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Drug treatment

Br J Ophthalmol. 2012 Oct 17. [Epub ahead of print]

Choroidal neovascularisation complicating geographic atrophy in age-related macular degeneration.

Querques G, Massamba N, Coscas F, Forte R, Souied EH.

University Paris Est Creteil, Centre Hospitalier Intercommunal de Creteil, Creteil, France.

OBJECTIVE: To investigate the morphological and functional outcomes after intravitreal ranibizumab injections for choroidal neovascularisation (CNV) complicating geographic atrophy (GA).

DESIGN: Retrospective, interventional, consecutive case series.

METHODS: We reviewed the charts of all consecutive patients with GA due to age-related macular degeneration (AMD), who received intravitreal ranibizumab injections for the development of CNV at least 24 months earlier.

RESULTS: 21 treatment-naive eyes of 21 consecutive patients (4 men, 17 women, mean age 86.9±1.6 years) were included. In 95.2% of eyes a type 2 CNV was present, extrafoveal in 42.8% of cases. After a mean of 5.0±0.87 (range 1-20) intravitreal ranibizumab injections, best-corrected visual acuity (BCVA) significantly worsened at the 24-month follow-up visit (0.73±0.05 vs 0.88±0.08 logMAR, respectively; p=0.01). A significant reduction of intraretinal cystic lesions, subretinal fluid and pigment epithelium detachment (p<0.001) and a significant increase of GA area (p=0.003) were present at last visit.

CONCLUSIONS: Ranibizumab treatment of GA-associated CNVs provides no BCVA improvement at 24 months follow-up despite an anatomic response of CNV. Low effectiveness of ranibizumab in these cases is likely due to GA progression.

PMID: 23077229 [PubMed - as supplied by publisher]

Retina. 2012 Oct 15. [Epub ahead of print]

ANATOMICAL MEASURES AS PREDICTORS OF VISUAL OUTCOMES IN RANIBIZUMAB-TREATED EYES WITH NEOVASCULAR AGE-RELATED MACULAR DEGENERATION.

Brown DM, Tuomi L, Shapiro H; FOR THE PIER STUDY GROUP.

*Retina Consultants of Houston, The Methodist Hospital, Houston, Texas †Genentech, Inc, South San Francisco, California.

PURPOSE: To investigate if anatomical characteristics of eyes undergoing ranibizumab therapy were predictive of best-corrected visual acuity (BCVA) outcomes over 2 years.

METHODS: Post hoc analyses of patients with age-related macular degeneration from PIER studies, defined by fundus fluorescein angiography, quantitative optical coherence tomography (OCT), and qualitative OCT, were performed to determine if associations with BCVA outcomes could be found.

RESULTS: Ranibizumab-treated subgroups defined by baseline fundus fluorescein angiography lesion size and composition did not differ in BCVA outcomes at Month 24 (P = 0.13-1.0). Inactivity on fundus fluorescein angiography at Month 3 was associated with a 12-letter gain by Month 12 (P < 0.01), whereas inactivity on Month 3 qualitative OCT was not (P > 0.05). Qualitative OCT inactivity at Month 5 and separately at Month 8 was associated with greater BCVA gains by Month 24 (7.1 and 9.5 letters, respectively; P ≤ 0.045) versus eyes with OCT activity.

CONCLUSION: When assessed separately, eyes with qualitative OCT (Months 5 and 8) or fundus fluorescein angiography (Months 3 and 5) inactivity maintained vision gain from baseline at Month 24, while those with leakage not only lost initial vision gains achieved by intraocular ranibizumab but also had net vision losses from baseline at Month 24. The PIER infrequent dosing regimen likely exaggerated and accelerated the deleterious effects of retinal fluid on BCVA, and it is not known whether these findings are applicable to treatment regimens that use more frequent monitoring and dosing of ranibizumab.

PMID: 23073338 [PubMed - as supplied by publisher]

BMJ Case Rep. 2012 Oct 12;2012. pii: bcr2012007128. doi: 10.1136/bcr-2012-007128.

Treatment of Stargardt disease with dobesilate.

Cuevas P, Outeiriño LA, Angulo J, Giménez-Gallego G.

Departamento de Investigación, IRYCIS, Hospital Universitario Ramón y Cajal, Madrid, Spain.

Abstract

Stargardt disease is a common inherited macular degeneration characterised by a significant loss in the central vision during the first or second decade of the life. Bilateral atrophic changes in the central retina are associated with degeneration of photoreceptors and underlying retinal pigment epithelium, and yellow flecks are extending from the macula. We present a patient with Stargardt disease treated with an intravitreal injection of dobesilate, showing an improvement of visual acuity 4 weeks after treatment.

PMID: 23076703 [PubMed - in process]

Other treatment & diagnosis

J Gene Med. 2012 Oct 18. doi: 10.1002/jgm.2678. [Epub ahead of print]

Reduction of choroidal neovascularization in mice by AAV-delivered anti-VEGF shRNA.

Askou AL, Pournaras JA, Pihlmann M, Svalgaard JD, Arsenijevic Y, Kostic C, Bek T, Dagnaes-Hansen F, Mikkelsen JG, Jensen TG, Corydon TJ.

Department of Biomedicine, Aarhus University, Denmark.

BACKGROUND: Strategies leading to long-term suppression of inappropriate ocular angiogenesis are required to avoid the need of repetitive monthly injections for treatment of diseases of the eye such as age-related macular degeneration (AMD). The aim of this study was to develop a strategy for sustained repression of vascular endothelial growth factor (VEGF), the molecule identified as the key player in exudative AMD.

METHODS: We have employed short hairpin RNAs (shRNAs) combined with adeno-associated virus (AAV) delivery to obtain targeted expression of potent gene-regulatory molecules. Anti-VEGF shRNAs were analyzed in human RPE cells using Renilla luciferase screening. For in vivo delivery of the most potent shRNA, self-complementary AAV vectors were packaged in serotype 8 capsids (scAAV2/8-hU6-sh9). In vivo efficacy was evaluated either by injection of scAAV2/8-hU6-sh9 into murine hindlimb muscles or in a laser-induced murine model of choroidal neovascularization (CNV) following scAAV2/8-hU6-sh9 subretinal delivery.

RESULTS: Plasmids encoding anti-VEGF shRNAs showed efficient knockdown of hVEGF in RPEs. Intramuscular administration led to localized expression and 91% knockdown of endogenous mVEGF. Subsequently the ability of AAV2/8-encoded shRNAs to impair vessel formation was evaluated in the murine model of CNV. In this model, sizes of the CNV were significantly reduced (up to 48%) following scAAV2/8-hU6-sh9 subretinal delivery.

CONCLUSIONS: Using anti-VEGF vectors we have demonstrated efficient silencing of endogenous mVEGF and showed that subretinal administration of scAAV2/8-hU6-sh9 has the ability to impair vessel formation in an AMD animal model. Thus AAV-encoded shRNA can be used for inhibition of neovascularization leading to development of sustained anti-VEGF therapy.

PMID: 23080553 [PubMed - as supplied by publisher]

Invest Ophthalmol Vis Sci. 2012 Oct 16. pii: iovs.12-10361v1. doi: 10.1167/iovs.12-10361. [Epub ahead of print]

The Relationship between Retinal Layer Thickness and the Visual Field in Early Age-Related Macular Degeneration.

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PURPOSE: To quantify and compare the structural and functional changes in subjects with early age-related macular degeneration (AMD), using spectral-domain optical coherence tomography (SD-OCT) and microperimetry.

Methods: Twenty-one eyes of 21 subjects with early AMD were examined. Nidek MP-1 10-2 visual fields (VFs) and SD-OCT (Heidelberg Spectralis) line and detail volume scans were acquired. The thicknesses of the outer segment (OS; distance between inner segment ellipsoid band and upper retinal pigment epithelium [RPE] border) and RPE layers and elevation of the RPE from Bruch's membrane were measured using a computer-aided manual segmentation technique. Thickness values were compared to those for 15 controls, and values at locations with VF total deviation defects were compared to values at non-defect locations at equivalent eccentricities.

RESULTS: Sixteen of 21 eyes with AMD, had VF defects. Compared to controls, line scans showed significant thinning of the OS layer (p=0.006) and thickening and elevation of the RPE (p=0.037, p=0.002). The OS layer was significantly thinner in locations with VF defects compared to locations without defects (p=0.003). There was a negligible difference between the retinal layer thickness values of the 5 eyes without VF defects and the values of normal controls.

Conclusions: In early AMD, when VF defects were present, there was significant thinning of the OS layer and thickening and elevation of the RPE. OS layer thinning was significantly associated with decreased visual sensitivity, consistent with known photoreceptor loss in early AMD. For AMD subjects without VF defects, thickness values were normal. The results highlight the clinical utility of both SD-OCT retinal layer quantification and VF testing in early AMD.

PMID: 23074210 [PubMed - as supplied by publisher]

Clin Experiment Ophthalmol. 2012 Oct 19. doi: 10.1111/ceo.12019. [Epub ahead of print]

Pre-clinical safety and stability study of a next generation telescope prosthesis for end-stage macular degeneration.

Rosen E, Sachs D, Eliahu SB, Assia EI, Kleinmann G.

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BACKGROUND: To assess the surgical procedure, safety and stability of a next generation (NG) injectable telescope prosthesis in rabbit model.

METHODS: After removal of the crystalline lenses of eight New Zealand White rabbits the NG device was randomly implanted in one eye and the available telescope prosthesis (Normal device), was implanted in the fellow eyes. Operative parameters (incision, capsulorrhexis size and operative time), intra and post-operative complications rates, endothelial cell density (ECD) changes and the distance between the corneal endothelium and the telescope (central clearance distance) were measured and compared between the groups.

RESULTS: Incision size and capsulorrhexis size were smaller, and operative time was shorter in the NG group in comparison with the Normal group. No difference was found in the intra and post-operative complication rates between the groups. ECD loss observed in the NG group was less than the loss in the Normal group, but the difference was not significant statistically. The central clearance distance was significantly larger in the NG group in comparison with the Normal group (P = 0.001).

CONCLUSIONS: The NG telescope implanted through a smaller incision, with a shorter surgical time and a larger central clearance distance in the rabbit eyes, in comparison with the Normal group. The NG device may allow reduced trauma to the corneal endothelium, better control during surgery and induce less astigmatism, while preserving the optical advantages of the FDA approved telescope prosthesis.

PMID: 23078123 [PubMed - as supplied by publisher]

Optom Vis Sci. 2012 Oct 12. [Epub ahead of print]

Retinally Induced Aniseikonia: A Case Series.

Rutstein RP.

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PURPOSE: To report the clinical findings for patients with binocular vision difficulties attributed to retinally induced aniseikonia.

METHODS: Clinical records of patients referred to the author and diagnosed with retinally induced aniseikonia from 2006 to 2012 were retrospectively reviewed.

RESULTS: Twelve patients with retinally induced aniseikonia attributed to epiretinal membrane, retinal

detachment surgical repair, or age-related macular degeneration are reported. Eleven patients were male. The age range was 44 to 76 years. Diplopia occurred in 10 patients, and prism lenses were prescribed for seven patients by their referring practitioner. The amount of aniseikonia measured using either the computerized Aniseikonia Inspector (visual field angle, ~ 14.5 degrees) or the New Aniseikonia Test (visual field angle, ~ 5.7 degrees) ranged from 1.7 to 11.3% and from 1.5 to 13.3% in the vertical and horizontal meridians, respectively. At other visual field angles, the amount of aniseikonia might have been different. Five patients perceived macropsia and seven patients perceived micropsia in the affected eye. Seven patients had measurable stereopsis. Use of Bangerter filters was the most frequent treatment modality. Detailed case reports on three patients are included.

CONCLUSIONS: Retinally induced aniseikonia is an increasingly important cause of binocular vision symptoms in the aging population. Long-term studies on its incidence, clinical course, and effect of treatment are needed.

PMID: 23069723 [PubMed - as supplied by publisher]

Theranostics. 2012;2(9):916-66. doi: 10.7150/thno.4571. Epub 2012 Oct 4.

Unique diagnostic and therapeutic roles of porphyrins and phthalocyanines in photodynamic therapy, imaging and theranostics.

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Abstract

Porphyrinic molecules have a unique theranostic role in disease therapy; they have been used to image, detect and treat different forms of diseased tissue including age-related macular degeneration and a number of different cancer types. Current focus is on the clinical imaging of tumour tissue; targeted delivery of photosensitisers and the potential of photosensitisers in multimodal biomedical theranostic nanoplatforms. The roles of porphyrinic molecules in imaging and pdt, along with research into improving their selective uptake in diseased tissue and their utility in theranostic applications are highlighted in this Review.

PMID: 23082103 [PubMed - in process]

Int Ophthalmol. 2012 Oct 18. [Epub ahead of print]

Choroidal neovascularization following laser in situ keratomileusis for high myopia: a case series.

Neo HY, Neelam K, Yip CC, Quah HM, Eong KG.

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Abstract

To report three patients who developed unilateral choroidal neovascularization (CNV) following laser in situ keratomileusis (LASIK) for high myopia. Retrospective chart reviews of three highly myopic patients who developed CNV following LASIK and who attended a tertiary care private practice were conducted. The clinical presentation of the patients was analyzed. All patients were treated with a combination of intravitreal ranibizumab and photodynamic therapy with verteporfin. Main outcome measures were clinical fundus appearance and best-corrected visual acuity (BCVA) after treatment. Two females and one male with a mean age of 34 ± 2.8 years underwent LASIK for high myopia in both eyes. The mean spherical equivalent was -11.42 diopters (D) (range -6.75 to -20.00). The mean time interval between LASIK and the

appearance of symptoms was 9.3 ± 8.5 weeks. One patient developed an extrafoveal CNV at the edge of a laser photocoagulation scar, one developed a subfoveal CNV and the third patient developed a juxtafoveal CNV. The mean BCVA at the time of CNV presentation was 0.44 logMAR (range 0.10-0.70 logMAR). Following treatment, the mean BCVA improved to 0.17 logMAR with complete resolution of CNV in two patients. CNV is a rare but potentially blinding complication following LASIK. Short-term good visual outcome can be achieved with timely intervention with current treatment modalities.

PMID: 23076454 [PubMed - as supplied by publisher]

Ophthalmologica. 2012 Oct 12. [Epub ahead of print]

Literature Review of Recombinant Tissue Plasminogen Activator Used for Recent-Onset Submacular Hemorrhage Displacement in Age-Related Macular Degeneration.

van Zeeburg EJ, van Meurs JC.

The Rotterdam Ophthalmic Institute, Rotterdam, The Netherlands.

Aims: To review and discuss the literature on recombinant tissue plasminogen activator (rtPA) for the treatment of a recent-onset submacular hemorrhage in patients with age-related macular degeneration.

Methods: The administration technique of rtPA, the use of additional gas and vascular endothelial growth factor inhibitors (anti-VEGF), and the displacement rate of submacular hemorrhage and complications were noted from published reports, and a case series from the Rotterdam Eye Hospital (REH).

Results: 38 studies with a total of 1,185 patients (1,176 eyes), and 28 patients from the REH were analyzed. Several methods for rtPA administration are available, which can be divided into two groups: submacular rtPA administration with vitrectomy; or intravitreal rtPA administration without vitrectomy. In both groups, the administration of gas and/or anti-VEGF agents could be additional. There appears to be no clear difference in complete displacement or complication rate between the more or the less invasive treatment groups.

Conclusion: Although intravitreal injection of rtPA and gas only was reported to be as effective as subretinal rtPA with vitrectomy and gas, recent studies tend to use vitrectomy. These data underscore the need for a randomized controlled trial to choose the most effective and safe method of rtPA administration.

PMID: 23075629 [PubMed - as supplied by publisher]

Eye (Lond). 2012 Oct 19. doi: 10.1038/eye.2012.207. [Epub ahead of print]

Alternative diagnosis for cases presented as vPED treated with high-dose ranibizumab.

Talks SJ, Gupta R, Browning A.

Department of Eye, Royal Victoria Infirmary, Newcastle upon Tyne, UK.

PMID: 23079757 [PubMed - as supplied by publisher]

Pathogenesis

Invest Ophthalmol Vis Sci. 2012 Oct 16. pii: iovs.12-10069v1. doi: 10.1167/iovs.12-10069. [Epub ahead of print]

A novel role of complement in retinal degeneration.

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Purpose: The association of single nucleotide polymorphisms of components of the complement alternative pathway with the risk of age-related macular degeneration (AMD) indicates that complement signaling plays an important role in retinal physiology. How genetic variation leads to retinal degeneration is unknown. It has been assumed that complement activation augments immune responses, which in turn initiate AMD pathogenesis. To better understand the relationship between complement and the outer retina, we examined mice lacking the main complement component C3 and the receptors for complement activation fragments C3a (C3aR) and/or C5a (C5aR).

Methods: Complement mutant mice were studied along with WT littermates from 6 weeks to 14 months of age. Strobe flash electroretinography (ERG) was used to examine outer retinal function and a dc-ERG technique was used to measure ERG components generated by the retinal pigment epithelium. Retinas were examined by histology, immunohistochemistry, and biochemistry.

Results: Mice lacking C3aR and/or C5aR developed early onset and progressive retinal degeneration, accompanied by cleaved caspase-3 up-regulation. Genetic deletion of C3aR and/or C5aR led to cell-specific defects that match the cellular localization of these receptors in the WT retina. Compared to WT, C3aR-/- and C3aR-/-C5aR-/- mice showed increased retinal dysfunction upon light exposure. C3aR-/-C5aR -/- mice immunized with 4-hydroxynonenal-adducted protein developed severe retinal impairment unrelated to immune response.

Conclusion: C3aR- and C5aR- mediated signaling are necessary to maintain normal retinal function and structure. These receptors may be important therapeutic targets for retinal degeneration including AMD.

PMID: 23074214 [PubMed - as supplied by publisher]

Invest Ophthalmol Vis Sci. 2012 Oct 16. pii: iovs.12-10650v1. doi: 10.1167/iovs.12-10650. [Epub ahead of print]

Ccl2/Cx3cr1 knock-out mice have inner retinal dysfunction but are not an accelerated model of age related macular degeneration.

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PURPOSE: The chemokine, Ccl2, and the fractalkine receptor, Cx3cr1, have both been implicated in the pathogenesis of age related macular degeneration (AMD), with mice lacking both genes exhibiting features of AMD by 3 months of age. However, recent reports indicate that this ascribed phenotype is due to the presence of a retinal degeneration mutation (crb1(rd8/rd8), rd8) on the background strain. Our aim was to characterise the retinal effects of lack of Ccl2 and Cx3cr1 (Ccl2(-/-)/Cx3cr1(EGFP/EGFP), CDKO-mice), in mice without the rd8 mutation.

Methods: Nine month old, CDKO- and wildtype C57blk6J-mice were investigated for retinal fundus appearance and histology. The function of the rod and cone pathways was assessed using the electroretinogram (ERG).

Results: The CDKO-mice did not develop lesions in the retinal fundus, and the ultrastructure of Bruch's membrane and the RPE were similar to that of C57blk6J-mice. From the ERG, there was no change in the amplitude of the rod photoreceptor response, or in the rod or cone post-photoreceptor b-wave. However, the rod and cone ERG oscillatory potentials were significantly reduced in the CDKO-animals, a phenotype apparent in Cx3cr1(EGFP/EGFP)- but not Ccl2(-/-)-founder lines. This correlated with aberrant amacrine

cell morphology in the CDKO-mice. In addition, the Müller cells were gliotic and microglial morphology subtly altered, indicative of retinal stress.

Conclusion: These results suggest that in the absence of the rd8 mutation, the CDKO-mouse has a mild inner retinal phenotype characterised by altered amacrine cell function, but that it is not an accelerated model of AMD.

PMID: 23074204 [PubMed - as supplied by publisher]

Invest Ophthalmol Vis Sci. 2012 Oct 18. pii: iovs.12-10793v1. doi: 10.1167/iovs.12-10793. [Epub ahead of print]

Protective effect of carnosic acid, a pro-electrophilic compound, in models of oxidative stress and light-induced retinal degeneration.

Rezaie T, McKercher SR, Kosaka K, Seki M, Wheeler L, Viswanath V, Chun T, Joshi R, Valencia M, Sasaki S, Tozawa T, Satoh T, Lipton SA.

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PURPOSE: The herb rosemary has been reported to have anti-oxidant and anti-inflammatory activity. We have previously shown that carnosic acid (CA), present in rosemary extract, crosses the blood-brain-barrier to exert neuroprotective effects by upregulating endogenous anti-oxidant enzymes via the Nrf2 transcriptional pathway. Here, we investigate the anti-oxidant and neuroprotective activity of CA in retinal cell lines exposed to oxidative stress and in a rat model of light-induced retinal degeneration (LIRD).

METHODS: Retinal-derived cell lines ARPE-19 and 661W treated with hydrogen peroxide were used as in vitro models for testing the protective activity of CA. For in vivo testing, dark adapted rats were given intraperitoneal injections of CA prior to exposure to white light to assess protection of the photoreceptor cells. Retinal damage was assessed by measuring outer nuclear layer thickness and ERG.

RESULTS: In vitro, CA significantly protected retinal-derived cell lines (ARPE-19 and 661W) against H2O2-induced toxicity. CA induced anti-oxidant, phase 2 enzymes and reduced formation of hyperoxidized peroxiredoxin (Prx)2. Similarly, we found that CA protected retinas in vivo from LIRD, producing significant improvement in outer nuclear layer (ONL) thickness and electroretinogram (ERG) activity.

CONCLUSIONS: These findings suggest that CA may potentially have clinical application to diseases affecting the outer retina, including age-related macular degeneration (AMD) and retinitis pigmentosa (RP), in which oxidative stress is thought to contribute to disease progression.

PMID: 23081978 [PubMed - as supplied by publisher]

Surv Ophthalmol. 2012 Nov;57(6):498-509. doi: 10.1016/j.survophthal.2012.01.011.

Vitreomacular adhesion and neovascular age-related macular degeneration.

Simpson AR, Petrarca R, Jackson TL.

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Abstract

We explore the hypothesis that vitreomacular adhesion (VMA) and vitreomacular traction (VMT) play a role in the pathogenesis and clinical course of neovascular ("wet") age-related macular degeneration (AMD). Several biological theories are offered to explain this possible association, including direct tractional force,

altered vitreous oxygenation, altered diffusion coefficients of intravitreal molecules, and alterations in the pharmacokinetics of intravitreal drugs. Release of VMT may improve the clinical course of neovascular AMD, and a few case series suggest that vitrectomy can lead to both a functional and anatomic improvement. A large, randomized, controlled clinical trial is underway, investigating pharmacologic release of VMA in eyes with neovascular AMD.

PMID: 23068973 [PubMed - in process]

J Diabetes Complications. 2012 Oct 10. pii: S1056-8727(12)00268-1. doi: 10.1016/j.jdiacomp.2012.09.001. [Epub ahead of print]

Serum Vascular Adhesion Protein-1 correlates with vascular endothelial growth factor in patients with type II diabetes.

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AIMS: To study serum levels of soluble vascular adhesion protein (sVAP)-1 in type II diabetic patients with retinopathy.

METHODS: Serum samples were obtained from 53 consecutive patients, including 14 cases with non-angiogenic ocular diseases, i.e., epiretinal membrane (ERM) and idiopathic macular hole (MH), 19 cases with age-related macular degeneration (AMD), and 20 cases with diabetic retinopathy (DR). Protein levels of sVAP-1, intercellular adhesion molecule (ICAM)-1, vascular cell adhesion molecule (VCAM)-1, and vascular endothelial growth factor (VEGF) were determined by enzyme-linked immunosorbent assay. Enzymatic activity of semicarbazide-sensitive amine oxidase (SSAO) was also measured.

RESULTS: Serum level of sVAP-1 showed a moderate correlation with SSAO activity in all cases. Patients with DR had higher levels of serum sVAP-1 than subjects with ERM and MH, or those with AMD; however, severity of DR is not related to the serum levels of sVAP-1. Serum sVAP-1 correlated positively with VEGF in patients with DR, but not in those with ERM and MH, or those with AMD. Neither soluble ICAM-1 nor VCAM-1 correlated with VEGF, even in subjects with DR.

CONCLUSION: The current data demonstrate the elevated serum levels of sVAP-1 and correlation between sVAP-1 and VEGF in patients with type II diabetes.

PMID: 23062326 [PubMed - as supplied by publisher]

Epidemiology

Curr Eye Res. 2012 Oct 18. [Epub ahead of print]

Medical Record Validation of Self-Reported Eye Diseases and Eye Care Utilization among Older Adults.

Maclennan PA, McGwin G Jr, Searcey K, Owsley C.

Department of Surgery.

Purpose: Vision impairment is an important public health concern. Accurate information regarding visual health and eye care utilization is essential to monitor trends and inform health policy interventions aimed at addressing at-need populations. National surveys provide annual prevalence estimates but rely on self-report. The validity of self-reported information regarding eye disease has not been adequately explored.

Methods: This cross-sectional study compared self-report of eye care utilization and eye disease with information obtained from medical records. The study population was 2001 adults aged 70 years and older who completed the Behavioral Risk Factor Surveillance System's Visual Impairment and Access to Eye Care Module. Cohen's kappa (κ) was used to assess agreement.

Results: Agreement between self-report and medical records was substantial for eye care utilization (κ = 0.64) and glaucoma (κ = 0.73), moderate for macular degeneration (κ = 0.40) and diabetic retinopathy (κ = 0.47) and slight for cataracts (κ = 0.18). Self-report tended to overestimate the number of subjects who visited an eye care provider in the previous year, and underestimated the prevalence in all but one (glaucoma) of the four eye diseases evaluated.

Conclusions: Though agreement was substantial for self-report of eye care utilization, results of the current study suggest that national estimates based on self-report overestimate eye care utilization.

PMID: 23078191 [PubMed - as supplied by publisher]

Diabet Med. 2012 Oct 17. doi: 10.1111/dme.12053. [Epub ahead of print]

Frequency and risk factors of non-retinopathy ocular conditions in people with diabetes: the Singapore Malay Eye Study.

Chiang PP, Lamoureux EL, Zheng Y, Tay WT, Mitchell P, Wang JJ, Wong TY.

Singapore Eye Research Institute, Singapore National Eye Centre, Singapore.

AIM: To investigate the frequency and risk factors of non-retinopathy ocular conditions in persons with diabetes.

METHODS: A population-based cross-sectional study of 3176 Malay persons aged between 40 and 79 years in Singapore was conducted. Cataract, glaucoma, refractive errors, age-related macular degeneration, dry eye, epiretinal membrane, ocular hypertension and retinal conditions were assessed based on standardized interviews, clinical examinations and laboratory investigations.

RESULTS: A total of 768 participants (24.2%) had diabetes. People with diabetes were more likely to have cortical cataract (52.1 vs. 37.3%, P < 0.001), ocular hypertension (10.9 vs. 7.4%, P = 0.002) and epiretinal membrane (17.2 vs. 10.1%, P < 0.001) compared with those without diabetes. The odds of having cortical cataract (odds ratio 1.63, 95% CI 1.20-2.20) and epiretinal membrane (among those with previous cataract surgery: odds ratio 1.63, 95% CI 1.20-2.20) were significantly higher in people with diabetes compared with those without. The population attributable risks for cortical cataract and epiretinal membrane because of diabetes were 8.7 and 9.0%, respectively. In persons with diabetes, hypertension and high cholesterol were the major risk factors associated with non-retinopathy eye complications such as ocular hypertension (odds ratio 1.18, 95% CI 1.04-1.33) and retinal emboli (odds ratio 1.99, 95% CI 1.05-3.80).

CONCLUSION: Our results allow clinicians to better inform patients with diabetes that they are more likely to have cortical cataract and epiretinal membranes (those with previous cataract surgery) in addition to diabetic retinopathy. Two modifiable risk factors-blood pressure and cholesterol associated with ocular hypertension and retinal emboli, respectively-are also risk factors for non-retinopathy ocular conditions in persons with diabetes. © 2012 The Authors. Diabetic Medicine © 2012 Diabetes UK.

PMID: 23074990 [PubMed - as supplied by publisher]

Genetics

Clin Experiment Ophthalmol. 2012 Oct 19. doi: 10.1111/ceo.12020. [Epub ahead of print]

Establishment and evolution of the Australian Inherited Retinal Disease Register and DNA Bank.

De Roach JN, McLaren TL, Paterson RL, O'Brien EC, Hoffmann L, Mackey DA, Hewitt AW, Lamey IM.

Australian Inherited Retinal Disease Register and DNA Bank, Department of Medical Technology and Physics, Sir Charles Gairdner Hospital, Perth, WA, Australia.

BACKGROUND: Inherited retinal disease (IRD) represents a significant cause of blindness and visual morbidity worldwide. With the development of emerging molecular technologies, accessible and well-governed repositories of data characterising IRD patients is becoming increasingly important. This manuscript introduces such a repository.

DESIGN: Participants were recruited by circulation of the Retina Australia membership, by canvassing the Australian membership of RANZCO, and by recruitment of suitable patients attending the SCGH visual electrophysiology clinic.

PARTICIPANTS: 4193 participants were recruited. All participants were members of families in which the proband was diagnosed with an IRD. Exclusion criteria included a diagnosis of age-related macular degeneration.

METHODS: Clinical and family information was collected by interview with the participant and by examination of medical records. In 2001, we began collecting DNA from Western Australian participants. In 2009 this activity was extended Australia-wide. Genetic analysis results were stored in the register as they were obtained.

MAIN OUTCOME MEASURES: The main outcome measurement was the number of DNA samples (with associated phenotypic information) collected from Australian IRD-affected families.

RESULTS: DNA was obtained from 2873 participants. 61.0% of affected participants had a diagnosis of retinitis pigmentosa, whilst Stargardt disease and Usher syndrome participants comprised 9.9% and 6.4% of the register, respectively.

CONCLUSIONS: This national resource is now a valuable tool for investigating the aetiology of inherited retinal diseases. As new molecular technologies are translated into clinical applications, this well-governed repository of clinical and genetic information will become increasingly relevant for tasks such as identifying candidates for gene-specific clinical trials.

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Diet

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Resveratrol Mitigates Rat Retinal Ischemic Injury: The Roles of Matrix Metalloproteinase-9, Inducible Nitric Oxide, and Heme Oxygenase-1.

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Abstract Purpose: Retinal ischemia-associated ocular disorders, such as retinal occlusive disorders, neovascular age-related macular degeneration, proliferative diabetic retinopathy, and glaucoma are vision-

threatening. In this study, we examined whether and by what mechanisms resveratrol, a polyphenol found in red wine, is able to protect against retinal ischemia/reperfusion injury.

Methods: In vivo rat retinal ischemia was induced by high intraocular pressure (HIOP), namely, 120 mmHg for 60 min. The mechanism and management was evaluated by electroretinogram (ERG) b-wave amplitudes measurement, immunohistochemistry, and real-time polymerase chain reaction.

Results: The HIOP-induced retinal ischemic changes were characterized by a decrease in ERG b-wave amplitudes, a loss of choline acetyltransferase immunolabeling of amacrine cell bodies/neuronal processes, and increased vimentin immunoreactivity, which is a marker of Müller cells, together with upregulation of matrix metalloproteinase-9 (MMP-9), heme oxygenase-1 (HO-1), and inducible nitric oxide (iNOS), and downregulation of Thy-1, both at the mRNA level. The detrimental effects due to the ischemia were concentration-dependent (weaker effect at 0.05 nmole) and/or significantly (at 0.5 nmole) altered when resveratrol was applied 15 min before or after retina ischemia.

Conclusion: This study supports the hypothesis that resveratrol may be able to protect the retina against ischemia by downregulation of MMP-9 and iNOS, and upregulation of HO-1.

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