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Management Options for Vitreomacular Traction: Use an Individualized Approach

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Purpose: To present the management options for vitreomacular traction (VMT) and to recommend an individualized approach to treatment selection.

Design: Presented at the American Academy of Ophthalmology Annual Meeting, 2016, Chicago, October 15, 2016 (The Charles Schepens Lecture).

Participants: None.

Methods: Review of published literature and clinical trials.

Main Outcome Measures: Visual and anatomic outcomes of various treatment options for VMT were reviewed.

Results: The management options for VMT include pars plana vitrectomy, pneumatic vitreolysis, enzymatic vitreolysis, and observation. The surgical management using pars plana vitrectomy offers the most effective approach for VMT, but there are inherent risks and cost issues. Pneumatic vitreolysis is reported to be cost-effective and may be an anatomically successful nonsurgical option for management. Enzymatic vitreolysis with intravitreal ocriplasmin is another nonsurgical option, but both short- and long-term side effects may occur. Observation in selected patients can be associated with stable visual outcomes during long-term follow-up.

Conclusions: The final management decision should be individualized for specific patients depending on the patient's clinical findings, potential risks, probable benefits, and costs of each option.

Long-Term Mortality in Diabetic Patients with Tractional Retinal Detachments

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Purpose: To determine the long-term, all-cause mortality rate of diabetic patients requiring vitrectomy surgery for tractional retinal detachment (TRD).

Design: Institutional review board–approved, retrospective, comparative study.

Participants: Four hundred eyes of 316 patients undergoing vitrectomy surgery from 2005 to 2015.

Methods: Long-term, all-cause mortality rates in the study population were compared with mortality in a historical control group of diabetic patients with minimal to no retinopathy. Subgroup analysis was done based on bilaterality of TRD and initial vision. Other concurrent associated diabetic comorbidities, use of insulin, and type 1 diabetes are also reported. Data were used to create Kaplan-Meier survival curves.

Main Outcome Measure: Long-term, all-cause mortality rate of diabetic patients undergoing vitrectomy surgery from 2005 to 2015.

Results: Mean survival after diagnosis of TRD requiring vitrectomy surgery was 2.7 years (median, 2 years; range, 0.17–9.00 years). Kaplan-Meier survival curve analysis revealed a 48.7% (154/316 patients) long-term, all-cause mortality rate for diabetics requiring vitrectomy surgery for TRDs at 10 years, compared with a mean 2% long-term, all-cause mortality rate in diabetics with minimal to no retinopathy. Subgroup analysis of those patients with bilateral TRDs requiring surgery revealed a 48.9% mortality rate with a mean survival after diagnosis of TRD of 2.6 years (median, 2 years; range, 0.25–9.00 years). Those patients with count fingers or worse vision in one or both eyes at diagnosis had a 52.0% mortality rate ($P < 0.05$), with a mean survival after diagnosis of 2.6 years (median, 2 years; range, 0.17–9.00 years).

Conclusions: In our population, diabetic patients with TRDs requiring surgery have a 48.7% long-term, all-cause mortality rate, with those presenting with count fingers or worse vision having a higher mortality rate. Diabetic TRD requiring vitrectomy surgery is a marker of poor long-term survival.

Ocular Arterial Occlusive Disorders and Carotid Artery Disease

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Objective: To compare prevalence of carotid artery disease and its various types of lesions in different types of ocular arterial occlusive disorders.

Design: Cohort study.

Subjects: We included 614 consecutive patients (728 eyes) with ocular arterial occlusive disorders.

Methods: At first visit, all patients had a detailed ophthalmic and medical history, comprehensive ophthalmic evaluation, and carotid artery evaluation (by Doppler/angiography) on the side of ocular arterial occlusion, and echocardiography. The same ophthalmic evaluation was performed at each follow-up visit. Ocular arterial occlusive disorders were divided into central (CRAO) and branch (BRAO) retinal artery occlusion, ocular ischemic syndrome (OIS), nonarteritic anterior ischemic optic neuropathy (NA-AION) and amaurosis fugax (AF).

Main Outcome Measures: Carotid artery and echocardiographic abnormalities, and incidence of transient ischemic attack (TIA)/stroke and myocardial ischemia.

Results: The study consists of a cohort of 266 eyes with NA-AION, 203 with CRAO, 127 with BRAO, 80 with OIS, and 52

with AF. Carotid artery stenosis on the involved side was worse in AF and OIS compared with BRAO, CRAO, and NA-AION ($P < 0.0001$). The presence of carotid artery plaques on the involved side was significantly higher in OIS, AF, and CRAO compared with NA-AION ($P = 0.002$, $P = 0.003$, and $P = 0.0003$, respectively). Echocardiography revealed an embolic source in 61% of CRAO and 53% of BRAO compared with only 3% of NA-AION patients ($P < 0.0001$). Stroke or TIA before or after the onset of ocular condition occurred in 17% of OIS, 11% of AF, 7% of CRAO, 6% of NA-AION, and 3% of BRAO patients. Kaplan-Meier estimate of the incidence of TIA/stroke within 3 months after onset was 6% (95% confidence interval, 2%-17%) for OIS, 3% (95% confidence interval, 0.4%-19%) for AF, and 1% (95% confidence interval, 0.3%-4.1%) for CRAO. A report of myocardial ischemia before or after the onset of an ocular condition was 52% in AF, 22% in OIS, 22% in BRAO, 21% in CRAO, and 6% in NA-AION patients.

Conclusions: The incidence of carotid artery stenosis and plaques, cardiac embolic source, TIA/stroke, and myocardial ischemia differ among various ocular arterial occlusive disorders. The role of embolism and hemodynamic disturbances caused by carotid artery disease in these disorders is discussed.

Association between Industry Payments and Anti-vascular Endothelial Growth Factor Use in Medicare Beneficiaries

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Purpose: To test for associations between anti-vascular endothelial growth factor (VEGF) industry payments to ophthalmologists who provide intravitreal injections and specific anti-VEGF agent use.

Design: Cross-sectional Medicare database study.

Participants: US fee-for-service Medicare beneficiaries and all ophthalmologists who submitted intravitreal injection claims for >10 Medicare beneficiaries between August 1, 2013, and December 31, 2013.

Methods: The Sunshine Act Open Payments database was searched for all industry financial relationships in ophthalmology. The Medicare Provider Utilization and Payment Database was searched for all intravitreal injection claims and anti-VEGF drug claims among fee-for-service Medicare beneficiaries. A novel algorithm was used to merge the 2 datasets to identify physician-specific associations between industry payments and specific anti-VEGF agent use. Odds ratios (ORs) and corresponding confidence intervals (CIs) were estimated by using logistic regression models.

Main Outcome Measures: Ophthalmologists providing intravitreal injections (Current Procedural Terminology 67028); ophthalmologists with reported nonresearch payment from anti-VEGF industry; physician-specific anti-VEGF agent use (treatment specific J-codes J0178 and J2778).

Results: Of 3391 ophthalmologists who performed intravitreal injections, 1187 (35%) received nonresearch payments from anti-VEGF industry. Of these 1187 ophthalmologists, 422 (35%) received payments from Regeneron Pharmaceuticals, 363 (31%) received payments from Genentech, and 402 (34%) received payments from both industries. When compared with ophthalmologists who perform intravitreal injections and who do not receive anti-VEGF industry payments, ophthalmologists receiving Genentech payments (median, $90; interquartile range, $22-$149) were more likely to use ranibizumab (OR, 2.14; 95% CI, 2.120-2.16), those receiving Regeneron payments (median, $55; interquartile range, $22-$131) were more likely to use ranibizumab (OR, 1.55; 95% CI, 1.54-1.56) and aflibercept (OR, 1.23; 95% CI, 1.22-1.24), those with payments from both manufacturers were more likely to use ranibizumab (OR, 2.69; 95% CI, 2.67-2.71) and aflibercept (OR, 1.53; 95% CI, 1.52-1.54), and all were less likely to use bevacizumab (OR, 0.33-0.64; $P < 0.001$ for all comparisons).

Conclusions: Industry payments to ophthalmologists who perform intravitreal injections were associated with higher odds of ranibizumab and aflibercept use, and lower odds of bevacizumab use. These findings reflect an association, not a cause-and-effect relationship.

Visual and Morphologic Outcomes in Eyes with Hard Exudate in the Comparison of Age-Related Macular Degeneration Treatments Trials

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Purpose: To compare baseline characteristics, visual acuity (VA), and morphologic outcomes between eyes with hard exudate (HE) at baseline and all other eyes among patients with neovascular age-related macular degeneration (NVAMD) treated with anti−vascular endothelial growth factors (VEGFs).

Design: Prospective cohort study within the Comparison of Age-Related Macular Degeneration Treatments Trials (CATT).

Participants: Patients with NVAMD.

Methods: Readers evaluated baseline and follow-up morphology on digital color images, fluorescein angiography (FA), and optical coherence tomography (OCT) in eyes with NVAMD that were randomly assigned to treatment with ranibizumab or bevacizumab. Ophthalmologists identified HE on color images in the study eye.

Main Outcome Measures: Visual acuity, scar, geographic atrophy, retinal thickness, retinal fluid, and number of anti-VEGF injections.

Results: HE was present in 128 of 1185 study eyes (11%) at baseline, 77% within 1 disc diameter of the foveal center. Patients with study eye HE were more likely to be female (81% vs. 60%; $P < 0.001$) and nonsmokers (53% vs. 42%; $P = 0.004$). Both groups had similar proportions of hypercholesterolemia and hypertriglyceridemia. At baseline, eyes with HE had worse VA (mean 57 vs. 61 letters; $P = 0.003$), larger total lesion size (3.3 vs. 2.4 disc areas; $P < 0.001$), greater total foveal thickness (522 vs. 452 mm; $P < 0.001$), and more retinal angiomatous proliferation (RAP) (18% vs. 10%; $P = 0.009$) and suberetinal pigment epithelium fluid (65% vs. 47%; $P < 0.001$). At 1 year, VA was similar in both groups; more eyes with baseline HE had no fluid (45% vs. 29%; $P < 0.001$) and greater reduction in total foveal thickness (−266 vs. −158 mm; $P < 0.001$). The VA at year 2 was similar, but retinas of eyes with baseline HE were thinner (267 vs. 299 μm; $P = 0.03$) and fewer eyes had subretinal fluid (23% vs. 36%; $P = 0.008$). HE was present in 19% of eyes at 1 year and 5% of eyes at 2 years. Hepatic lipase promoter single