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Drug treatment

Ophthalmology. 2015 Dec 8. [Epub ahead of print]

Outcomes in Eyes with Retinal Angiomatous Proliferation in the Comparison of Age-Related Macular Degeneration Treatments Trials (CATT).

Daniel E, Shaffer J, Ying GS, Grunwald JE, Martin DF, Jaffe GJ, Maguire MG; Comparison of Age-Related Macular Degeneration Treatments Trials (CATT) Research Group.

PURPOSE: To compare baseline characteristics, visual acuity (VA), and morphologic outcomes between eyes with retinal angiomatous proliferation (RAP) and all other eyes among patients with neovascular age-related macular degeneration (NVAMD) treated with anti-vascular endothelial growth factor (VEGF) drugs.

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

PARTICIPANTS: Patients with NVAMD.

METHODS: Reading center staff evaluated digital color fundus photographs, fluorescein angiography (FA) images, and optical coherence tomography (OCT) scans of eyes with NVAMD treated with either ranibizumab or bevacizumab over a 2-year period. Retinal angiomatous proliferation was identified by the intense intra-retinal leakage of fluorescein in combination with other associated features.

MAIN OUTCOME MEASURES: Visual acuity; fluorescein leakage; scar; geographic atrophy (GA) on FA; retinal thickness, fluid, and subretinal hyperreflective material (SHRM) on OCT; and the number of intravitreal anti-VEGF injections at 1 and 2 years.

RESULTS: Retinal angiomatous proliferation was present in 126 of 1183 (10.7%) study eyes at baseline. Mean VA improvement from baseline was greater (10.6 vs. 6.9 letters; $P = 0.01$) at 1 year, but similar at 2 years (7.8 vs. 6.2 letters; $P = 0.34$). At 1 year, eyes with RAP were more likely to have no fluid (46% vs. 26%; $P < 0.001$) on OCT, no leakage on FA (61% vs. 50%; $P = 0.03$), and greater reduction in foveal thickness ($-240 \mu\text{m}$ vs. $-161 \mu\text{m}$; $P < 0.001$). They were more likely to demonstrate GA (24% vs. 15%; $P = 0.01$) and less likely to have scarring (17% vs. 36%; $P < 0.001$) or SHRM (36% vs. 48%; $P = 0.01$). These results were similar at 2 years. The mean change in lesion size at 1 year differed (-0.27 DA vs. 0.27 DA ; $P = 0.02$), but was similar at 2 years (0.49 DA vs. 0.79 DA ; $P = 0.26$). Among eyes treated PRN, eyes with RAP received a lower mean number of injections in year 1 (6.1 vs. 7.4; $P = 0.003$) and year 2 (5.4 vs. 6.6; $P = 0.025$).

CONCLUSIONS: At both 1 and 2 years after initiation of anti-VEGF treatment in CATT, eyes with RAP were less likely to have fluid, FA leakage, scar, and SHRM and more likely to have GA than eyes without RAP. Mean improvement in VA was similar at 2 years.

PMID: 26681392 [PubMed - as supplied by publisher]

Graefes Arch Clin Exp Ophthalmol. 2015 Dec 17. [Epub ahead of print]

Cooperation of German ophthalmologists in routine care of patients with neovascular age-related macular degeneration: results of the non-interventional BRIDGE study.

Wachtlin J, Ringwald A, Maulhardt T, Pohl K, Wiedon A; BRIDGE investigators.

PURPOSE: In the non-interventional ophthalmological study 'BRIDGE' the routine care of patients with neovascular age-related macular degeneration (nAMD) treated with ranibizumab was observed in Germany. A patient regularly sees the general ophthalmologist (GO) for monitoring and, if needed, the injecting ophthalmologist (IO) for intravitreal injections (IVI). Thus, patients are routinely treated by two ophthalmologists in parallel and patient care depends on their collaboration. This cooperation was evaluated based on network questionnaires.

METHODS: 'BRIDGE' was a multicenter, national, open-label, prospective, observational study, conducted between July 2010 and December 2012. The network questionnaire for GOs consisted of 51 questions, while the similar questionnaire for IOs consisted of 43 questions, addressing the type and details of the individual collaboration. The statistical analysis was purely descriptive.

RESULTS: The network questionnaire for GOs was completed by 152 GOs, regularly cooperating with 2.5 ± 1.1 IOs, while the questionnaire for IOs was completed by 43 IOs, regularly cooperating with 23.2 ± 23.6 GOs. Generally, both GOs and IOs stated that they regularly exchange information regarding the patients' situation. Diagnostic standards were only established for 15 % of the GOs' collaborations and for 35 % of the IOs' collaborations. After initial treatment, both GOs and IOs agreed on the medical significance of regular monitoring visits performed by the GOs. Agreements on re-treatment criteria were only established in the case of 16 % of the GOs and 28 % of the IOs. Overall, both GOs and IOs were satisfied with the current situation, with regard to the medical treatment situation for patients and to the cooperation within the networks.

CONCLUSIONS: The network questionnaires revealed well-established cooperation between IOs and GOs in Germany with an accepted division of responsibilities for the routine care of patients with nAMD. However, the cooperation between two ophthalmologists treating one patient harbors risks. Agreements on diagnostic and re-treatment criteria would help to improve network performance and outcomes.

PMID: 26678412 [PubMed - as supplied by publisher]

Indian J Ophthalmol. 2015 Nov;63(11):832-6.

Intravitreal aflibercept treatment in eyes with exudative age-related macular degeneration following prior treatment with intravitreal ranibizumab.

Narayan DS, Muecke J.

BACKGROUND: To investigate visual and anatomical outcomes in eyes with exudative age-related macular degeneration treated with intravitreal aflibercept following prior treatment with intravitreal ranibizumab.

MATERIALS AND METHODS: Retrospective, single-center study of 192 eyes treated with 0.5 mg intravitreal ranibizumab every 4 weeks for three consecutive doses followed by a variable dose schedule. After more than 12 months of ranibizumab treatment, eyes that required ranibizumab injections at 4-week or 6-week intervals were switched to aflibercept therapy.

RESULTS: After 12-69 months ($42 \text{ months} \pm 18 \text{ months}$, mean $\pm$ standard deviation [SD]) of treatment with intravitreal ranibizumab, 80 eyes were changed to 2 mg intravitreal aflibercept treatment with follow-up after 12-18 months ($16 \text{ months} \pm 1 \text{ month}$, mean $\pm$ SD). Thirty-nine eyes had persistent macular fluid after treatment with ranibizumab. Mean logMAR visual acuity (VA) in eyes treated with ranibizumab changed by -0.089 ± 0.310 (mean $\pm$ SD; $P = 0.0003$), which correlates to an approximate gain of 4.5 letters. The number

of eyes with macular fluid decreased from 39 to 23 after aflibercept treatment. Mean logMAR VA in eyes with intraretinal macular fluid treated with aflibercept changed by -0.079 ± 0.134 (mean $\pm$ SD; $P = 0.006$), which correlates to an approximate gain of 4 letters. Mean logMAR VA in eyes with submacular fluid was not significantly different after aflibercept treatment.

CONCLUSION: Eyes with persistent intraretinal macular fluid had visual and anatomic response after changing from ranibizumab to aflibercept treatment.

PMID: 26669334 [PubMed - in process]

Rev Diabet Stud. 2015 Spring-Summer;12(1-2):196-210. Epub 2015 Aug 10.

New Therapeutic Approaches in Diabetic Retinopathy.

Vaziri K, Schwartz SG, Relhan N, Kishor KS, Flynn HW Jr.

Abstract: Diabetic retinopathy is a common microvascular complication of diabetes mellitus. It affects a substantial proportion of US adults over age 40. The condition is a leading cause of visual loss. Much attention has been given to expanding the role of current treatments along with investigating various novel therapies and drug delivery methods. In the treatment of diabetic macular edema (DME), intravitreal pharmacotherapies, especially anti-vascular endothelial growth factor (anti-VEGF) agents, have gained popularity. Currently, anti-VEGF agents are often used as first-line agents in center-involved DME, with recent data suggesting that among these agents, aflibercept leads to better visual outcomes in patients with worse baseline visual acuities. While photocoagulation remains the standard treatment for proliferative diabetic retinopathy (PDR), recent FDA approvals of ranibizumab and aflibercept in the management of diabetic retinopathy associated with DME may suggest a potential for pharmacologic treatments of PDR as well. Novel therapies, including small interfering RNAs, chemokines, kallikrein-kinin inhibitors, and various anti-angiogenic agents, are currently being evaluated for the management of diabetic retinopathy and DME. In addition to these strategies, novel drug delivery methods such as sustained-release implants and refillable reservoir implants are either under active evaluation or have recently gained FDA approval. This review provides an update on the novel developments in the treatment of diabetic retinopathy.

PMID: 26676668 [PubMed - in process]

Med Sci Monit. 2015 Dec 15;21:3906-12.

Combination of Aflibercept and Bromfenac Therapy in Age-Related Macular Degeneration: A Pilot Study Aflibercept and Bromfenac in AMD.

Wygłędowska-Promieńska D1, Piotrowska-Gwóźdź A1, Piotrowska-Seweryn A2, Mazur-Piotrowska G1.

BACKGROUND: Among many protocols for treatment of exudative AMD, combined therapy of anti-VEGF agents and non-steroidal anti-inflammatory drugs (NSAIDs) seems to be an ideal alternative to monotherapy based on ranibizumab or bevacizumab. The aim of this study was to evaluate the effectiveness of aflibercept and bromfenac in the treatment of exudative AMD.

MATERIAL AND METHODS: The study was conducted on a group of 27 patients with exudative AMD who were administered intravitreal aflibercept and topical bromfenac (study group) once a month. Additional injections were administered up to 3 months after the third administration, depending on response to treatment. The control group consisted of subjects treated with aflibercept only. Visual acuity and anatomical outcomes in optical coherence tomography (OCT) were assessed at baseline visit, 4 months after the first dose, and 6 months after the start of the treatment.

RESULTS: Visual acuity improved over time in the study group and the differences between the groups were statistically significant. No statistically significant differences were found in OCT parameters.

CONCLUSIONS: Combined therapy of aflibercept and bromfenac in the treatment of wet AMD is more effective than single aflibercept therapy.

PMID: 26667262 [PubMed - in process]

Expert Opin Biol Ther. 2015 Dec 16. [Epub ahead of print]

Treatment Strategies for Refractory Diabetic Macular Edema: Switching Anti-VEGF Treatments, adopting corticosteroid-based treatments, and combination therapy.

Hussain RM, Ciulla TA.

INTRODUCTION: The pathophysiology of diabetic macular edema (DME) is complex, involving vascular endothelial growth factor (VEGF) and other inflammatory mediators. DME is currently treated first-line with intravitreal anti-VEGF treatments, though some cases are refractory to multiple anti-VEGF treatments.

Areas Covered: This article examines the evolution of treatment practices for DME, with discussion of the recent studies that guide treatment for refractory cases of DME. A literature search was performed using the following terms: anti-VEGF, DME, aflibercept, bevacizumab, ranibizumab, refractory macular edema, and VEGF.

Expert Opinion: Focal extrafoveal DME may be treated first-line with laser. In patients with center-involving DME and only mild vision loss, consider starting treatment with bevacizumab, especially when cost is an issue, whereas aflibercept may be considered more strongly in patients with moderate visual loss or worse. There are no standard protocols that define "treatment failure," but several studies have reported that switching from bevacizumab to either ranibizumab or aflibercept will result in further reduction of CSFT and improvement in BCVA. Further study with prospective randomized trials is warranted to validate these findings. Switching to intravitreal corticosteroids may be of particular benefit to pseudophakic patients. Anti-VEGF combination with sustained-release corticosteroids also appears promising for refractory DME.

PMID: 26674182 [PubMed - as supplied by publisher]

Ophthalmic Res. 2015 Dec 16;55(3):119-125. [Epub ahead of print]

Long-Term Management of RAP Lesions in Clinical Practice: Treatment Efficacy and Predictors of Functional Improvement.

Marques MF, Marques JP, Gil JQ, Costa J, Almeida E, Cachulo MD, Pires I, Figueira J, Silva R.

PURPOSE: To evaluate the long-term efficacy of ranibizumab in the treatment of retinal angiomatous proliferation (RAP) and to identify predictors of functional outcome.

METHODS: Retrospective case series comprised 79 eyes of 68 consecutive patients with RAP followed up ≥ 36 months. Primary end-points were best-corrected visual acuity (BCVA) and central macular thickness (CMT) variation at 36 months and at the last visit.

RESULTS: Mean follow-up time was 59.8 ± 16.0 months. All eyes were treated with pro re nata ranibizumab, with ($n = 33$) or without ($n = 46$) photodynamic therapy (PDT). Stabilization or improvement in BCVA was observed in 50.6% of the patients at 36 months, and in 40.5% at the end of the follow-up, where 20.3% preserved reading vision. A significant decrease in CMT was observed at 36 months ($p < 0.001$), but not at the end of the follow-up. Geographic atrophy (GA) was present in 59.5% of the eyes at the final visit. Baseline subretinal fluid was associated with better visual outcomes ($p = 0.001$). Results of combination treatment with intravitreal ranibizumab and PDT did not significantly differ from ranibizumab monotherapy.

CONCLUSION: Modest functional outcomes can be expected from the long-term treatment of RAP lesions in clinical practice, most likely due to the advent of GA. Baseline subretinal fluid positively correlated with

final BCVA.

PMID: 26671015 [PubMed - as supplied by publisher]

BMJ Case Rep. 2015 Dec 18;2015.

Ziv-aflibercept: a novel option for the treatment of polypoidal choroidal vasculopathy.

Videkar C, Kapoor A, Chhablani J, Narayanan R.

Abstract: Polypoidal choroidal vasculopathy (PCV) is an exudative maculopathy usually treated using photodynamic therapy (PDT) and antivascular endothelial growth factor agents. However, these cases may sometimes be refractory to both PDT and ranibizumab or bevacizumab, and may have persistent intra-retinal fluid. Recently, studies have reported that aflibercept may be effective in such resistant cases. However, high cost and limited availability has restricted its use to only a few countries. Ziv-aflibercept (Zaltrap), a systemic analogue of aflibercept, has been tried recently and it has been effective in macular oedema. We report a case of PCV resistant to PDT and ranibizumab, which responded well to intravitreal ziv-aflibercept.

PMID: 26682842 [PubMed - in process]

Expert Rev Clin Pharmacol. 2015 Dec 17. [Epub ahead of print]

Fluocinolone acetonide for the treatment of diabetic macular edema.

Haritoglou C, Mayer W, Wolf A.

Abstract: In addition to VEGF inhibitors such as ranibizumab, aflibercept or bevacizumab, clinical and experimental investigations have revealed the great potential of steroids in the treatment of DME. At present two intravitreal steroid inserts are approved for the treatment of DME containing either dexamethasone or fluocinolone acetate (FA) as a pharmacological compound. The non degradable intravitreal FA insert releases 0.2 µg FA per day (Iluvien, Alimera Sciences). Clinical phase III studies have demonstrated the beneficial effect of the FA insert to last up to three years, especially in patients with a prolonged history of DME of at least three years at the initiation of therapy. While the treatment appears to be well tolerated over all, side effects such as cataract formation in nearly all treated phakic patients and raise of intraocular pressure need to be discussed with the patients as potential complications of the treatment.

PMID: 26681198 [PubMed - as supplied by publisher]

Other treatment & diagnosis

Ophthalmology. 2015 Dec 8. [Epub ahead of print]

Reticular Pseudodrusen and Their Association with Age-Related Macular Degeneration: The Melbourne Collaborative Cohort Study.

Finger RP, Chong E, McGuinness MB, Robman LD, Aung KZ, Giles G, Baird PN, Guymer RH.

PURPOSE: To determine the prevalence of reticular pseudodrusen (RPD) and its association with age-related macular degeneration (AMD) and AMD risk factors in a large sample.

DESIGN: Community-based cohort study in Melbourne, Victoria, Australia.

PARTICIPANTS: A total of 21 130 participants 48 to 86 years of age available for ophthalmic assessment

at follow-up from 2003 through 2007.

METHODS: Lifestyle, diet, and anthropometric measurements were obtained at baseline and follow-up. At follow-up, digital macular color photographs were graded for early, intermediate, and late AMD as well as the presence of RPD. Data were analyzed using multinomial logistic regression controlling for age, gender, smoking, country of birth, and diet.

MAIN OUTCOME MEASURES: Detection of RPD based on color fundus photographs.

RESULTS: Prevalence of RPD was 0.41% (87 of 21 130 participants), with 51% having bilateral RPD. Patients with RPD were older compared with patients with large drusen ($>125\ \mu\text{m}$; 76 ± 4 vs. 68 ± 9 years; $P < 0.001$). Increasing age, female gender, being a current smoker, as well as focal pigmentary abnormalities and large drusen ($>125\ \mu\text{m}$) were associated with a higher prevalence of RPD. Presence of geographic atrophy (GA) was associated with the highest odds of having RPD (odds ratio [OR], 153; 95% confidence interval [CI], 53-442), followed by choroidal neovascularization (CNV; OR, 90; 95% CI, 26-310), intermediate AMD (OR, 33; 95% CI, 14-77), and early AMD (OR, 12; 95% CI, 5-31) compared with those with no AMD. The ARMS2 single nucleotide polymorphism (SNP) rs10490924, HTRA1 SNPs rs11200638 and rs3793917, and CFH SNPs rs393955, rs1061170, and rs2274700 were associated with increased prevalence of RPD (all $P < 0.05$).

CONCLUSIONS: Reticular pseudodrusen are highly concurrent with AMD and have similar associations with known AMD risk factors such as age, gender, smoking, and genetic risk factors. Reticular pseudodrusen are associated more strongly with GA than with CNV. Although RPD are not specific to AMD, they are likely to be a strong risk factor for progression to late-stage AMD, similar to focal pigmentary abnormalities and large drusen.

PMID: 26681391 [PubMed - as supplied by publisher]

J Fr Ophtalmol. 2015 Dec 8. [Epub ahead of print]

Spontaneous retinal pigment epithelium tear in geographic atrophy.

Cavallero E, Corvi F, Souied E, Bandello F, Querques G.

PURPOSE: To report two cases of spontaneous retinal pigment epithelial (RPE) tears occurring in two patients affected with geographic atrophy (GA) due to non-exudative age-related macular degeneration (AMD).

CASE REPORT: Two patients (a 79-year-old man and a 71-year-old woman) presented to our department with progressive visual loss. The man had a best-corrected visual acuity (BCVA) of 20/100 in the right eye (RE) and 20/50 in the left eye (LE); the woman had a BCVA of 20/200 in the RE and 20/160 in the LE. Upon complete ophthalmologic examination, revealing a large area of atrophy ($>175\ \mu\text{m}$ in diameter) along with pigmentary changes, calcified drusen and no choroidal neovascularization (CNV) in either eye, the patients were diagnosed with GA due to non-exudative AMD. Interestingly, the imaging modalities performed, including fluorescein angiography (FA), indocyanine green angiography (ICGA) and spectral-domain optical coherence tomography (SD-OCT), clearly highlighted the presence of spontaneous RPE tears in the context of non-exudative AMD, while in general, RPE tears are a well-recognized complication of exudative AMD.

CONCLUSIONS: To our knowledge, this is the first description of spontaneous RPE tears as a possible complication of GA due to non-exudative AMD.

PMID: 26679385 [PubMed - as supplied by publisher]

Opt Lett. 2015 Dec 15;40(24):5782-5.

Simultaneous optical coherence tomography angiography and fluorescein angiography in rodents with normal retina and laser-induced choroidal neovascularization.

Liu W, Li H, Shah RS, Shu X, Linsenmeier RA, Fawzi AA, Zhang HF.

Abstract: Fluorescein angiography (FA) is the current clinical imaging standard for vascular related retinal diseases such as macular degeneration and diabetic retinopathy. However, FA is considered invasive and can provide only two-dimensional imaging. In comparison, optical coherence tomography angiography (OCTA) is noninvasive and can generate three-dimensional imaging; investigations of OCTA already demonstrated great promise in retinal vascular imaging. Yet, to further develop and apply OCTA, strengths and weaknesses between OCTA and FA need to be thoroughly compared. To avoid complications in image registration, an ideal comparison requires co-registered and simultaneous imaging by both FA and OCTA. In this Letter, we developed a system with integrated laser-scanning ophthalmoscope FA (SLO-FA) and OCTA, and conducted simultaneous dual-modality retinal vascular imaging in rodents. In imaging healthy rodent eyes, OCTA can resolve retinal capillaries better than SLO-FA does, particularly deep capillaries. In imaging rodent eyes with laser-induced choroidal neovascularization (CNV), OCTA can identify CNV that eludes SLO-FA detection.

PMID: 26670511 [PubMed - in process]

Am J Ophthalmol. 2015 Dec 8. [Epub ahead of print]

Assessment of Choroidal Topographic Changes by Swept-Source Optical Coherence Tomography After Intravitreal Ranibizumab for Exudative Age-Related Macular Degeneration.

Razavi S, Souied EH, Darvizeh F, Querques G.

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Epidemiology

Ophthalmology. 2015 Dec 8. [Epub ahead of print]

Risk Factors and Incidence of Macular Edema after Cataract Surgery: A Database Study of 81984 Eyes.

Chu CJ, Johnston RL, Buscombe C, Sallam AB, Mohamed Q, Yang YC; United Kingdom Pseudophakic Macular Edema Study Group.

PURPOSE: To define the incidence of pseudophakic macular edema (PME) after cataract surgery and to identify contributory risk factors.

DESIGN: Retrospective database study of electronic medical records (EMRs).

PARTICIPANTS: A total of 81984 eyes undergoing cataract surgery between December 2010 and December 2014 from 8 independent United Kingdom clinical sites.

METHODS: Structured clinical data mandated by the EMR were anonymized and extracted for each eye undergoing cataract surgery including: perioperative visual acuity, copathologic features, simultaneous surgical procedures, and the presence or absence of a specified list of intraoperative complications. Diabetic status with matched Early Treatment Diabetic Retinopathy Study (ETDRS) grading also was mandated by the EMR. Eyes receiving prophylactic nonsteroidal anti-inflammatory drugs were excluded.

MAIN OUTCOME MEASURE: Diagnosis of cystoid macular edema or new-onset macular edema in patients with diabetes, recorded by a healthcare professional within 90 days of surgery.

RESULTS: Baseline incidence of PME in eyes without operative complications, diabetes, or risk factors was 1.17%. Eyes in which PME developed were more likely to be male, older and to demonstrate risk factors. The relative risk (RR) was increased in eyes with capsule rupture with or without vitreous loss (RR, 2.61; 95% confidence interval [CI], 1.57-4.34), a previous diagnosis of epiretinal membrane (RR, 5.60; 95% CI, 3.45-9.07), uveitis (RR, 2.88; 95% CI, 1.50-5.51), retinal vein occlusion (RR, 4.47; 95% CI, 2.56-5.92), or retinal detachment repair (RR, 3.93; 95% CI, 2.60-5.92). High myopia, age-related macular degeneration, or prostaglandin analog use were not shown to increase risk. Eyes with PME on average had poorer postoperative visual acuity, which persisted to the latest time point assessed, up to 24 weeks. Eyes from patients with diabetes, even in the absence of retinopathy, had an increased RR (RR, 1.80; 95% CI, 1.36-2.36) of new macular edema after surgery. The risk was higher in the presence of any diabetic retinopathy (DR; RR, 6.23; 95% CI, 5.12-7.58) and rose proportionately with increasing severity of DR.

CONCLUSIONS: Pseudophakic macular edema occurs commonly after phacoemulsification cataract surgery, even in the absence of complications and risk factors. This large retrospective study using structured EMR data quantified the RRs of PME and the risk with increasing ETDRS severity of DR. It highlights the need for prophylactic therapy, especially in those groups of eyes with the highest RRs.

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J Womens Health (Larchmt). 2015 Dec 14. [Epub ahead of print]

Association of Socioeconomic Status with Eye Health Among Women With and Without Diabetes.

Norris KL, Beckles GL, Chou CF, Zhang X, Saaddine J.

OBJECTIVE: To investigate the association between socioeconomic position (SEP) and poor eye health among women.

MATERIALS AND METHODS: We included the 7,708 women aged ≥ 40 years who participated in the 2008 National Health Interview Survey. We defined poor eye health as self-reported age-related eye diseases (AREDS; cataract, glaucoma, macular degeneration, or diabetic retinopathy) or visual impairment (VI). We identified diagnosed diabetes by self-report. We measured SEP by education attained and annual household income. We conducted logistic regression analyses while controlling for demographic, clinical, behavioral, and healthcare access variables.

RESULTS: The age-standardized prevalence of VI and ARED was significantly higher among women with diagnosed diabetes than among those without diagnosed diabetes, 29.8% versus 14.4% and 34.1% versus 20.8%, respectively ($p < 0.05$ for both). The prevalence of VI and ARED increased with decreasing SEP, but the trends were only significant among women without diabetes. After multivariable adjustment, education and income were significantly associated with VI but not with ARED. We found no interaction with diagnosed diabetes.

CONCLUSIONS: SEP was inversely associated with VI but not with ARED. We found no interaction with diagnosed diabetes.

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Ophthalmic Res. 2015 Dec 15;55(3):111-118. [Epub ahead of print]

Risk Factors and Age-Related Macular Degeneration in a Mediterranean-Basin Population: The PAMDI (Prevalence of Age-Related Macular Degeneration in Italy) Study - Report 2.

Piermarocchi S, Tognetto D, Piermarocchi R, Masetto M, Monterosso G, Segato T, Cavarzeran F, Turrini A, Peto T; PAMDI Study Group.

AIM: To investigate the association of diet and other modifiable risk factors with the prevalence of age-

related macular degeneration (ARMD) in rural and urban communities of a Mediterranean population in the northeast of Italy.

METHODS: A cross-sectional population-based study was conducted among subjects aged over 60 years. A food frequency questionnaire (FFQ) was used to assess the consumption of different food categories, i.e., protective (P), risky (R), lutein-rich (L) and neutral (N). Smoking habit and alcohol intake were also examined. Macular pigment was measured by Raman spectroscopy.

RESULTS: P food intake reduced the risk of large drusen (ARM2; OR 0.93; 95% CI 0.89-0.96) within the rural community. In this sub-group, R foods resulted in a slight association with large drusen, though the R/P food ratio was highly correlated with ARM2 (OR 1.21; 95% CI 1.12-1.31). Raman measures showed an age-dependent decrease but did not correlate with lutein intake. Smoking habit showed a positive association with ARM2 among women (OR 2.40; 95% CI 1.54-3.75), whereas alcohol consumption resulted in protective odds (OR 0.72; 95% CI 0.60-0.86).

CONCLUSION: FFQ analysis confirmed the role of P and R foods and the benefit of a Mediterranean diet in ARMD. Moderate alcohol consumption showed a beneficial effect, whereas the deleterious role of a smoking habit was more evident in females.

PMID: 26666641 [PubMed - as supplied by publisher]

Int J Ophthalmol. 2015 Dec 18;8(6):1190-5. eCollection 2015.

Measurement of macular pigment optical density among healthy Chinese people and patients with early-stage age-related macular degeneration.

Ren XT, Gu H, Han X, Zhang JY, Li X, Yang XF, Xu J, Snellings T, Liu XP, Wang NL, Liu NP.

AIM: To measure the macular pigment optical density (MPOD) in healthy Chinese people and patients with early age-related macular degeneration (AMD).

METHODS: Cross-sectional population based study. Demographic and lifestyle characteristics were ascertained by questionnaire. A food frequency questionnaire was completed for all participants. Participants underwent general physical and ophthalmic examinations and MPOD was measured by heterochromatic flicker photometry. Foveal architecture was measured by optical coherence tomography.

RESULTS: MPOD of 225 participants (122 healthy and 103 early AMD) was 0.48 ± 0.18 . Patients with early AMD (0.52 ± 0.19) tended to have higher MPOD levels than healthy people (0.47 ± 0.17), but the difference was not statistically significant ($P=0.06$). Participants with carrot or corn oil intake every week tended to have higher levels of MPOD ($P=0.002$ and 0.008 respectively) while those with corn intake had relatively lower level of MPOD ($P=0.01$). MPOD increased with the center foveal thickness ($P=0.01$).

CONCLUSION: Our findings show that there is no statistically significant association between MPOD and early AMD in the studied population. MPOD is related to center foveal thickness and diets would influence MPOD levels.

PMID: 26682171 [PubMed] PMCID: PMC4651887

Stem Cells

Stem Cells Transl Med. 2015 Dec 18. [Epub ahead of print]

Concise Review: Patient-Specific Stem Cells to Interrogate Inherited Eye Disease.

Giacalone JC, Wiley LA, Burnight ER, Songstad AE, Mullins RF, Stone EM, Tucker BA.

Abstract: Whether we are driving to work or spending time with loved ones, we depend on our sense of vision to interact with the world around us. Therefore, it is understandable why blindness for many is feared above death itself. Heritable diseases of the retina, such as glaucoma, age-related macular degeneration, and retinitis pigmentosa, are major causes of blindness worldwide. The recent success of gene augmentation trials for the treatment of RPE65-associated Leber congenital amaurosis has underscored the need for model systems that accurately recapitulate disease. With the advent of patient-specific induced pluripotent stem cells (iPSCs), researchers are now able to obtain disease-specific cell types that would otherwise be unavailable for molecular analysis. In the present review, we discuss how the iPSC technology is being used to confirm the pathogenesis of novel genetic variants, interrogate the pathophysiology of disease, and accelerate the development of patient-centered treatments.

SIGNIFICANCE: Stem cell technology has created the opportunity to advance treatments for multiple forms of blindness. Researchers are now able to use a person's cells to generate tissues found in the eye. This technology can be used to elucidate the genetic causes of disease and develop treatment strategies. In the present review, how stem cell technology is being used to interrogate the pathophysiology of eye disease and accelerate the development of patient-centered treatments is discussed.

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Genetics

Ophthalmic Res. 2015 Dec 16;55(3):126-134. [Epub ahead of print]

Retinal Phenotype following Combined Deletion of the Chemokine Receptor CCR2 and the Chemokine CX3CL1 in Mice.

Hagbi-Levi S, Grunin M, Elbaz-Hayoun S, Tal D, Obolensky A, Hanhart J, Banin E, Burstyn-Cohen T, Chowers I.

PURPOSE: Conflicting data were reported with respect to the retinal phenotype of mice with dual perturbation of the CCL2 and CX3CR1 genes. We report the generation and retinal phenotype of mice with a reverse CCR2/CX3CL1 gene deficiency as a suggested model for age-related macular degeneration (AMD).

METHODS: Crossing of single-deficient mice generated CCR2/CX3CL1 DKO mice. DKO mice were compared with age-matched C57BL6J mice. Evaluation included color fundus photographs, electroretinography (ERG), histology and morphometric analysis. Immunohistochemistry for CD11b in retinal cross-sections and retinal pigment epithelium (RPE)-choroid flat mounts was performed to assess microglia and macrophage recruitment.

RESULTS: A minority of DKO mice showed yellowish subretinal deposits at 10 months. ERG recordings showed reduced cone sensitivity in young, but not older DKO mice. Compared to wild-type mice, DKO mice exhibited 11% reduction in the number of outer nuclear layer nuclei. Old DKO mice had an increased number of CD11b-positive cells across the retina, and on RPE-choroid flat mounts.

CONCLUSIONS: In the absence of the rd8 allele, deficiency of CCR2 and CX3CL1 in mice leads to a mild form of retinal degeneration which is associated with the recruitment of macrophages, particularly to the subretinal space. This model enables to assess consequences of perturbed chemokine signaling, but it does not recapitulate cardinal AMD features.

PMID: 26670885 [PubMed - as supplied by publisher]

Diet, lifestyle and low vision

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[Physical activity benefits patients with age-related macular degeneration]. [Article in Danish]

Subhi Y, Munch IC, Singh A, Sørensen TL.

Abstract: We have reviewed studies investigating the effect of physical activity on prevention of early age-related macular degeneration (AMD), progression to late AMD, and risk modulation of morbidity and mortality in patients with AMD. Regular physical activity may lower risk of developing early AMD and progression of early AMD to late AMD at a level comparable with smoking cessation or dietary supplements. Studies suggest that AMD itself is associated with physical inactivity which can result in higher morbidity levels. Patients with AMD may benefit from physical activity counselling at all stages of the disease.

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