Drug treatment


Macular morphology and visual acuity in year five of the comparison of age-related macular degeneration treatments trials (CATT).

Jaffe GJ, Ying GS, Toth CA, Daniel E, Grunwald JE, Martin DF, Maguire MG; Comparison of Age-related Macular Degeneration Treatments Trials Research Group.

Objective: To evaluate associations of morphologic features with 5-year visual acuity (VA) in the Comparison of Age-related Macular Degeneration (AMD) Treatments Trials (CATT).

Design: Cohort study within a randomized clinical trial.

Participants: Participants in CATT.

Methods: Eyes with AMD-associated choroidal neovascularization (CNV) and VA between 20/25 and 20/320 were eligible. Treatment was assigned randomly to ranibizumab or bevacizumab and to 3 dosing regimens for 2 years and was at the ophthalmologists’ discretion thereafter.

Main Outcome Methods: VA; thickness and morphological features on optical coherence tomography; lesion size and foveal composition on fundus photography and fluorescein angiography.

Results: VA and image gradings were available for 523 of 914 (57%) participants alive at 5 years. At 5 years, 60% of eyes had intraretinal fluid (IRF), 38% had subretinal fluid (SRF), 36% had sub-retinal pigment epithelium (RPE) fluid, and 66% had subretinal hyper-reflective material (SHRM). Mean (SD) foveal center thickness (μm) was 148 (99) for retina, 5 (21) for SRF, 125 (107) for subretinal tissue complex, 11 (33) for SHRM, and 103 (95) for RPE+RPE elevation. SHRM, thinner retina, greater CNV lesion area and foveal center pathology (all p<0.001) and IRF (p<0.05), were independently associated with worse VA. Adjusted mean VA letters was 62 for no pathology in the foveal center, 61 for CNV, fluid, or hemorrhage, 64 for non-geographic atrophy (GA), 64 for non-fibrotic scar, 53 for GA, and 56 for fibrotic scar. Incidence or worsening of eight pathological features (foveal GA, foveal scar, foveal CNV, SHRM, foveal IRF, retinal thinning, CNV lesion area, and GA area) between years 2 and 5 were independently associated with greater loss of VA from year 2 to 5, and VA loss from baseline to year 5.

Conclusions: Associations between VA and morphologic features previously identified through year 1 were maintained or strengthened at year 5. New foveal scar, CNV, intraretinal fluid, SHRM and retinal thinning, development or worsening of foveal GA, and increased lesion size, are important contributors to the VA decline from year 2 to 5. A significant need to develop therapies to address these adverse pathological
Features remains.

PMID: 30189282 DOI: 10.1016/j.ophtha.2018.08.035


The role of anti-vascular endothelial growth factor (anti-VEGF) in the management of proliferative diabetic retinopathy.

Zhao Y, Singh RP.

Abstract: Diabetes is a major cause of visual impairment among working-age adults in the United States. The proliferative form of diabetic retinopathy is associated with severe vision loss (acuity <5/200). The standard treatment in proliferative diabetic retinopathy (PDR) is panretinal photocoagulation (PRP), which is effective but has established side effects such as peripheral visual-field constraints. Vascular endothelial growth factor (VEGF) is thought to drive the process of vascular proliferation. Drugs targeting VEGF (anti-VEGF) have been studied extensively in diabetic macular edema (DME), and results have shown that diabetic retinopathy regresses with anti-VEGF treatment. Recent studies show that anti-VEGF is not inferior to PRP for PDR while treatment is maintained, though recurrence rate when anti-VEGF treatment is stopped is unclear. In vitreous hemorrhage where PRP cannot be performed, use of anti-VEGF medications can treat underlying PDR and delay or reduce need for vitrectomy. Limitations of anti-VEGF treatment, however, require careful patient selection and monitoring. This review discusses recent clinical trials and guidelines for anti-VEGF use in PDR.

PMID: 30181760 PMCID: PMC6113746 DOI: 10.7573/dic.212532

Rambam Maimonides Med J. 2018 Sep 2:1-6. [Epub ahead of print]

Causative pathogens in endophthalmitis after intravitreal injection of anti-vascular endothelial growth factor agents.

Labardini CP, Blumenthal EZ.

Abstract: Intravitreal injection of anti-vascular endothelial growth factor is currently the preferred treatment for several posterior segment diseases, including age-related macular degeneration and diabetic retinopathy, as well as macular edema and retinal vein occlusion. As an invasive procedure it involves risks. The most significant risk is infectious endophthalmitis, a sight-threatening and even a globe-threatening acute fulminant condition. Most common pathogens include Streptococcus and Staphylococcus species, surprisingly originating from the patient's, surgeon's, or nurse's mouth. Infectious endophthalmitis may have devastating and irreversible effect, with Streptococcus-induced cases having the worst visual outcome. It is therefore crucial for clinicians to promptly recognize and treat such conditions, and, far more important, to put in place protective and preventive measures against this rare, but sight-threatening complication. To that end, this paper describes the most common pathogens causing endophthalmitis after IVI of anti-VEGF, and defines their source, to aid the physician in developing strategies to prevent this catastrophic infection.

PMID: 30180932 DOI: 10.5041/RMMJ.10348


The use of vascular endothelial growth factor inhibitors and complementary treatment options in polypoidal choroidal vasculopathy: a subtype of neovascular age-related macular degeneration.

Teo KYC, Gillies M, Fraser-Bell S.
Abstract: Polypoidal choroidal vasculopathy (PCV) is a subtype of neovascular age-related macular degeneration (AMD; nAMD) which occurs more commonly in Asian populations as compared to Caucasians. PCV and nAMD share pathological mechanisms, including pathological expression of vascular endothelial growth factor (VEGF). The advent of anti-vascular endothelial growth factor (VEGF) revolutionized the treatment of nAMD. Despite being a subtype of nAMD, PCV responds less well to VEGF inhibitors; thus, photodynamic therapy (PDT) in combination with anti-VEGF treatment may be considered. This review aims to summarize the current evidence for the treatment of PCV, especially whether VEGF inhibitors should be used alone or in combination with PDT.

PMID: 30177632 DOI: 10.3390/ijms19092611

Other treatment and diagnosis


Review of clinical approaches in fluorescence lifetime imaging ophthalmoscopy.

Sauer L, Andersen KM, Dysli C, Zinkernagel MS, Bernstein PS, Hammer M.

Abstract: Autofluorescence-based imaging techniques have become very important in the ophthalmological field. Being noninvasive and very sensitive, they are broadly used in clinical routines. Conventional autofluorescence intensity imaging is largely influenced by the strong fluorescence of lipofuscin, a fluorophore that can be found at the level of the retinal pigment epithelium. However, different endogenous retinal fluorophores can be altered in various diseases. Fluorescence lifetime imaging ophthalmoscopy (FLIO) is an imaging modality to investigate the autofluorescence of the human fundus in vivo. It expands the level of information, as an addition to investigating the fluorescence intensity, and autofluorescence lifetimes are captured. The Heidelberg Engineering Spectralis-based fluorescence lifetime imaging ophthalmoscope is used to investigate a 30-deg retinal field centered at the fovea. It detects FAF decays in short [498 to 560 nm, short spectral channel (SSC) and long (560 to 720 nm, long spectral channel (LSC)] spectral channels, the mean fluorescence lifetimes ($\tau_m$) are calculated using bi- or triexponential approaches. These are meant to be relatively independent of the fluorophore's intensity; therefore, fluorophores with less intense fluorescence can be detected. As an example, FLIO detects the fluorescence of macular pigment, retinal carotenoids that help protect the human fundus from light damages. Furthermore, FLIO is able to detect changes related to various retinal diseases, such as age-related macular degeneration, albinism, Alzheimer's disease, diabetic retinopathy, macular telangiectasia type 2, retinitis pigmentosa, and Stargardt disease. Some of these changes can already be found in healthy eyes and may indicate a risk to developing such diseases. Other changes in already affected eyes seem to indicate disease progression. This review article focuses on providing detailed information on the clinical findings of FLIO. This technique detects not only structural changes at very early stages but also metabolic and disease-related alterations. Therefore, it is a very promising tool that might soon be used for early diagnostics.

PMID: 30182580 DOI: 10.1117/1.JBO.23.9.091415


Variable response of subretinal hyperreflective material to anti-vascular endothelial growth factor classified with optical coherence tomography angiography.

Maruyama-Inoue M, Sato S, Yamane S, Kadonosono K.

Purpose: To evaluate the prognosis and response of neovascular age-related macular degeneration (AMD) to anti-vascular endothelial growth factor (VEGF), according to the components of subretinal hyperreflective material (SHRM) classified using optical coherence tomography angiography (OCTA), is the aim of this
study.

Methods: We retrospectively studied 39 eyes of 39 consecutive patients with SHRM associated with exudative AMD, who underwent standard examination and multimodal imaging, including fundus photography, optical coherence tomography (OCT), and OCTA. We classified SHRM into type 2 neovascularization (NV), fibrosis, subretinal hyperreflective exudation (SHE), and hemorrhage using OCTA. If compound SHRM was found, components in the foveal center were considered. All patients except one with fibrosis received anti-VEGF treatment for more than 12 months. The best-corrected visual acuity (BCVA) values measured before treatment and at 3, 6, and 12 months after the first injection were compared according to the components of SHRM.

Results: Using OCTA, 11 eyes with type 2 NV showed abnormal blood flow and 1 eye with fibrosis showed strong surface projection. Both SHE and hemorrhage components showed projection artifact with no intrinsic flow. However, OCTA enabled eyes with SHE (17 eyes) to be distinguished from those with hemorrhage (10 eyes) because hemorrhage showed masking of choriocapillaris flow. Eyes with SHE showed a significant improvement in the mean logMAR BCVA as compared with the value at the baseline, which was sustained throughout the 12-month follow-up period (p < 0.05). In eyes with type 2 NV and hemorrhage, no significant difference in the mean BCVA values was observed at any follow-up time-point (all, p > 0.05).

Conclusion: OCTA was useful to noninvasively distinguish SHRM components. It may be important to consider the components of SHRM to predict the visual acuity in patients with AMD.

PMID: 30173338 DOI: 10.1007/s00417-018-4121-7

Pathogenesis


Amount of mononuclear phagocyte infiltrate does not predict area of experimental choroidal neovascularization (CNV).


Purpose: Mononuclear phagocytes (MNPs) are present in neovascular age-related macular degeneration (nv AMD) which is also called choroidal neovascularization (CNV). The number and phenotype of the MNPs depend upon the local environment in the CNV and effect of nv AMD therapy. We investigated ocular cell infiltration and conditions that modulate angiogenesis in a laser-induced mouse CNV model.

Methods: We developed assays to quantify MNPs in our established mouse CNV model. One MNP assay quantified the number of subretinal cells peripheral to the CNV lesions. A second assay semiquantitatively assesses the number of MNPs localized to the CNV lesion. We used these assays to measure the effect of toll-like receptor-2 (TLR-2) activation, anti-vascular endothelial growth factor (VEGF) therapy, and chemokine (C-C motif) ligand 2 (Ccl2) genetic deletion on MNP infiltration after laser injury.

Results: Laser injury induced blood vessel growth and infiltration of MNPs. Systemic administration of a TLR-2 activating peptide increased laser-induced CNV area, MNP cell numbers, and MNP density over the CNV lesions. Systemic administration of a VEGF antibody reduced CNV area, while Ccl2 genetic deletion increased CNV area. Despite the change in amount of angiogenesis, MNP infiltration was, surprisingly, unchanged in these 2 conditions.

Conclusions: MNP quantification provides biological insights for candidate AMD therapies. The number of infiltrating MNP cells does not correlate with the amount of laser-induced CNV area.

PMID: 30188257 DOI: 10.1089/jop.2017.0131
Imidazole compounds for protecting choroidal endothelial cells from complement injury.


Abstract: Age-related macular degeneration (AMD) is a common, blinding disease associated with increased complement system activity. Eyes with AMD show elevated accumulation of the membrane attack complex (MAC) in the choriocapillaris and degeneration of macular choriocapillaris endothelial cells (ECs). Thus, one could reasonably conclude that the endothelial cell death that occurs in AMD is due to injury by the MAC. We therefore sought to identify strategies for protecting ECs against MAC lysis. RF/6A endothelial cells were pre-incubated with a library of FDA-approved small molecules, followed by incubation with complement intact human serum quantification of cell death. Two closely related molecules identified in the screen, econazole nitrate and miconazole nitrate, were followed in validation and mechanistic studies. Both compounds reduced lysis of choroidal ECs treated with complement-intact serum, across a range of doses from 1 to 100 µM. Cell rescue was confirmed in mouse primary choroidal ECs. Both exosome release and cell surface roughness (assessed using a Holomonitor system) were reduced by drug pretreatment in RF/6A cells, whereas endosome formation increased with both drugs, consistent with imidazole-mediated alterations of cell surface dynamics. The results in the current study provide further proof of principle that small molecules can protect choroidal ECs from MAC-induced cell death and suggest that FDA approved compounds may be beneficial in reducing vascular loss and progression of AMD.

PMID: 30190604 DOI: 10.1038/s41598-018-31846-z

Impaired monocyte cholesterol clearance initiates age-related retinal degeneration and vision loss.


Abstract: Advanced age-related macular degeneration (AMD), the leading cause of blindness among people over 50 years of age, is characterized by atrophic neurodegeneration or pathologic angiogenesis. Early AMD is characterized by extracellular cholesterol-rich deposits underneath the retinal pigment epithelium (RPE) called drusen or in the subretinal space called subretinal drusenoid deposits (SDD) that drive disease progression. However, mechanisms of drusen and SDD biogenesis remain poorly understood. Although human AMD is characterized by abnormalities in cholesterol homeostasis and shares phenotypic features with atherosclerosis, it is unclear whether systemic immunity or local tissue metabolism regulates this homeostasis. Here, we demonstrate that targeted deletion of macrophage cholesterol ABC transporters A1 (ABCA1) and -G1 (ABCG1) leads to age-associated extracellular cholesterol-rich deposits underneath the neurosensory retina similar to SDD seen in early human AMD. These mice also develop impaired dark adaptation, a cardinal feature of RPE cell dysfunction seen in human AMD patients even before central vision is affected. Subretinal deposits in these mice progressively worsen with age, with concomitant accumulation of cholesterol metabolites including several oxysterols and cholesterol esters causing lipotoxicity that manifests as photoreceptor dysfunction and neurodegeneration. These findings suggest that impaired macrophage cholesterol transport initiates several key elements of early human AMD, demonstrating the importance of systemic immunity and aging in promoting disease manifestation. Polymorphisms in genes involved with cholesterol transport and homeostasis are associated with a significantly higher risk of developing AMD, thus making these studies translationally relevant by identifying potential targets for therapy.

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Protective effect of melatonin against oxidative stress-induced apoptosis and enhanced autophagy

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in human retinal pigment epithelium cells.

Chang CC, Huang TY, Chen HY, Huang TC, Lin LC, Chang YJ, Hsia SM.

Abstract: Age-related macular degeneration (AMD) affects the retinal macula and results in loss of vision, and AMD is the primary cause of blindness and severe visual impairment among elderly people worldwide. AMD is characterized by the accumulation of drusen in the Bruch's membrane and dysfunction of retinal pigment epithelial (RPE) cells and photoreceptors. The pathogenesis of AMD remains unclear, and no effective treatment exists. Accumulating evidence indicates that oxidative stress plays a critical role in RPE cell degeneration and AMD. Melatonin is an antioxidant that scavenges free radicals, and it has anti-inflammatory, antitumor, and antiangiogenic effects. This study investigated the antioxidative, antiapoptotic, and autophagic effects of melatonin on oxidative damage to RPE cells. We used hydrogen peroxide (H2O2) to stimulate reactive oxygen species production to cause cell apoptosis in ARPE-19 cell lines. Our findings revealed that treatment with melatonin significantly inhibited H2O2-induced RPE cell damage, decreased the apoptotic rate, increased the mitochondrial membrane potential, and increased the autophagy effect. Furthermore, melatonin reduced the Bax/Bcl-2 ratio and the expression levels of the apoptosis-associated proteins cytochrome c and caspase 7. Additionally, melatonin upregulated the expression of the autophagy-related proteins LC3-II and Beclin-1 and downregulated the expression of p62. Thus, melatonin's effects on autophagy and apoptosis can protect against H2O2-induced oxidative damage in human RPE cells. Melatonin may have multiple protective effects on human RPE cells against H2O2-induced oxidative damage.

PMID: 30174783 PMCID: PMC6098907 DOI: 10.1155/2018/9015765


Metabolic signature of the aging eye in mice.


Abstract: Aging is a major risk factor for age-related ocular diseases including age-related macular degeneration in the retina and retinal pigment epithelium (RPE), cataracts in the lens, glaucoma in the optic nerve, and dry eye syndrome in the cornea. We used targeted metabolomics to analyze metabolites from young (6 weeks) and old (73 weeks) eyes in C57 BL6/J mice. Old mice had diminished electroretinogram responses and decreased number of photoreceptors in their retinas. Among the 297 detected metabolites, 45-114 metabolites are significantly altered in aged eye tissues, mostly in the neuronal tissues (retina and optic nerve) and less in cornea, RPE/choroid, and lens. We noted that changes of metabolites in mitochondrial metabolism and glucose metabolism are common features in the aged retina, RPE/choroid, and optic nerve. The aging retina, cornea, and optic nerve also share similar changes in Nicotinamide adenine dinucleotide (NAD), 1-methylnicotinamides, 3-methylhistidine, and other methylated metabolites. Metabolites in taurine metabolism are strikingly influenced by aging in the cornea and lens. In conclusion, the aging eye has both common and tissue-specific metabolic signatures. These changes may be attributed to dysregulated mitochondrial metabolism, reprogrammed glucose metabolism and impaired methylation in the aging eye. Our findings provide biochemical insights into the mechanisms of age-related ocular changes.

PMID: 30172221 DOI: 10.1016/j.neurobiolaging.2018.07.024


Oxidative stress induces ferroptotic cell death in retinal pigment epithelial cells.

Totsuka K, Ueta T, Uchida T, et al.

Abstract: The dysfunction and cell death of retinal pigment epithelial (RPE) cells are hallmarks of late-stage
dry (atrophic) age-related macular degeneration (AMD), for which no effective therapy has yet been
developed. Previous studies have indicated that iron accumulation is a source of excess free radical
production in RPE, and age-dependent iron accumulation in RPE is accelerated in patients with dry AMD.
Although the pathogenic role of oxidative stress in RPE in the development of dry AMD is widely accepted,
the mechanisms of oxidative stress-induced RPE cell death remain elusive. Here, we show that ferroptotic
cell death, a mode of regulated necrosis mediated by iron and lipid peroxidation, is implicated in oxidative
stress-induced RPE cell death in vitro. In ARPE-19 cells we observed that the ferroptosis inhibitors
ferrostatin-1 and deferoxamine (DFO) rescued tert-butyl hydroperoxide (tBH)-induced RPE cell death more
effectively than inhibitors of apoptosis or necroptosis. tBH-induced RPE cell death was accompanied by the
three characteristics of ferroptotic cell death: lipid peroxidation, glutathione depletion, and ferrous iron
accumulation, which were all significantly attenuated by ferrostatin-1 and DFO. Exogenous iron overload
enhanced tBH-induced RPE cell death, but this effect was also attenuated by ferrostatin-1 and DFO.
Furthermore, mRNA levels of numerous genes known to regulate iron metabolism were observed to be
influenced by oxidative stress. Taken together, our observations suggest that multiple modes of cell death
are involved in oxidative stress-induced RPE cell death, with ferroptosis playing a particularly important
role.

PMID: 30171859 DOI: 10.1016/j.exer.2018.08.019

Epidemiology

Int Arch Occup Environ Health. 2018 Sep 6. [Epub ahead of print]

Macular degeneration and occupational risk factors: a systematic review.

Modenese A, Gobba F.

Purpose: Macular degeneration is a multi-factorial disease, leading cause of blindness for people over 50
years old in developed countries. To date, the knowledge on possible occupational factors involved in the
development of the disease is scant.

Methods: We performed a systematic scientific literature search on the association between macular
degeneration and occupational risk factors searching the MedLine and Scopus databases.

Results: We examined 158 articles and, according to the inclusion criteria, 13 peer-reviewed studies
evaluating occupational risk factors for macular degeneration or reporting the frequency of the disease in
specific groups of workers were included in the review. Ten on thirteen articles evaluated the presence of
macular degeneration in workers exposed to solar radiation. Only one study found that non-specific history
of occupational chemical exposure was associated with the disease. Two studies showed an association
between macular degeneration and the general category of "blue-collar" workers, but they did not identify
the specific risk factors involved.

Conclusions: To date few studies have examined occupational risk factors for macular degeneration.
Nevertheless, available data indicate that long-term occupational solar radiation exposure, in particular for
its blue-light component, is associated with macular degeneration in outdoor workers.

PMID: 30191305 DOI: 10.1007/s00420-018-1355-y


Purpose: To report the results of a survey conducted among retina specialists in the Asia-Pacific region on
real-life practice patterns in the management of vitreoretinal diseases.

**Design:** Prospective study.

**Methods:** In 2016 and 2017, a link was sent to 1400 retinal specialists across the Asia-Pacific region by email, which directed to a web-based questionnaire (Google forms or Survey Monkey) with secure confidential access. The study had institutional review board approval. Answers to some of the common questions were compared with the 2016 American Society of Retina Specialists domestic and global trends.

**Results:** The surveys of 2016 and 2017 received 539 (38.5%) and 200 (14.3%) responses, respectively, across the Asia-Pacific region. Of the respondents, 85% practiced combined medical and surgical retina. The survey indicated that ranibizumab was the drug of choice (41% of respondents) in the management of wet age-related macular degeneration. In the management of polypoidal choroidal vasculopathy, both combination of verteporfin photodynamic therapy (vPDT) and anti-vascular endothelial growth factor (VEGF) (n = 59%) and intravitreal aflibercept monotherapy (n = 53%) were preferred. Anti-VEGF treatment remained the first choice for center-involving diabetic macular edema (DME) (n = 78%) and switch to dexamethasone implant in nonresponding DME was preferred after 2-3 anti-VEGF injections (n = 53%).

**Conclusions:** The survey revealed information that may be close to real-world practices and could be of help to understand the transformation of global trends and practices due to evolving evidence and technologies.

PMID: 30188025 DOI: 10.22608/APO.2018136

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**Genetics and gene therapy**

*Genet Test Mol Biomarkers. 2018 Sep 4. [Epub ahead of print]*

**Association between complement factor C2/C3/CFB/CFH polymorphisms and age-related macular degeneration: a meta-analysis.**


**Background:** Several previous studies assessed the contribution of polymorphisms in genes encoding the complement factors C2/C3/CFB/CFH to the risk of age-related macular degeneration (AMD), although the results were inconsistent. In this study, we conducted a meta-analysis to systematically review the potential association between complement factor polymorphisms and AMD.

**Methods:** Studies that investigated associations between C2 (rs547154 and rs9332739), C3 (rs1047286), CFB (rs4151667 and rs641153), and CFH (rs551397 and rs2274700) polymorphisms and AMD were identified by searching PubMed, EMBASE, Web of Science, and Cochrane Library databases for articles published before January 1, 2018. Odds ratios (ORs) and 95% confidence intervals (95% CIs) were calculated to evaluate the association between polymorphisms and AMD using Stata 12.0 software. Q and I² statistics were used to evaluate between-study heterogeneity. Publication bias analyses were conducted using Begg’s test. We also conducted an ethnic subgroup analysis.

**Results:** A total of 53 studies that included data for 53,774 patients and 56,973 healthy controls were evaluated. The pooled ORs for rs551397, rs2274700, rs4151667, rs641153, rs1047286, rs9332739, and rs547154 in the heterozygote model were 0.53 (95% CI: 0.45-0.61), 0.53 (95% CI: 0.40-0.70), 0.54 (95% CI: 0.46-0.63), 0.48 (95% CI: 0.4-0.57), 1.42 (95% CI: 1.22-1.66), 0.5 (95% CI: 0.43-0.62), and 0.52 (95% CI: 0.43-0.62), respectively.

**Conclusion:** Our findings from this analysis confirmed the protective role of C2/CFB/CFH polymorphisms in the development of AMD, but showed that the single-nucleotide polymorphism in C3 was a high-risk factor for AMD. The racial analysis results suggested that the effect of variant alleles was stronger in Caucasians than Asians.
Case Reports


Effect of intravitreal dexamethasone on macular edema in von Hippel-Lindau disease assessed using swept-source optical coherence tomography: a case report.

Minnella AM, Pagliei V, Maceroni M, Federici M, Gambini G, Caporossi A.

Background: Von Hippel-Lindau disease is a rare hereditary syndrome caused by germinal mutations in a von Hippel-Lindau tumor-suppressing gene. Retinal hemangioblastoma is the ocular hallmark lesion of von Hippel-Lindau disease.

Case Presentation: A 20-year-old Caucasian woman presented to our institution with painless visual impairment in the right eye. A fundus ophthalmoscopic evaluation and swept-source optical coherence tomographic examination revealed a retinal hemangioblastoma associated with cystoid macular edema. On the basis of the clinical ocular findings and genetic analysis, von Hippel-Lindau disease was diagnosed. Following an intravitreal injection of ranibizumab, off-label administration of intravitreal dexamethasone was considered to reduce the edema. An almost complete resolution of the edema in the macular area was observed 1 week after the injection. Finally, laser photocoagulation and transconjunctival cryotherapy were performed; the patient developed "ablatio fugax" after cryotherapy.

Conclusions: In our experience, intravitreal dexamethasone administration has proven to be a useful tool for reducing retinal hemangioblastoma-related macular edema in von Hippel-Lindau disease and may be considered a potentially valuable treatment that can be used in combination with other therapies.

PMID: 30185211 DOI: 10.1186/s13256-018-1787-8


Macular cytomegalovirus retinitis following dexamethasone intravitreal implant combined with phacoemulsification.

Dogra M, Rohilla V, Dogra M, Singh R.

Abstract: A 60-year-old diabetic patient, who had undergone a renal transplant 2 years earlier, presented with sudden decrease in vision in his left eye (LE). He had undergone phacoemulsification combined with intravitreal dexamethasone implant injection in his LE 2 months earlier, for coexistent cataract and diabetic macular edema. Examination revealed necrotizing retinitis with hemorrhages in the macula. A diagnosis of cytomegalovirus retinitis was made, which was confirmed on vitreous polymerase chain reaction. Intravitreal and systemic ganciclovir led to the resolution of retinitis and improvement of visual acuity over a follow-up of 9 months.

PMID: 30127173 PMCID: PMC6113845 DOI: 10.4103/ijo.IJO_171_18

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