviewer-Michael S. Lee, MD).

Keywords: Bevacizumab, Macular Degeneration

Print Tag: Refer to original journal article

Topical Steroids May Help Treat Bacterial Corneal Ulcers

Corticosteroids for Bacterial Corneal Ulcers.

Srinivasan M, Lalitha P, et al:

Br J Ophthalmol 2009; 93 (February): 198-202

After establishing effective topical antibiotic therapy for a minimum of 48 hours, the addition of topical steroids may reduce corneal scarring in patients with bacterial corneal ulcers.

Objective: To investigate the efficacy of the use of topical steroids in the management of patients with bacterial corneal ulcers.
Design: Prospective, double-masked, randomized, controlled clinical trial.
Participants/Methods: 42 patients with confirmed bacterial culture-positive corneal ulcers were enrolled. Initial therapy consisted of topical moxifloxacin (Vigamox) applied every hour while the patient was awake for the first 48 hours. Patients were randomly assigned to the addition of topical prednisolone phosphate 1% or placebo drops 4 times daily, as long as the corneal epithelial defect had decreased in size to a maximum of 0.75 mm and there was no evidence of fungal keratitis or acanthamoeba. Therapy was continued 4 times daily for 1 week, followed by 2 times daily for 1 week, and 1 time daily for 1 week before being stopped. All patients were hospitalized until complete re-epithelialization occurred. Antibiotic therapy was continued at the discretion of the treating physician in accordance with the clinical response. Follow-up study visits took place 3 weeks and 3 months after treatment was initiated. Visual acuity, central corneal opacity, and the rate of re-epithelialization were compared between the 2 groups.
Results: The time to re-epithelialization was longer in steroid-treated eyes (8.6 vs 6.3 days; $P < 0.05$). At 3 weeks and 3 months, the size of the corneal opacity was smaller in the steroid group, although the difference did not reach statistical significance. In addition, the best-corrected visual acuity was slightly better in the steroid group at both follow-up time points, although the difference did not reach statistical significance.
Conclusions: Topical steroid therapy may be a useful adjunct in the treatment of bacterial corneal ulcers to minimize the size and density of corneal opacity.
Reviewer's Comments: There is considerable precedent in other medical conditions to use steroids in conjunction with antibiotic therapy to minimize tissue damage associated with bacterial infections. This study did not demonstrate statistically significant differences in visual outcome or in size or density of corneal opacities, but there was a trend toward improvement in these parameters in association with steroid use. A larger prospective trial with more statistical power is needed to definitively demonstrate the efficacy of steroid therapy in this clinical situation. Until those data are available, this study does support the careful addition of topical steroid to reduce central corneal scarring in patients with bacterial corneal ulcers once response to antibiotic therapy has been established. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Bacterial Corneal Ulcers, Corticosteroids

Print Tag: Refer to original journal article

Meibomian Gland Loss From CL Contributes to Dry Eye

Contact Lens Wear Is Associated With Decrease of Meibomian Glands.

Arita R, Itoh K, et al:

Ophthalmology 2009; 116 (March): 379-384

Long-term contact lens wear results in loss of meibomian glands and alteration of the tear film, which may contribute to dry eye symptoms.

Objective: To investigate the effects of contact lens (CL) wear on meibomian gland dysfunction (MGD) as a possible cause of CL-related dry eye syndrome.
Design: Cross-sectional, observational clinical case series.
Participants/Methods: A consecutive series of 121 CL wearers and 137 non-CL wearers volunteered to participate in this study. All subjects underwent slit-lamp evaluation of the eyelids, corneal and conjunctival staining with fluorescein, measurement of tear film break-up time, and evaluation of the meibomian glands using non-contact meibography. In addition, measurement of tear production was measured by Schirmer testing. A standardized grading system was used to quantify meibomian gland loss on a scale of 0 (no loss) to 3 (>67% meibomian gland dropout). Scores were summed for the upper and lower eyelids.
Results: A significantly higher score for meibomian gland loss was seen in CL wearers than in non-CL wearers (1.72 vs. 0.96; P <0.05). Although the mean age of CL wearers was only 31.8 years, the mean severity of meibomian gland loss in these individuals was similar to that seen in subjects in the 60- to 69-year-old age group of healthy volunteers who did not wear CLs. Tear film break-up time was shorter and corneal fluorescein staining was greater in CL wearers than in non-CL wearers.
Conclusions: CL wear is associated with meibomian gland loss and other objective findings associated with dry eye syndrome.
Reviewer's Comments: The finding that CL wear is associated with meibomian gland loss is one possible explanation for the high prevalence of dry eye syndrome seen in association with CL use. The decrease in meibomian gland density was proportional to the duration of CL use, and suggests that chronic inflammatory changes in the eyelids may accompany CL use and lead to meibomian gland loss. The resultant decrease in the lipid layer of the tear film and increased tear evaporation could contribute to dry eye syndrome in these patients. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Meibomian Glands, Contact Lens, Dry Eye

Print Tag: Refer to original journal article

New CL Materials Do Not Reduce Non-Ulcerative Complications

Risk Factors for Nonulcerative Contact Lens Complications in an Ophthalmic Accident and Emergency Department: A Case-Control Study.

Radford CF, Minassian D, et al:

Ophthalmology 2009; 116 (March): 385-392

Overnight wear of contact lenses remains a significant risk factor for lens-related complications, even with newer, more oxygen-permeable lens materials.

Objective: To evaluate the risk of developing acute, non-ulcerative complications of contact lens (CL) use in patients using recently introduced lens materials compared to older-design CL.
Design: 2-year prospective case-control study.
Participants/Methods: 877 patients presenting with acute CL-related complications at Moorfields Eye Hospital were enrolled in this study; 1069 control subjects who also wore CL but presented for other disorders not related to CL wear were also included. Another population-based control group of 639 CL wearers was also identified within the Moorfields Eye Hospital catchment area. Statistical analysis allowed estimation of the relative risk of developing non-ulcerative complications of CL use associated with newer-design daily disposable and silicone hydrogel lenses compared to older design planned replacement soft CL.
Results: A significant reduction in toxic and hypersensitivity reactions was seen with the use of daily disposable and silicone hydrogel lenses compared to planned replacement lenses. However, these lenses were associated with a higher risk of sterile keratitis. As a result, there was no overall difference in the rate of non-ulcerative complications between the different lens types. Significant additional risk factors for the development of CL-related complications with any of the lens types included overnight wear, more days/week of wear, poor hand hygiene, smoking, and less experience with CL wear.
Conclusions: Non-ulcerative complications of soft CL wear remain a significant problem, even with use of lenses made of newer, more oxygen-permeable materials.
Reviewer's Comments: In spite of improvements in CL design with materials that are more permeable to oxygen, proper CL care and use remain extremely important in minimizing the risk of lens-related complications. Patients should be properly instructed about CL use when they are first prescribed, and follow-up evaluation should include a review of each patient's CL use and care practices. In addition, patients should be informed of the risks associated with overnight wear of CL, as well as long duration of daily wear. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Contact Lens, Cornea

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Trachoma Remains Cause of Preventable Vision Loss Worldwide

Trachoma: Global Magnitude of a Preventable Cause of Blindness.

Mariotti SP, Pascolini D, Rose-Nussbaumer J:

Br J Ophthalmol 2009; 93 (May): 563-568

Although treatment programs and economic development have decreased the prevalence of trachoma, it remains a significant public health problem in endemic regions of the developing world.

Objective: To estimate the global prevalence of trachoma.
Design: Comprehensive review of the medical literature.
Methods: A literature search was performed of the published and unpublished literature to identify sources of information containing estimates of the prevalence of trachoma in different areas of the world. All information sources were based on information obtained after the year 2000. Unpublished data were derived primarily from the Eleventh Meeting of the World Health Organization Alliance for the Global Elimination of Trachoma by 2020. Additional information came through personal contact with experts from countries and regions affected by the disease and from researchers at various academic institutions. The estimates of regional trachoma prevalence were combined with estimates of country populations from the 2004 United Nations demographic assessment by the United Nations Population Division. This allowed the computation of estimates of global trachoma prevalence.
Results: Data were available for 42 of 57 endemic countries. It was estimated that 40.6 million people suffer from active trachoma infection. An additional 8.2 million people are estimated to have late sequelae of trachoma with trichiasis and corneal opacity.
Conclusions: Trachoma continues to be a major cause of preventable vision loss worldwide.
Reviewer's Comments: These estimates are lower than the 80 million people estimated to be affected by the disease in a review conducted in 2003. However, trachoma remains endemic in large areas of Africa and Asia, and is also found in smaller regions where many are affected in the Middle East and Latin America. The problem continues to require ongoing efforts to identify better treatment strategies, as well as government support of treatment programs to reach the millions who are affected by this preventable disease. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Trachoma, Blindness, Prevention

Print Tag: Refer to original journal article

Topical Steroids Improve Visual Outcome in SJS With Ocular Involvement

Diagnosis and Treatment of Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis With Ocular Complications.

Sotozono C, Ueta M, et al:

Ophthalmology 2009; 116 (April): 685-690

Early recognition of ocular involvement of Stevens-Johnson syndrome and initiation of treatment with topical steroids improves the visual outcome of this condition.

Objective: To describe the clinical course of ocular involvement of Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN), and to evaluate the effect of topical steroid therapy and the visual outcome in patients suffering from this condition.
Design: Retrospective clinical case series.
Methods: Clinical and demographic information was obtained through patient interviews and the review of medical records of a consecutive series of individuals who developed SJS with ocular involvement. The review permitted the identification of clinical signs and symptoms that were present before and at the time of diagnosis with SJS or TEN. In addition, any treatment with topical steroids at the time of diagnosis was recorded. Review of follow-up examination allowed determination of the final visual outcome. Statistical analysis was performed to determine the relationship between treatment with topical steroids and visual outcome.
Results: 94 patients were included in the study. Acute conjunctivitis occurred before the onset of skin eruptions in 45% of patients and simultaneously with skin eruptions in 22%. The visual outcome was better in patients who received treatment with topical steroids during the first week after diagnosis. Of those who received treatment, 41% had final visual acuity of 20/20 or better, and 77% had visual acuity of 20/40 or better. In contrast, no patients without treatment had a final vision acuity of 20/20 or better, and only 21% had a visual acuity of 20/40 or better (P =0.00001).
Conclusions: Treatment with topical steroids during the first week after onset of ocular involvement of SJS or TEN appears to improve visual outcome.
Reviewer's Comments: A prompt and accurate diagnosis of SJS and its more severe form of TEN is important in order to initiate treatment with topical steroids, which appears to improve visual outcome. Common symptoms seen at the outset of this condition include malaise, fever, and/or sore throat preceding skin eruptions with involvement of the oral mucosa, conjunctiva, and/or nail beds. Although rare, this serious condition can be initiated by exposure to a wide range of drugs including antibiotics, non-steroidal anti-inflammatory drugs, and anti-epileptic medications. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Stevens-Johnson Syndrome, Toxic Epidermal Necrolysis

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Glaucoma Treatment Is Cost-Effective

The Cost-Effectiveness of Routine Office-Based Identification and Subsequent Medical Treatment of Primary Open-Angle Glaucoma in the United States.

Rein DB, Wittenborn JS, et al:

Ophthalmology 2009; 116 (May): 823-832

Based on standardized, validated methods of determining cost-effectiveness, glaucoma therapy is cost-effective compared to other treatments for chronic disease.

Objective: To estimate the cost-effectiveness of routine glaucoma assessment and treatment.
Design: Computer simulation.
Methods: A randomized computer simulation of 20 million people (assuming age ≥50 years) was developed. Sources of information about glaucoma incidence, probability of visual impairment, and efficacy of therapy were used to estimate outcomes and costs of diagnosis and treatment. Demographics were assigned according to population data from the United States census of 2004. Standardized methods were used to determine costs associated for quality-adjusted life years (QALYs). Glaucoma was defined conservatively using a minimum severity of visual field loss of -4 dB loss on mean deviation on visual field testing in either eye. The simulation was based on annual probability of subsequent progression of visual field loss and the quantity of vision loss if progression occurred.
Results: Compared to no treatment, the incremental cost associated with each QALY gained through glaucoma treatment was $46,000 using a conservative estimate of the efficacy of glaucoma therapy, and $28,000 assuming an optimistic estimate of the efficacy of glaucoma therapy.
Conclusions: The diagnosis and treatment of glaucoma is cost-effective, as the estimated cost per QALY gained is in line with costs associated with treatment for a wide range of other chronic diseases.
Reviewer's Comments: This study provides support for the economic justification of routine diagnosis and treatment of glaucoma. This justification comes from the reduced probability of requiring nursing home or other supportive care, as well as improvement in the quality of life of those who would otherwise suffer from visual impairment. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Glaucoma, Medical Economics, Office Identification

Print Tag: Refer to original journal article

Careful Case Selection Can Reduce Risk of Resident-Performed Phacoemulsification

Risk Factors for Intraoperative Complications in Resident-Performed Phacoemulsification Surgery.

Rutar T, Porco TC, Naseri A:

Ophthalmology 2009; 116 (March): 431-436

Inexperienced surgeons should select patients with routine cataracts to gain experience before attempting to perform surgery in more difficult cases, such as those with a very dense nucleus, pseudoexfoliation, or history of ocular trauma.

Objective: To identify risk factors for intraoperative complications in resident-performed phacoemulsification surgery and to assess the visual outcome of such procedures.
Design: Retrospective, interventional clinical case series.
Methods: Medical records were reviewed of a consecutive series of patients who underwent resident-performed phacoemulsification at a Veterans Administration Hospital during a 1-year period. This review allowed identification of demographic and clinical information, including presence of ocular comorbidity, density of the cataract, level of experience of the resident performing the surgery, surgical technique, intraoperative and postoperative complications, and preoperative and postoperative visual acuity. Major complications were defined by the occurrence of vitreous loss, corneal wound burn, suprachoroidal hemorrhage, new-onset vitreous hemorrhage, retinal detachment, need for reoperation within 90 days, and endophthalmitis within 90 days of surgery. Multivariate statistical analysis allowed identification of risk factors for development of a major complication.
Results: A total of 320 cases were included in the series. Major complications occurred in 4.7% of cases. The most common complication was vitreous loss, occurring in 3.1% of cases. Cases identified as "challenging" (small pupil, corneal opacity, mature cataract, zonular weakness due to pseudoexfoliation or trauma, shallow anterior chamber, or prior vitrectomy surgery) had a 6-fold greater risk of experiencing a major surgical complication (P =0.01). Features of challenging cases most associated with complications included a very dense nucleus or zonular weakness.
Conclusions: Case selection is important in reducing the risk of complications of resident-performed phacoemulsification.
Reviewer's Comments: This study demonstrates the importance of case selection during the learning process of phacoemulsification. Gaining experience in more routine cases is very important in minimizing the risk of complications for patients. In addition, when complications occur, the confidence of the inexperienced surgeon can be shaken. Selecting patients who are expected to have routine, straightforward surgery helps the cataract surgeon progressively gain confidence to eventually tackle more challenging cases without putting patients at undue risk of a poor visual outcome. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Cataract Surgery, Complications, Residents

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Patterned Visual Response Possible With Retinal Prosthesis

Feasibility Study of a Retinal Prosthesis: Spatial Vision With a 16-Electrode Implant.

Caspi A, Dorn JD, et al:

Arch Ophthalmol 2009; 127 (April): 398-401

A patterned visual response can be elicited in patients with end-stage photoreceptor degeneration by stimulation of a retinal prosthesis with a 16-electrode array.

Objective: To report the efficacy of a retinal prosthesis in providing patterned visual perception in patients with end-stage photoreceptor degeneration.
Design: Interventional clinical case study. **Case Report:** A 55-year-old patient with end-stage photoreceptor degeneration due to retinitis pigmentosa with no light perception underwent implantation of a 16-electrode retinal prosthesis. Retinal electrodes are activated by wireless input from a computer or from a head-mounted video camera, and they are able to stimulate the inner retina to produce a neural signal perceived by the visual cortex. The patient's vision after implantation of the retinal prosthesis was assessed by measuring response to patterns and to compare the ability to identify the orientation of gratings with the system on or off.
Results: In response to the stimulation of 2 perpendicular rows of electrodes, the subject drew lines with a mean angle of 87° between them. In response to stimulation with a grating pattern, the patient responded with a spatial resolution matching the distance between retinal electrodes.
Conclusions: A patterned visual response can be perceived by patients with end-stage photoreceptor degeneration following implantation of a 16-electrode retinal prosthesis.
Reviewer's Comments: Although the visual acuity obtained by this system remains crude, this study demonstrates the feasibility of the concept of patterned retinal stimulation by an electrode array. This offers hope for eventual development of a system to provide functional vision in patients with retinal degeneration with no other therapeutic options. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Retinal Degeneration, Prosthesis, Implant

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Check Diabetic Patients for SDB When PDR Is Present

Relationship Between Diabetic Retinopathy and Sleep-Disordered Breathing.

Shiba T, Sato Y, Takahashi M:

Am J Ophthalmol 2009; 147 (June): 1017-1021

Diabetic individuals with proliferative retinopathy experience more episodes of nocturnal oxygen desaturation, suggesting that sleep-disordered breathing is related to the pathogenesis of this condition.

Objective: To investigate the association between sleep-disordered breathing (SDB) and proliferative diabetic retinopathy (PDR).
Design: Cross-sectional case-control study.
Participants/Methods: A consecutive series of diabetic patients with PDR who were admitted overnight following ophthalmic surgery were included in the study. A control group of diabetic patients with non-PDR (NPDR) hospitalized overnight following ophthalmic surgery was also identified. Each patient underwent continuous monitoring of oxygen saturation throughout the night of hospital admission. The results of pulse oximetry allowed determination of the frequency of nocturnal oxygen desaturation episodes (ODEs) with desaturation to a level at least 4% below baseline. A diagnosis of SDB was made based on accepted criteria. Statistical analysis was performed to determine whether SDB, ODEs, and mean oxygen saturation were associated with presence of PDR.
Results: The prevalence of SDB was higher in subjects with PDR than in those with NPDR (48% vs 29%; *P* =0.003). In addition, the frequency of ODE was greater in those with PDR (*P* =0.03). Multivariate statistical analysis demonstrated that younger age and more frequent ODEs were independently associated with having PDR.
Conclusions: In diabetic individuals, SDB is associated with a higher probability of having PDR.
Reviewer's Comments: SDB includes the full range of nocturnal breathing syndromes. While sleep apnea is one manifestation of SDB, where symptoms of consciousness, disturbance, and fatigue are present, many individuals have asymptomatic SDB, where nocturnal oxygen saturation is nevertheless affected. The results of this study suggest that episodic nocturnal oxygen desaturation contributes to the pathogenesis of PDR. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Diabetic Retinopathy, Sleep Apnea

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DME Eyes See Better After Bevacizumab Injection

Intravitreal Bevacizumab for Diabetic Macular Edema Associated With Severe Capillary Loss: One-Year Results of a Pilot Study.

Bonini-Filho M, Costa RA, et al:

Am J Ophthalmol 2009; 147 (June): 1022-1030

Visual acuity and macular thickness improve after intravitreal injection of bevacizumab in patients with severe capillary loss associated with diabetic macular edema.

Objective: To evaluate the effect of intravitreal injection of bevacizumab in patients with diabetic macular edema (DME) associated with severe loss of retinal capillaries.
Design: Open-label, interventional, clinical case series.
Participants/Methods: 10 consecutive patients with DME and severe loss of retinal capillaries within 1500 µm of the center of the macula were enrolled in this study. Patients with a history of bleeding disorders or systemic thromboembolic events were excluded, as were those with a history of prior ocular surgery or glaucoma. Patients received an intravitreal injection of bevacizumab 1.5 mg under sterile conditions. Follow-up examinations were completed at periodic intervals through 6 months of follow-up. Repeat imaging of the retina was used to identify presence of recurrent or persistent subretinal or intraretinal fluid, which prompted retreatment with another injection of bevacizumab if present. An additional final follow-up visit was conducted 1 year after enrollment.
Results: A significant improvement in best-corrected visual acuity was noted at each follow-up visit in comparison to baseline acuity (all P <0.008). In addition, a significant reduction in central macular thickness and total macular volume was noted on optical coherence tomography imaging of the retina at the 6-month and 12-month follow-up visits. No change in the extent of macular capillary loss was seen on follow-up fluorescein angiography at the time of final follow-up.
Conclusions: Improvement in visual acuity and severity of macular edema were noted through 1 year of follow-up following intravitreal injection of bevacizumab for treatment of DME associated with severe loss of retinal capillaries.
Reviewer's Comments: Intravitreal injection of anti-vascular endothelial grown factor (VEGF) drugs such as bevacizumab (Avastin) has demonstrated efficacy in the treatment of an increasing range of conditions characterized by retinal ischemia. This study demonstrates that, in eyes with capillary loss due to diabetic retinopathy, visual acuity can improve and severity of retinal edema can decrease with this treatment. Longer-term studies in a larger number of patients are needed to further clarify the role of anti-VEGF therapy in this and other related retinal conditions. (Reviewer-Scott D. Smith, MD, MPH).

Keywords: Macular Edema, Bevacizumab, Capillary Loss

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