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MD Research News

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Drug treatment

Cochrane Database Syst Rev. 2016 Feb 8;2:CD011346. [Epub ahead of print]

Aflibercept for neovascular age-related macular degeneration.

Sarwar S, Clearfield E, Soliman MK, Sadiq MA, Baldwin AJ, Hanout M, Agarwal A, Sepah YJ, Do DV, Nguyen QD.

BACKGROUND: Central vision loss caused by age-related macular degeneration (AMD) is the leading cause of blindness among the elderly in developed countries. Neovascular AMD is characterized by choroidal neovascularization (CNV). Growth of new blood vessels in patients with neovascular AMD is driven by a complex process that involves a signal protein called vascular endothelial growth factor A (VEGF-A). Anti-VEGF drugs that block this protein include ranibizumab, bevacizumab, and aflibercept.

OBJECTIVES: To assess and compare the effectiveness and safety of intravitreal injections of aflibercept versus ranibizumab, bevacizumab, or sham for treatment of patients with neovascular AMD.

SEARCH METHODS: We searched the Cochrane Central Register of Controlled Trials (CENTRAL) (which contains the Cochrane Eyes and Vision Trials Register) (Issue 11, 2015), Ovid MEDLINE, Ovid MEDLINE In-Process and Other Non-Indexed Citations, Ovid MEDLINE Daily, Ovid OLDMEDLINE (January 1946 to November 2015), EMBASE (January 1980 to November 2015), PubMed (1948 to November 2015), Latin American and Caribbean Health Sciences Literature Database (LILACS) (1982 to November 2015), the metaRegister of Controlled Trials (mRCT) (www.controlled-trials.com) (last searched December 4, 2014), ClinicalTrials.gov (www.clinicaltrials.gov), and the World Health Organization (WHO) International Clinical Trials Registry Platform (ICTRP) (www.who.int/ictrp/search/en). We did not use any date or language restrictions in the electronic search for trials. We last searched the electronic databases on November 30, 2015.

SELECTION CRITERIA: We included randomized controlled trials (RCTs) in which aflibercept monotherapy was compared with ranibizumab, bevacizumab, or sham for participants with neovascular AMD who were treatment-naive.

DATA COLLECTION AND ANALYSIS: We used standard methodological procedures of The Cochrane Collaboration for screening, data abstraction, and study assessment. Two review authors independently screened records, abstracted data, and assessed risk of bias of included studies; we resolved discrepancies by discussion or with the help of a third review author when needed.

MAIN RESULTS: We included two RCTs (total of 2457 participants, 2457 eyes). Trial participants had neovascular AMD with active subfoveal choroidal neovascular lesions. Both trials followed the same protocol and compared aflibercept at various doses versus ranibizumab, but they were carried out in different countries. One trial enrolled participants from the United States and Canada, and the second trial was conducted at 172 sites in Europe, Asia Pacific, Latin America, and the Middle East. The overall quality of the evidence was high, and included trials were at low risk for most bias domains assessed; however,

both trials were funded by the manufacturers of aflibercept. For the purposes of analysis, we combined aflibercept groups regardless of dosing and analyzed them as a single group.Visual acuity outcomes were similar between aflibercept and ranibizumab groups; at one year, participants in the aflibercept groups showed mean change in best-corrected visual acuity (BCVA) from baseline similar to that of participants in the ranibizumab groups (mean difference (MD) -0.15 Early Treatment Diabetic Retinopathy Study (ETDRS) letters, 95% confidence interval (95% CI) -1.47 to 1.17; high-quality evidence). At two years, the mean change in BCVA from baseline was 7.2 ETDRS letters for aflibercept groups versus 7.9 for ranibizumab groups. Sufficient data were not available for calculation of confidence intervals.The proportion of participants who gained 15 or more letters of BCVA by one year of follow-up was approximately 32% for both aflibercept and ranibizumab (RR 0.97, 95% CI 0.85 to 1.11; high-quality evidence), and by two years of follow-up was approximately 31% (RR 0.98, 95% CI 0.85 to 1.12; high-quality evidence). Similar small proportions of participants in the aflibercept and ranibizumab groups lost 15 or more letters of BCVA at one year (RR 0.89, 95% CI 0.61 to 1.30; high-quality evidence); this outcome was not reported for two-year follow-up. Data were not reported on the proportion of participants with BCVA worse than 20/200 at one- or two-year follow-up.Participants treated with aflibercept or ranibizumab showed similar improvement in morphological outcomes, as assessed from images (central retinal thickness and CNV size). At one year, the proportion of eyes that achieved dry retina was similar between aflibercept and ranibizumab groups (absence of cystic intraretinal fluid and subretinal fluid on optical coherence tomography (OCT); RR 1.06, 95% CI 0.98 to 1.14; high-quality evidence). In addition, investigators reported no difference in reduction of CNV area between aflibercept- and ranibizumab-treated eyes at one year (MD -0.24 mm2, 95% CI -0.78 to 0.29; high-quality evidence). Data were not reported for the proportion of eyes with absence of leakage on fluorescein angiography at one- or two-year follow-up.Overall, occurrence of serious systemic adverse events was similar and comparable in aflibercept- and ranibizumab-treated groups at one year (RR 0.99, 95% CI 0.79 to 1.25). Risk of any serious ocular adverse event was lower in the aflibercept group than in the ranibizumab group, but the risk estimate is imprecise (RR 0.62, 95% CI 0.36 to 1.07). As the result of imprecision, we graded the quality of evidence for all adverse events as moderate.

AUTHORS' CONCLUSIONS: Results of this review document the comparative effectiveness of aflibercept versus ranibizumab for visual acuity and morphological outcomes in eyes with neovascular AMD. Current available information on adverse effects of each medication suggests that the safety profile of aflibercept is comparable with that of ranibizumab; however, the number of participants who experienced adverse events was small, leading to imprecise estimates of absolute and relative effect sizes. The eight-week dosing regimen of aflibercept represents reduced treatment requirements in comparison with monthly dosing regimens and thus has the potential to reduce treatment burden and risks associated with frequent injections.

PMID: 26857947 [PubMed - as supplied by publisher]

Ophthalmic Epidemiol. 2016 Feb 8:1-9. [Epub ahead of print]

Severe Ocular Inflammation Following Ranibizumab or Aflibercept Injections for Age-Related Macular Degeneration: A Retrospective Claims Database Analysis.

Souied EH, Dugel PU, Ferreira A, Hashmonay R, Lu J, Kelly SP.

PURPOSE: Intravitreal injections of anti-vascular endothelial growth factor (VEGF) agents including ranibizumab and aflibercept are used to treat patients with ocular disorders such as neovascular age-related macular degeneration (nAMD); however, the injections are associated with rare instances of severe ocular inflammation. This study compared severe ocular inflammation rates in patients treated with ranibizumab versus aflibercept.

METHODS: United States physician-level claims data covering an 18-month period for each therapy were analyzed. The primary analysis compared severe ocular inflammation event rates per 1000 injections. Sensitivity and subgroup analyses evaluated the impact of factors including intraocular surgery, intravitreal antibiotic administration, and previous intravitreal injections.

RESULTS: The analysis included 432,794 injection claims (ranibizumab n = 253,647, aflibercept n = 179,147); significantly, more unique severe ocular inflammation events occurred in patients receiving aflibercept than ranibizumab (1.06/1000 injections, 95% confidence interval [CI], 0.91-1.21, vs. 0.64/1000 injections, 95% CI 0.54-0.74; p < 0.0001). Comparable results were observed for analyses of patients who had undergone glaucoma or cataract surgeries, had antibiotic-associated endophthalmitis, had non-antibiotic-associated endophthalmitis, and were non-treatment-naive. In contrast, no significant differences in severe ocular inflammation claims were recorded in treatment-naive patients who had no record of anti-VEGF treatment in the 6 months preceding the index claim. No significant change occurred in the rate of severe ocular inflammation claims over time following ranibizumab treatment.

CONCLUSIONS: Severe ocular inflammation was more frequent following intravitreal injection with aflibercept than with ranibizumab during routine clinical use in patients with nAMD. This highlights the importance of real-world, post-approval, observational monitoring of novel medicines, and may aid clinical decision-making, including choice of anti-VEGF agent.

PMID: 26855278 [PubMed - as supplied by publisher]

Retina. 2016 Feb 9. [Epub ahead of print]

NEAR VISION OUTCOME IN PATIENTS WITH AGE-RELATED MACULAR DEGENERATION TREATED WITH AFLIBERCEPT.

Epstein D, Amrén U.

PURPOSE: The aim of this study was to investigate the outcome in near vision and the best-corrected visual acuity in patients with wet, age-related macular degeneration treated with aflibercept in a fixed bimonthly regimen in an ordinary clinical setting.

METHODS: The study was a retrospective, nonrandomized consecutive case series including 85 patients with wet, age-related macular degeneration followed for 18 months. During the first year all the patients received aflibercept injections in a fixed regimen at the following time points: Month 0, 1, 2, 4, 6, 8, 10, and 12. From Month 12 to Month 18, patients were treated with a treat and extend algorithm.

RESULTS: The median near visual acuity improved from 12 points (95% confidence interval [CI] 10.5-13.4) at baseline to 5 points both at Month 12 (95% CI 3.8-6.2) and at Month 18 (95% CI 3.6-6.4) (P < 0.0001). At the 18-month visit, 58% (42/73) of the patients had a near visual acuity of at least 5 points compared with 7% (6/85) (P < 0.0001) at baseline. Best-corrected visual acuity improved from 60.9 letters (Snellen 20/63) (95% CI 58.4-63.4) at baseline to 68.1 letters (20/40) (95% CI 65.3-70.9) (P < 0.001) at Month 12 and 69.6 letters (20/40) (95% CI 66.7-72.5) (P < 0.001) at Month 18.

CONCLUSION: Significant improvements were found in near vision and best-corrected visual acuity. The improvement in near vision was comparably greater than the change in best-corrected visual acuity. Monitoring near vision can contribute additional information when managing the patient with wet, age-related macular degeneration.

PMID: 26866528 [PubMed - as supplied by publisher]

Retina. 2016 Feb 9. [Epub ahead of print]

SHORT-TERM EFFECT OF INTRAVITREAL RANIBIZUMAB THERAPY ON MACULAR EDEMA AFTER BRANCH RETINAL VEIN OCCLUSION.

Minami Y, Nagaoka T, Ishibazawa A, Yoshida A.

PURPOSE: To assess the short-term effect of intravitreal ranibizumab (IVR) on macular edema after branch retinal vein occlusion.

METHODS: Twenty-three eyes with macular edema after branch retinal vein occlusion were enrolled in a prospective observational study. After administering one IVR injection (0.5 mg) for the first time, the authors measured the foveal thickness (FT) before and 2 hours, 1 and 3 days, 1 week, and 1 month later and the best-corrected visual acuity at all times except 2 hours, and determined the changes from baseline (ΔFT and ΔVA).

RESULTS: The mean FT decreased significantly ($P < 0.0001$) from 522 ± 131 μm to 458 ± 96 μm after 2 hours. The mean logarithm of the minimum angle of resolution (logMAR) visual acuity improved significantly ($P < 0.05$) after 1 day from 0.69 ± 0.40 to 0.55 ± 0.34 (20/98-20/70, Snellen equivalent). The ΔFT after 2 hours was significantly positively correlated with the ΔFT after 1 week ($r = 0.76$, $P < 0.001$) and 1 month ($r = 0.67$, $P < 0.001$). The ΔVA after 1 day was correlated positively with the ΔVA after 1 week ($r = 0.80$, $P < 0.001$) and 1 month ($r = 0.59$, $P < 0.01$).

CONCLUSION: Structural and functional effects of IVR for branch retinal vein occlusion occurred within 1 day. The short-term effects of IVR may predict the outcome of the therapy at 1 week and 1 month after IVR in macular edema secondary to branch retinal vein occlusion.

PMID: 26866527 [PubMed - as supplied by publisher]

Korean J Ophthalmol. 2016 Feb;30(1):17-24. Epub 2016 Jan 21.

Changes in Fundus Autofluorescence after Anti-vascular Endothelial Growth Factor According to the Type of Choroidal Neovascularization in Age-related Macular Degeneration.

Lee JY, Chung H, Kim HC.

PURPOSE: To describe the changes of fundus autofluorescence (FAF) in patients with age-related macular degeneration before and after intravitreal injection of anti-vascular endothelial growth factor according to the type of choroidal neovascularization (CNV) and to evaluate the correlation of FAF with spectral domain optical coherence tomography (SD-OCT) parameters and vision.

METHODS: This was a retrospective study. Twenty-one treatment-naïve patients with neovascular age-related macular degeneration were included. Study eyes were divided into two groups according to the type of CNV. Fourteen eyes were type 1 CNV and seven eyes were type 2 CNV. All eyes underwent a complete ophthalmologic examination, including an assessment of best-corrected visual acuity, SD-OCT, fluorescein angiography, and FAF imaging, before and 3 months after intravitreal anti-vascular endothelial growth factor injection. Gray scales of FAF image for CNV areas, delineated as in fluorescein angiography, were analyzed using the ImageJ program, which were adjusted by comparison with normal background areas. Correlation of changes in FAF with changes in SD-OCT parameters, including CNV thickness, photoreceptor inner and outer segment junction disruption length, external limiting membrane disruption length, central macular thickness, subretinal fluid, and intraretinal fluid were analyzed.

RESULTS: Eyes with both type 1 and type 2 CNV showed reduced FAF before treatment. The mean gray scales (%) of type 1 and type 2 CNV were 52.20% and 42.55%, respectively. The background values were 106.72 and 96.86. After treatment, the mean gray scales (%) of type 1 CNV and type 2 CNV were changed to 57.61% ($p = 0.005$) and 57.93% ($p = 0.008$), respectively. After treatment, CNV thickness, central macular thickness, and inner and outer segment junction disruption length were decreased while FAF increased.

CONCLUSIONS: FAF was noted to be reduced in eyes with newly diagnosed wet age-related macular degeneration, but increased after anti-vascular endothelial growth factor therapy regardless of CNV lesion type.

PMID: 26865799 [PubMed - in process]

Curr Opin Ophthalmol. 2016 Feb 11. [Epub ahead of print]

Systemic safety of intravitreal anti-vascular endothelial growth factor agents in age-related macular degeneration.

Dedania VS, Bakri SJ.

PURPOSE OF REVIEW: The purpose of review is to summarize the literature addressing nonocular adverse events in patients with neovascular age-related macular degeneration treated with intravitreal vascular endothelial growth factor (VEGF) inhibitors and to present possible mechanisms of effect.

RECENT FINDINGS: The incidence of overall nonocular serious adverse events varied from 0 to 39.3% and nonocular adverse events ranged from 0 to 86.9%. Few studies have reported a significant association between use of intravitreal anti-VEGF agents and overall incidence of adverse events, stroke, myocardial infarction, nonocular hemorrhage and death, with overall greater concern in patients treated with bevacizumab. Additionally, history of stroke or other arterial thromboembolic event may be a risk factor for future stroke in patients treated with intravitreal anti-VEGF agents. Theories explaining the mechanisms of increased risk of nonocular adverse events secondary to anti-VEGF agent use surround the necessity of VEGF for the normal functioning of the endothelium and the damage incurred with use of anti-VEGF agents.

SUMMARY: Current data are insufficient to definitively conclude that intravitreal anti-VEGF agents are safe, although there is a trend toward an overall favorable systemic safety profile. Caution should be exerted in patients with a history of cardiovascular disease, as these patients may be at greater risk for nonocular serious adverse events.

PMID: 26871657 [PubMed - as supplied by publisher]

Cell Physiol Biochem. 2016 Feb 15;38(2):737-747. [Epub ahead of print]

Fc Receptor Inhibition Reduces Susceptibility to Oxidative Stress in Human RPE Cells Treated with Bevacizumab, but not Aflibercept.

Ranjbar M, Brinkmann MP, Zapf D, Miura Y, Rudolf M, Grisanti S.

BACKGROUND/AIMS: VEGF-A is induced by oxidative stress, and functions as a survival factor for various cell types, including retinal pigment epithelial (RPE) cells. Anti-vascular endothelial growth factor (VEGF) drugs like aflibercept and bevacizumab have shown to be most effective in treating neovascular age-related macular degeneration (AMD), however uptake of the drugs might lead to interference with cell physiology. Herein, we evaluated the significance of the Fc receptor (FcR) within this context and moreover explored the impact of VEGF inhibition under normal conditions as well as under oxidative stress, in terms of potential adverse effects.

METHODS: ARPE-19 (human RPE) cells were treated with aflibercept and bevacizumab in presence or absence of H2O2 as oxidative stress stimulus. After 24h cells were evaluated for drug uptake, VEGF-A expression and secretion, levels of intracellular reactive oxygen species (ROS) as well as cell proliferation. Experiments were repeated with cells being pre-incubated with an FcR inhibitor prior to drug application.

RESULTS: Both drugs inhibited extracellular levels of VEGF-A and were taken up into the RPE, resulting in significantly reduced intracellular levels of VEGF-A. When oxidative stress was applied, intracellular ROS levels in cells treated with both drugs rose, and cell proliferation was reduced. Prior incubation with the FcR inhibitor lessened the uptake of bevacizumab, but not aflibercept into RPE cells, and simultaneously enhanced cell survival under oxidative stress conditions.

CONCLUSIONS: Our results indicate that uptake and accumulation of aflibercept and bevacizumab within RPE cells affect the intracellular VEGF-A metabolism negatively, leading to a biologically relevant reduced cell survival under oxidative stress. The FcR plays a substantial role in the uptake of bevacizumab, but not aflibercept, which allows an enhanced RPE cell survival through FcR blockage in an environment

dominated by oxidative stress, as clinically significant for various inflammatory retinal disorders.

PMID: 26871551 [PubMed - as supplied by publisher]

Invest Ophthalmol Vis Sci. 2016 Feb 1;57(2):462-6.

Vascular Endothelial Growth Factor (VEGF) Concentration Is Underestimated by Enzyme-Linked Immunosorbent Assay in the Presence of Anti-VEGF Drugs.

Takahashi H, Nomura Y, Nishida J, Fujino Y, Yanagi Y, Kawashima H.

PURPOSE: Commercially available enzyme-linked immunosorbent assay (ELISA) kits are often used to monitor vascular endothelial growth factor (VEGF) levels in exudative age-related macular degeneration. To test their accuracy, this study performed measurements using the ELISA kits in the presence of anti-VEGF drugs.

METHODS: The concentrations of bevacizumab, pegaptanib, or ranibizumab at 28 days and aflibercept at 28 and 56 days after an injection were estimated based on previous pharmacokinetic studies. Vascular endothelial growth factor concentrations were measured with two widely used VEGF ELISA kits in the presence of anti-VEGF drugs or control mouse immunoglobulin G (IgG). The monocyte chemotactic protein -1 (MCP-1) ELISA kit was used as a non-VEGF ELISA control kit.

RESULTS: The concentrations of aflibercept, bevacizumab, pegaptanib, and ranibizumab were estimated at 0.14 to 7.2, 4.9, 8.6, and 0.11 to 1.1 μg/mL, respectively. ELISA underestimated the VEGF concentration 2- to 100-fold lower in the presence of an anti-VEGF drug, except for pegaptanib, at all VEGF concentrations tested (7.8-1500 pg/mL). Vascular endothelial growth factor at 1000 pg/mL was measured as 92, 150, and 170 pg/mL in the presence of aflibercept (7.2 μg/mL), bevacizumab (4.9 μg/mL), and ranibizumab (1.1 μg/mL), respectively (all $P < 0.0001$), and the measured VEGF concentration decreased proportionately by 90% to 92% with aflibercept, 85% to 94% with bevacizumab, and 83% to 99% with ranibizumab. The control mouse IgG did not interfere with the measurement of VEGF. Ranibizumab did not affect the measurements with MCP-1 ELISA.

CONCLUSIONS: Investigators should exercise caution when interpreting measurements of VEGF ELISA in patients being treated with an anti-VEGF drug.

PMID: 26868748 [PubMed - in process]

Eur J Ophthalmol. 2016 Feb 5:0. [Epub ahead of print]

Visual and anatomic outcomes after conversion to aflibercept in neovascular age-related macular degeneration: 12-month results.

Aghdam KA, Pielen A, Framme C, Junker B

PURPOSE: To investigate 12-month outcomes of conversion to aflibercept in patients with neovascular age -related macular degeneration resistant to ranibizumab.

METHODS: Twenty-two eyes of 19 consecutive patients received 3 monthly aflibercept injections followed by a pro re nata protocol. Spectral-domain optical coherence tomography (OCT) images were obtained before each injection. All 49 cross-sectional OCT B-scans obtained in each examination were investigated and the largest choroidal neovascularization (CNV) size was chosen. The same cross-sectional B-scan sections containing the maximum CNV size were used during the follow-up.

RESULTS: After 12 months, best-corrected visual acuity increased from 45.68 ± 20.25 to 59.09 ± 17.50 Early Treatment Diabetic Retinopathy Study letters (plt;0.001), central subfield thickness decreased from 399.91 ± 148.85 to 304.55 ± 97.89 μm ($p = 0.003$), area of CNV declined from 0.38 ± 0.24 to 0.28 ± 0.19

mm2 (p = 0.003), and macular volume improved from 9.64 ± 1.75 to 8.45 ± 0.98 mm3 (plt;0.001). There was a significant resolution of intraretinal fluid (p = 0.016), but reduction of subretinal fluid was not significant (p = 0.25).

CONCLUSIONS: Visual and anatomic improvement were obtained after conversion to aflibercept.

PMID: 26868007 [PubMed - as supplied by publisher]

Eye (Lond). 2016 Feb 12. [Epub ahead of print]

Comment on: 'Intravitreal aflibercept for macular oedema secondary to central retinal vein occlusion in patients with prior treatment with bevacizumab or ranibizumab'.

Călugăru D, Călugăru M.

PMID: 26869160 [PubMed - as supplied by publisher]

Eye (Lond). 2016 Feb 12. [Epub ahead of print]

Reply to 'Comment on: Intravitreal aflibercept for macular oedema secondary to central retinal vein occlusion in patients with prior treatment with bevacizumab or ranibizmab'.

Papakostas TD, Vavvas D, Eliott D, Kim LA.

PMID: 26869157 [PubMed - as supplied by publisher]

Other treatment & diagnosis

Ophthalmic Res. 2016 Feb 13;55(4):185-193. [Epub ahead of print]

Geographic Atrophy and Choroidal Neovascularization in the Same Eye: A Review.

Kaszubski P, Ben Ami T, Saade C, Smith RT.

Abstract: Geographic atrophy (GA) and choroidal neovascularization (CNV), the two late forms of age-related macular degeneration, are generally considered two distinct entities. However, GA and CNV can occur simultaneously in the same eye, with GA usually occurring first. The prevalence of this combined entity is higher in histological studies than in clinical studies. No distinct systemic or genetic risk characteristics are associated with the combined GA/CNV entity, although on clinical examination and retinal imaging it can feature drusen or subretinal drusenoid deposits. GA and CNV may exist within the spectrum of a single disease, or they may be two very different diseases. Therapy with antivascular endothelial growth factor (anti-VEGF) is often successful for CNV, but some evidence suggests increased rates of GA development in eyes treated with anti-VEGF. In this article, we review the current literature regarding the epidemiology, clinical presentation, and treatment options for patients with the combined GA/CNV entity.

PMID: 26871899 [PubMed - as supplied by publisher]

Clin Ophthalmol. 2016 Jan 27;10:239-42. eCollection 2016.

Vitrectomy in patients over 90 years of age.

Muto T, Ide T, Chikuda M, Machida S.

PURPOSE: The aim of this study was to evaluate vitrectomy procedures performed in patients over 90

years of age at the Dokkyo Medical University Koshigaya Hospital (Koshigaya, Japan).

PATIENTS AND METHODS: Vitrectomies were performed in nine eyes of nine patients who were over 90 years of age between May 2010 and March 2015. Factors such as the underlying vitreoretinal disease, preoperative and postoperative best-corrected visual acuity (BCVA), surgical time, postoperative body position, need for a second surgery, systemic disease, and intraoperative changes in systemic conditions have been evaluated.

RESULTS: The most common cause of the underlying vitreoretinal disease was vitreous hemorrhage derived from age-related macular degeneration and posterior dislocation of the lens secondary to a posterior capsular rupture (two cases each). The mean values for the logarithm of the minimum angle of resolution BCVA were 2.15 preoperatively and 1.46 postoperatively (P=0.020, Wilcoxon signed-rank test). The mean surgical time was 109 minutes. Prone position was needed in two cases, and no second surgeries were needed. The most common cause of systemic disease was hypertension, which was found in six cases. Transient hypertension was found in two cases during surgery, and these patients were treated using intravenous calcium blocker injections.

CONCLUSION: Patients over 90 years of age who underwent vitrectomy procedures did not have serious problems, except transient hypertension during surgery. The BCVA significantly improved. These results indicated that vitrectomies could be performed successfully in patients over 90 years of age.

PMID: 26869759 [PubMed]

Ophthalmologe. 2016 Feb 11. [Epub ahead of print]

[Design of the ORCA module in the OCEAN study : Evaluation of SD-OCT results in daily routine practice]. [Article in German]

Heimes B, Schick T, Brinkmann CK, et al

BACKGROUND: The prevalence of blindness as defined by law could be reduced by the introduction of anti-vascular endothelial growth factor (VEGF) therapy. Because the treatment is governed by patient needs, mostly using morphological criteria, imaging diagnostics are of particular importance. The non-interventional OCEAN study investigates the treatment with ranibizumab in the clinical routine practice. In a subgroup of patients the interpretation of spectral domain optical coherence tomography (SD-OCT) scans by the treating physicians will be analyzed (ORCA module).

METHODS: Over a period of 24 months data from patients with exudative age-related macular degeneration (AMD), macular edema due to retinal vein occlusion or diabetes mellitus, who are receiving intravitreal injections of ranibizumab, will be assessed. Information on examinations, visual acuity, treatment and recordings from imaging techniques will be documented using a questionnaire. The SD-OCT scans, fluorescence angiography and fundus photography will be independently analyzed by the ophthalmologist of the study center and by three reading centers (CIRCL Cologne, GRADE Bonn and M3 Münster). Automated measurements of retinal thickness by the manufacturers' software will be checked and if necessary manually corrected. A qualitative interpretation in terms of morphological criteria for (further) treatment will be performed.

CONCLUSION: A thorough assessment of SD-OCT images during anti-VEGF therapy provides the basis for the best possible needs-oriented treatment regimen. The control of the quality of data from daily routine practice may indicate possible weaknesses allowing explicit training and therefore optimization of patient treatment.

PMID: 26868827 [PubMed - as supplied by publisher]

Curr Opin Ophthalmol. 2016 Feb 10. [Epub ahead of print]

Recent approaches to evaluating and monitoring geographic atrophy.

Chaikitmongkol V, Tadarati M, Bressler NM.

PURPOSE OF REVIEW: Given the increasing prevalence of geographic atrophy from age-related macular degeneration as the number of individuals over 85 increases throughout the world, as well as the recent increase in potential treatments to slow growth of geographic atrophy, this article discusses recent findings regarding retinal imaging of geographic atrophy to detect its presence or expansion over time.

RECENT FINDINGS: During the review period, the COMPLETE (Systemic complement inhibition with eculizumab for geographic atrophy in age-related macular degeneration) and the GATE (Randomized trial to evaluate tandospirone in geographic atrophy secondary to age-related macular degeneration) studies, respectively, reported no beneficial effects of intravenous eculizumab or tandospirone eye drops, respectively, identified on the growth of geographic atrophy. Several imaging and visual function studies have evaluated the role of various techniques using fundus autofluorescence, optical coherence tomography, microperimetry, or other investigator-initiated tools to assess geographic atrophy growth or progression over time, although the ideal imaging for geographic atrophy remains unknown. Some predictive factors for geographic atrophy growth recently suggested include genetic features, geographic atrophy characteristics in the fellow eye, or the presence of outer retinal tubulation on optical coherence tomography.

SUMMARY: Quantification of geographic atrophy is important for evaluating growth of geographic atrophy. Numerous new imaging techniques of geographic atrophy beyond human grading of fundus photographs or fluorescein angiograms have emerged, but the ideal imaging for geographic atrophy has yet to be determined.

PMID: 26866953 [PubMed - as supplied by publisher]

Klin Monbl Augenheilkd. 2016 Feb 8. [Epub ahead of print]

[Morphologic Patterns on Spectral-Domain Optical Coherence Tomography (SD-OCT) as a Prognostic Indicator in Treatment of Macular Edema Due to Retinal Vein Occlusion]. [Article in German]

Groneberg T, Trattnig JS, Feucht N, Lohmann CP, Maier M.

Background: SD-OCT is an important tool in the diagnosis of macular oedema (ME) due to retinal vein occlusion (RVO). Its high resolution makes it possible to distinguish various morphological characteristics and differences. The aim of this study is to evaluate the correlation between morphological patterns and the development of visual acuity (VA) after intravitreal treatment of ME due to RVO. Methods: 81 patients on intravitreal treatment (dexamethasone: n = 53/ranibizumab: n = 28) due to ME associated with branch and central retinal vein occlusion (BRVO: n = 38/CRVO: n = 43) were retrospectively reviewed. Preoperative SD-OCT images were analysed by vitreous adhesion, epiretinal membranes, foveal contour, height of intraretinal cystoid spaces, inner and outer segment integrity and presence of subretinal fluid. The influence of these patterns on VA improvement was analysed. Results: In almost every morphological pattern, the data were highly variable. Therapy was effective, with a medium gain in VA of 9.51 letters ETDRS (dexamethasone: 9.62 letters/ranibizumab: 9.29 letters). The improvement in VA in patients with small intraretinal cystoid spaces (thickness ≤ 250 µm) was 19.44 letters ETDRS, compared to 7.23 letters ETDRS in patients with confluent cystoid spaces (p = 0.009). Patients with a convex fovea exhibited more pronounced reduction in central retinal thickness (CRT) (p = 0.004). Conclusion: Analysis of OCT has concentrated on demonstrating oedema and CRT. Our data indicate that detailed OCT morphology and the size of intraretinal cystoid spaces offer important information about VA prognosis after intravitreal therapy in ME due to RVO.

PMID: 26854482 [PubMed - as supplied by publisher]

Ophthalmology. 2016 Feb 4. [Epub ahead of print]

Segmentation Errors in Macular Ganglion Cell Analysis as Determined by Optical Coherence Tomography.

Hwang YH, Kim MK, Kim DW.

PURPOSE: To investigate the prevalence, features, associated factors, and reproducibility of segmentation errors in macular ganglion cell inner plexiform layer (GCIPL) thickness measurement as determined by optical coherence tomography (OCT).

DESIGN: Cross-sectional study.

PARTICIPANTS: Five hundred thirty-eight glaucomatous and healthy eyes from 290 subjects with OCT-measured macular GCIPL thickness were enrolled. Eyes with macular disorders, including epiretinal membrane, macular degeneration, macular hole, and myopic maculopathy, were excluded.

METHODS: By inspecting 128 cross-sectional OCT B-scan images per eye, the presence (yes vs. no), layer (anterior vs. posterior border), location (quadrants), and area (diffuse vs. focal) of macular GCIPL segmentation error were investigated. The effects of age, refractive error, mean deviation of visual field test, circumpapillary retinal nerve fiber layer thickness obtained by OCT, and signal strength of OCT scan on the presence of macular GCIPL segmentation errors were evaluated. In eyes with segmentation errors, repeated OCT examinations were performed to investigate the reproducibility of the segmentation errors.

MAIN OUTCOME MEASURES:

The prevalence, features, associated factors, and reproducibility of macular GCIPL segmentation errors were assessed.

RESULTS: Among the 538 eyes, 52 eyes (9.7%) showed segmentation errors in macular GCIPL thickness measurement. The most common features of segmentation errors were that they affected both the anterior and posterior borders, were located at the nasal quadrant (centered to the fovea), and were diffuse. In univariate analysis, the presence of segmentation error was associated significantly with younger age ($P < 0.001$), higher degree of myopia ($P < 0.001$), and lower signal strength of OCT scan ($P = 0.038$). In multivariate analysis, only higher degree of myopia was associated significantly with the presence of segmentation error ($P < 0.001$). In repeated examinations, segmentation errors were reproducible in 24 eyes (46.2%). In other cases, the features of segmentation errors changed or disappeared.

CONCLUSIONS: Although the OCT segmentation algorithm accurately detected macular GCIPL thickness in most eyes without macular disorders, in some cases, segmentation errors were found, especially in myopic eyes. In repeated examinations, approximately half of the errors were nonreproducible. These findings should be considered when assessing macular GCIPL thickness using OCT.

PMID: 26854040 [PubMed - as supplied by publisher]

Can J Ophthalmol. 2016 Feb;51(1):50.

Comment on: Peripapillary RNFL thickness in nonexudative versus chronically treated exudative age-related macular degeneration.

Ozge G, Ayyildiz O, Mumcuoglu T.

PMID: 26874160 [PubMed - as supplied by publisher]

Can J Ophthalmol. 2016 Feb;51(1):e1-e2.

Assessment of online health resources for ophthalmology patients with age-related macular

degeneration or diabetic retinopathy.

Yoo P, Carlone D, Ren LY, Lam WC.

Author information

PMID: 26874161 [PubMed - as supplied by publisher]

Pathogenesis

Cell Mol Life Sci. 2016 Feb 6. [Epub ahead of print]

Inflammation and its role in age-related macular degeneration.

Kauppinen A, Paterno JJ, Blasiak J, Salminen A, Kaarniranta K.

Abstract: Inflammation is a cellular response to factors that challenge the homeostasis of cells and tissues. Cell-associated and soluble pattern-recognition receptors, e.g. Toll-like receptors, inflammasome receptors, and complement components initiate complex cellular cascades by recognizing or sensing different pathogen and damage-associated molecular patterns, respectively. Cytokines and chemokines represent alarm messages for leukocytes and once activated, these cells travel long distances to targeted inflamed tissues. Although it is a crucial survival mechanism, prolonged inflammation is detrimental and participates in numerous chronic age-related diseases. This article will review the onset of inflammation and link its functions to the pathogenesis of age-related macular degeneration (AMD), which is the leading cause of severe vision loss in aged individuals in the developed countries. In this progressive disease, degeneration of the retinal pigment epithelium (RPE) results in the death of photoreceptors, leading to a loss of central vision. The RPE is prone to oxidative stress, a factor that together with deteriorating functionality, e.g. decreased intracellular recycling and degradation due to attenuated heterophagy/autophagy, induces inflammation. In the early phases, accumulation of intracellular lipofuscin in the RPE and extracellular drusen between RPE cells and Bruch's membrane can be clinically detected. Subsequently, in dry (atrophic) AMD there is geographic atrophy with discrete areas of RPE loss whereas in the wet (exudative) form there is neovascularization penetrating from the choroid to retinal layers. Elevations in levels of local and systemic biomarkers indicate that chronic inflammation is involved in the pathogenesis of both disease forms.

PMID: 26852158 [PubMed - as supplied by publisher]

Ophthalmic Res. 2016 Feb 13;55(4):180-184. [Epub ahead of print]

Aquaporin-1 Expression in Retinal Pigment Epithelial Cells Overlying Retinal Drusen.

Tran TL, Bek T, la Cour M, Prause JU, Hamann S, Heegaard S.

PURPOSE: In the outer retina, age-related macular degeneration (AMD) results in reduced hydraulic conductivity in Bruch's membrane, possibly leading to altered water transport in retinal pigment epithelial (RPE) cells. We hypothesize that RPE cells may express aquaporin-1 (AQP1) to compensate for these changes. Therefore, we wanted to investigate the expression of AQP1 in RPE cells of human eyes with age -related maculopathy (ARM) and AMD, and eyes with tumour-associated drusen.

METHODS: Nine human eyes with ARM, 6 eyes with AMD and 9 eyes with choroidal malignant melanoma were examined for immunoreactivity to AQP1. AQP1 labelling in the RPE cells was evaluated for each drusen and grouped according to size and AQP1 labelling. AQP1 labelling in the RPE outside drusen was also evaluated.

RESULTS: AQP1 labelling was observed in the apical membrane of the RPE cells situated above drusen in all three groups. There was a significant association between AQP1 labelling and drusen size ($p < 0.001$),

and AQP1 labelling was more frequently observed in large drusen.

CONCLUSION: AQP1 was expressed in RPE cells covering drusen but not in RPE cells outside drusen. We suggest that AQP1 expression is upregulated in the cell membranes of RPE cells above drusen in order to alleviate the increased need for fluid transport across the growing drusen.

PMID: 26871693 [PubMed - as supplied by publisher]

Clin Ophthalmol. 2016 Jan 28;10:243-9. eCollection 2016.

Evaluation of an oral telomerase activator for early age-related macular degeneration - a pilot study.

Dow CT, Harley CB.

PURPOSE: Telomere attrition and corresponding cellular senescence of the retinal pigment epithelium contribute to the changes of age-related macular degeneration. Activation of the enzyme telomerase can add telomeric DNA to retinal pigment epithelium chromosomal ends and has been proposed as a treatment for age-related macular degeneration. We report the use of a small molecule, oral telomerase activator (TA) -65 in early macular degeneration. This study, focusing on early macular degeneration, provides a model for the use of TAs in age-related disease.

METHOD: Thirty-eight (38) patients were randomly assigned to a 1-year, double-blinded, placebo-controlled interventional study with arms for oral TA-65 or placebo. Macular functions via micro-perimetry were the primary measured outcomes.

RESULTS: The macular function in the arm receiving the TA-65 showed significant improvement relative to the placebo control. The improvement was manifest at 6 months and was maintained at 1 year: macular threshold sensitivity (measured as average dB [logarithmic decibel scale of light attenuation]) improved 0.97 dB compared to placebo (P-value 0.02) and percent reduced thresholds lessened 8.2% compared to the placebo arm (P-value 0.04).

CONCLUSION: The oral TA significantly improved the macular function of treatment subjects compared to controls. Although this study was a pilot and a larger study is being planned, it is noteworthy in that it is, to our knowledge, the first randomized placebo-controlled study of a TA supplement.

PMID: 26869760 [PubMed]

FEBS Lett. 2016 Feb 10. [Epub ahead of print]

Amyloid properties of the leader peptide of variant B cystatin C: implications for Alzheimer and Macular Degeneration.

Sant'Anna R, Navarro S, Ventura S, Paraoan L, Foguel D.

Abstract: Variant B (VB) of cystatin C has a mutation in its signal peptide (A25T), which interferes with its processing leading to reduced secretion and partial retention in the vicinity of the mitochondria. There are genetic evidences of the association of VB with Alzheimer' disease (AD) and age-related macular degeneration (AMD). Here we investigated aggregation and amyloid propensities of unprocessed VB combining computational and in vitro studies. Aggregation predictors revealed the presence of four aggregation-prone regions, with a strong one at the level of the signal peptide, which indeed formed toxic aggregates and mature amyloid fibrils in solution. In the light of these results, we propose for the first time the role of the signal peptide in pathogenesis AD and AMD. This article is protected by copyright. All rights reserved.

PMID: 26865059 [PubMed - as supplied by publisher]

Indian J Ophthalmol. 2015 Dec;63(12):905-11.

Intraocular cytokines in retinal vein occlusion and its relation to the efficiency of anti-vascular endothelial growth factor therapy.

Shchuko AG, Zlobin IV, Iureva TN, Ostanin AA, Chernykh ER, Mikhalevich IM.

PURPOSE: To analyze the change in the concentration of intraocular cytokines (ICs) in patients with retinal vein occlusion (RVO) before and after intravitreal ranibizumab therapy (IVR), and to find the correlations of IC with clinical activity of RVO and efficiency of treatment.

MATERIALS AND METHODS: Forty-four patients aged 46-79 years old (mean age: 60.7 ± 7.5 years old) with RVO and macular edema (18 patients - with central RVO, 26 - with branch RVO) treated with IVR were included into the study. The concentrations of 27 cytokines were simultaneously measured in aqueous humor by flow fluorometry using Bio-Plex Pro Human Cytokine Panel, 27-Plex (Bio-Rad Laboratories, USA) at baseline and after the first IVR. Control group consisted of 20 age-matched patients.

RESULTS: The levels of 11 cytokines (vascular endothelial growth factor [VEGF], receptor antagonist interleukin-1, interleukin-6 [IL-6], IL-8, IL-9, IL-10, IL-12r70, IL-13, IL-15, monocyte chemotactic protein-1 [MCP-1], regulated on activation, normal T expressed and secreted) were significantly ($P < 0.05$) different compared to control and significantly ($P < 0.05$) changed after IVR both in central and branch RVO. The patients were divided into two groups: the first -"effective" and the second - "partially effective" therapy. The second group characterized by the higher concentrations of VEGF, IL-8, IL-10, IL-17, and MCP-1 at baseline compared to the first group.

CONCLUSION: The patients with RVO were characterized by the increased levels of VEGF and other pro- and anti-inflammatory cytokines and chemokines. Aqueous concentration of cytokines were different in patients with central and branch RVO and significantly changed after IVR. Insufficient response to IVR was associated with activation of immune-inflammatory processes.

PMID: 26862095 [PubMed - in process]

APMIS. 2016 Feb 8. [Epub ahead of print]

Hypersensitivity toward bacterial stimuli in patients with age-related macular degeneration.

Chen JJ, Han BS, Xu SG, Vu H, Farrow JW, Rodman CL, Zhu Y, Wang WZ.

Abstract: Although the pathogenesis of age-related macular degeneration (AMD) is unclear, genetic screening has revealed that polymorphisms in the complement system may be associated with AMD development. Production of autoantibodies was also found in AMD patients. In this study, we analyzed the antibody response in AMD patients. We found that purified B cells from AMD patients tended to respond to lower concentrations of bacterial antigen stimulation, and produced higher amounts of antibodies, especially in IgM and IgA secretions. When examining clinical symptoms, patients with more severe wet-form AMD tended to exhibit higher sensitivity to bacterial antigens and secreted more IgM and IgA antibodies than those with less severe dry-form cases. In conclusion, our study discovered an altered B-cell antibody production in response to bacterial antigens in AMD patients, which potentially contributes to AMD pathogenesis.

PMID: 26853231 [PubMed - as supplied by publisher]

Epidemiology

Indian J Ophthalmol. 2015 Dec;63(12):899-904.

Retrospective hospital-based analysis of age-related macular degeneration patterns in India: 5-year

follow-up.

Sudhalkar A, Sethi V, Gogte P, Bondalapati S, Khodani M, Chhablani JK1.

PURPOSE: To provide a detailed analysis of age-related macular degeneration (AMD) with a 5-year follow-up at a Tertiary Eye Care Center in India.

METHODS: In this retrospective institutional study, 408 eyes of 204 subjects (100 males) with a diagnosis of AMD with minimum 5-year follow-up were included. Data collected included demographics, details of the ocular exam, special investigations performed, treatment offered, complications, and systemic diseases, if any.

RESULTS: The median age was 74.24 ± 8.23 years. Median follow-up was 5.77 years. The visual acuity (VA) at baseline and last visit was 0.74 ± 0.12 (Snellen's equivalent 20/100) and 0.54 ± 0.12 logarithm of the minimum angle of resolution (Snellen's equivalent 20/50; P = 0.032) in patients with choroidal neovascular membrane (CNVM). The most common complaint was decreased vision (94.5%). AMD (any stage) was found to be bilateral in 93% of patients at baseline and 197 patients (96.56%) at 5 years. Seventeen eyes had active CNVM (12 of these were occult) at presentation. At baseline, 43 eyes had a disciform scar. Three hundred twenty-one eyes had dry AMD at baseline (geographic atrophy - 12 [3.7%] eyes). Five-year conversion rate into wet AMD and geographic atrophy was 2.87% and 3.12%. Median number of anti-vascular endothelial growth factor injections administered per patient was 2.8 ± 1.2. CNVM bilaterality was low (7.5%).

CONCLUSION: Patients with AMD in India presented later in the course of the disease. Bilateral advanced AMD and geographic atrophy were uncommon. Five-year conversion rate into wet AMD and geographic atrophy was 2.87% and 3.12%.

PMID: 26862094 [PubMed - in process]

Genetics

Arch Gerontol Geriatr. 2016 Jan 28;64:123-129. [Epub ahead of print]

Four complement factor H gene polymorphisms in association with AMD: A meta-analysis.

Liao X, Lan CJ, Cheuk IW, Tan QQ.

AIM: To investigate the possible association between CFH gene polymorphisms -543G>A (rs1410996), A473A (rs2274700), -257C>T (rs3753394), IVS15 (rs1329428) and AMD risk.

METHODS: We searched the published literature in the Medline and Scopus from inception to May 2015. A meta-analysis was performed by the programs RevMan 5.1 and Stata 12.0, and the Pooled odds ratio (OR) with 95% confidence interval (CI) was calculated in fixed or random effect model based on heterogeneity test among studies.

RESULTS: Nineteen studies with a total of 10,676 subjects were included in the present meta-analysis. A statistical significant association was observed between AMD risk and CFH -543G>A polymorphism with OR of 1.77 (95% CI, 1.47-2.12), 2.24 (95% CI, 1.71-2.94), 0.49 (95% CI, 0.38-0.62) and 0.25 (95% CI, 0.18 -0.37) in additive, dominant, recessive and codominant models, respectively. Similar results were obtained in polymorphisms A473A, -257C>T, IVS15. Furthermore, stratified analysis for ethnicity showed a significantly strong association between -543G>A, A473A polymorphisms and AMD risk.

CONCLUSION: The present meta-analysis suggested that CFH -543G>A, A473A, -257C>T, and IVS15 polymorphisms might be moderately associated with AMD risk. This conclusion warrants confirmation by further studies.

PMID: 26852301 [PubMed - as supplied by publisher]

Sci Rep. 2016 Feb 10;6:20914.

Associations of 6p21.3 Region with Age-related Macular Degeneration and Polypoidal Choroidal Vasculopathy.

Ye Z, Shuai P, Zhai Y, et al

Abstract: Neovascular age-related macular degeneration (AMD) and polypoidal choroidal vasculopathy (PCV) are leading causes of blindness in aging populations. This study was conducted to investigate the associations of chromosome 6p21.3 region, including CFB-SKIV2L-TNXB-FKBPL-NOTCH4 genes, with both neovascular AMD and PCV. Six single nucleotide polymorphisms (SNPs) in this region and two known AMD-associated SNPs in CFH (rs800292) and HTRA1 (rs11200638) were genotyped in a Han Chinese cohort composed of 490 neovascular AMD patients, 419 PCV patients and 1316 controls. Among the SNPs, TNXB rs12153855 and FKBPL rs9391734 conferred an increased susceptibility to neovascular AMD ($P = 2.8 \times 10(-4)$ and 0.001, OR = 1.80 and 1.76, respectively), while SKIV2L exerted a protective effect on neovascular AMD ($P = 2.2 \times 10(-4)$, OR = 0.49). Rs12153855C and rs9391734A alleles could further increase the susceptibility to AMD in subjects with rs800292, rs11200638 and rs429608 risk alleles. However, only the association of SKIV2L rs429608 remained significant after adjusting for rs800292, rs11200638 and the other 5 SNPs. The protective haplotype AATGAG exhibited significant association with neovascular AMD (permutation P = 0.015, OR = 0.34). None of the SNPs in this region was associated with PCV. Association profiles of 6p21.3 region showed discrepancy between neovascular AMD and PCV, indicating possible molecular and pathological differences between these two retinal disorders.

PMID: 26861912 [PubMed - in process]

Exp Eye Res. 2016 Feb 5. [Epub ahead of print]

Increased Retinal mtDNA Damage in the CFH Variant Associated with Age-Related Macular Degeneration.

Ferrington DA, Kapphahn RJ, Leary MM, Atilano SR, Terluk MR, Karunadharma P, Kuei-Jie Chen G, Ratnapriya R, Swaroop A, Montezuma SR, Kenney MC.

Abstract: Age-related macular degeneration (AMD) is a major cause of blindness among the elderly in the developed world. Genetic analysis of AMD has identified 34 high-risk loci associated with AMD. The genes at these high risk loci belong to diverse biological pathways, suggesting different mechanisms leading to AMD pathogenesis. Thus, therapies targeting a single pathway for all AMD patients will likely not be universally effective. Recent evidence suggests defects in mitochondria (mt) of the retinal pigment epithelium (RPE) may constitute a key pathogenic event in some AMD patients. The purpose of this study is to determine if individuals with a specific genetic background have a greater propensity for mtDNA damage. We used human eyebank tissues from 76 donors with AMD and 42 age-matched controls to determine the extent of mtDNA damage in the RPE that was harvested from the macula using a long extension polymerase chain reaction assay. Genotype analyses were performed for ten common AMD-associated nuclear risk alleles (ARMS2,TNFRSF10A, CFH, C2, C3, APOE, CETP, LIPC, VEGF and COL10A1) and mtDNA haplogroups. Sufficient samples were available for genotype association with mtDNA damage for TNFRSF10A, CFH, CETP, VEGFA, and COL10A1. Our results show that AMD donors carrying the high risk allele for CFH (C) had significantly more mtDNA damage compared with donors having the wild-type genetic profile. The data from an additional 39 donors (12 controls and 27 AMD) genotyped for CFH alleles further supported these findings. Taken together, these studies provide the rationale for a more personalized approach for treating AMD by uncovering a significant correlation between the CFH high risk allele and accelerated mtDNA damage. Patients harboring this genetic risk factor may benefit from therapies that stabilize and protect the mt in the RPE.

PMID: 26854823 [PubMed - as supplied by publisher]

Stem cells

Curr Opin Ophthalmol. 2016 Feb 6. [Epub ahead of print]

Cell therapy for retinal disease.

Ehmann D, Shahlaee A, Ho AC.

PURPOSE OF REVIEW: The following review will provide an update on stem cell therapy with a focus on completed and ongoing human trials.

RECENT FINDINGS: Significant progress has brought stem cell therapy from proof-of-concept animal models to human clinical trials. Although in its infancy, valuable safety and efficacy data are starting to emerge from trials looking at cell therapies for age-related macular degeneration, Stargardt's macular dystrophy, retinitis pigmentosa, and ischemic retinopathies.

SUMMARY: Although clinical trials continue to enroll and evaluate stem cell therapy in patients with retinal diseases, preliminary results using both cellular replacement and trophic models have provided initial support for this exciting therapy. Results of these pivotal trials will form a key foundation for moving forward toward the ultimate goal of preventing blinding disease.

PMID: 26859132 [PubMed - as supplied by publisher]

Diet, lifestyle & low vision

Eye (Lond). 2016 Feb;30(2):230-3. Epub 2016 Jan 15.

Low-energy light bulbs, computers, tablets and the blue light hazard.

O'Hagan JB, Khazova M, Price LL.

Abstract: The introduction of low energy lighting and the widespread use of computer and mobile technologies have changed the exposure of human eyes to light. Occasional claims that the light sources with emissions containing blue light may cause eye damage raise concerns in the media. The aim of the study was to determine if it was appropriate to issue advice on the public health concerns. A number of sources were assessed and the exposure conditions were compared with international exposure limits, and the exposure likely to be received from staring at a blue sky. None of the sources assessed approached the exposure limits, even for extended viewing times.

PMID: 26768920 [PubMed - in process]

Can J Ophthalmol. 2016 Feb;51(1):3-6.

Prevalence of visual hallucinations in a national low vision client population.

Gordon KD.

PURPOSE: To evaluate the prevalence of visual hallucinations (Charles Bonnet syndrome) in a national population undergoing vision rehabilitation.

STUDY DESIGN: Cross-sectional survey.

PARTICIPANTS: Participants were 2565 new clients older than 40 years attending a Canadian National Institute for the Blind (CNIB) vision rehabilitation clinic.

METHODS: Participants were asked the following question: "Many people who come to CNIB tell us that they see things they know are not there. Some see patterns or shapes. Others see images of people or

animals. Have you ever experienced this?" Responses were cross-tabulated on the basis of age, sex, eye disease, visual acuity, and whether the clients lived alone. Multivariable logistic regression was used to analyze the responses.

RESULTS: Overall, 18.8% of people surveyed indicated that they had experienced hallucinations. In the multivariable model, females showed higher odds of hallucinations than males did (odds ratio [OR] 1.32, 95% CI 1.06-1.64, p = 0.02). Clients with greater vision loss had higher chances of experiencing hallucinations than those with the lowest level of vision loss (OR 1.49, 95% CI 1.19-1.88, p = 0.0005). There was no significant difference in the chances of experiencing hallucinations between people with age-related macular degeneration, diabetic retinopathy, and glaucoma, or in older versus younger respondents. People who did not live alone had higher chances of experiencing hallucinations than those who lived alone (OR 1.54, 95% CI 1.19-1.98, p = 0.0009).

CONCLUSIONS: Visual hallucinations are experienced by approximately 1 in 5 patients with vision loss caused by any eye disease, warranting greater awareness of the phenomenon among all vision health professionals and their patients.

PMID: 26874151 [PubMed - as supplied by publisher]