Journal of Clinical & Experimental Ophthalmology

Nayak et al. J Clinic Experiment Ophthalmol 2011, S:10
DOI: 10.4172/2155-9570.S10-001

Review Article Open Access

Salient Features of New Therapies in Ophthalmology

Swati Srabani Nayak[1]*, Sridevi Kadali[2] and Shalini B[3]

[1]Department of Bioscience and Biotechnology, Fakir MohanUniversity, Balasore, Orissa
[2]Department of Micro Biology, Andhra University,Vizag, Andhra Pradesh
[3]Department of Biotechnology, GITAM University, Vizag, Andhra Pradesh

Abstract

This review gives the information regarding the therapies that are used against ophthalmological disorders and along with that it helps us to update ourselves to know more about the salient features of the therapies, drugs and diagnosis methodologies. This review also shares information regarding the various eye related diseases like substantial changes in corneal structure, glaucoma, cataract and age-related macular degeneration and many other and along with that the remedial therapies like Refractive laser surgery, in Polypoidal Choroidal Vasculopathy (PCV), Ranibizumab and Panretinal laser photocoagulation etc.

Keywords: Rebound tonometer; Povidone Iodine; Bevacizumab; Ranibizumab; Olopatadine

Introduction

Ophthalmology [1] is the branch of medicine that deals with the anatomy, physiology and diseases of the eye. The word *ophthalmology* comes from the Greek roots *ophthalmos* meaning *eye* and *logos* meaning *word*, *thought,* or *discourse*; ophthalmology literally means "the science of eyes". "Opthomology" is a common mis-hearing or mis-remembering of the term. As a discipline, it applies to animal eyes also, since the differences from human practice are surprisingly minor and are related mainly to differences in anatomy or prevalence, not differences in disease processes. However, veterinary medicine is regulated separately in many countries and states/provinces resulting in few ophthalmologists treating both humans and animals.

Therapies in Ophthalmology

A case study taking 5 patients suggests that systemic immune suppression with 2 or more agents may be helpful to prevent corneal graft rejection [2] in high-risk patients.

Refractive laser surgery [3] induces substantial changes in corneal structure, causing inaccurate intraocular pressure (IOP) readings. Pascal dynamic contour tonometry (PDCT) and I care rebound tonometer (RBT) are two novel devices that do not depend on applanation to measure IOP. A prospective study was done to compare PDCT and rebound tonometry versus Goldman tonometry (GAT) in a group of patients who underwent photorefractive keratectomy (PRK). PDCT and RBT are less dependent on iatrogenic corneal changes than GAT and this might be related to their small contact area. In order to minimize IOP underestimation after excimer laser surgery, the clinician should consider adopting non-applanation tonometers like RBT and PDCT as an alternative to GAT.

Although glaucoma is a leading cause of blindness worldwide, yet there are no large databases where risk factors, current management options and outcomes may be evaluated. With this concept in mind, Dallas Glaucoma Registry [4] was established to focus on an ethnically mixed North Texas population. Large numbers of patients in the ongoing Dallas Glaucoma Registry do provide adequate data to better understand risk factors, early detection, improved screening targets, treatment options, outcomes and future studies.

A case study was done to evaluate the choroidal thickness changes in the eyes with myopic choroidal neovascularization [5] (mCNV) after Intravitreal Injection of Bevacizumab (IVB). Subfoveal and temporal choroidal thinning is transiently observed. IVB may affect the choroidal circulation in such myopic eyes as with thin choroid.

To increase awareness and emphasize clinically relevant management issues for patients with Familial Mediterranean fever (FMF) [6] presenting with ocular inflammation and other ocular symptoms. Ophthalmologists are encouraged to report more cases of eye symptoms in FMF patients to elucidate the panorama of ocular pathologies associated with FMF. Objective verification of a recurrence of FMF attacks at first visit is recommended and appropriate samples should be taken. It is also worth noting that eye manifestations in FMF patients may occur during systemic prophylactic treatment.

Ischemic retinopathies may cause neovascular glaucoma due to the growth of fibrovascular tissues which may close the anterior chamber angle and increase intraocular pressure. Angiogenesis factors, such as Vascular Endothelial Growth Factor (VEGF) [7], play a fundamental role in the development and maintenance of these diseases. Adequate intraocular pressure control was observed after Bevacizumab injection as well as regression of anterior and posterior segment neovascularization, and maintenance of visual acuity. In the present case, the treatment of neovascular glaucoma with Intravitreal Bevacizumab was effective for long-term intraocular pressure control although repeated injections were necessary.

Due to the increasing proportion of elderly citizens the need for cataract surgery is expected to increase markedly within the next two decades but also the indication level for cataract surgery will influence the need for surgery. During the time period from 2002 to 2010 the indication for cataract surgery [8,36] changed towards patients being operated at better visual acuities and at younger ages. In the same time period, there was an increase in life expectancy by 2 years. Expectedly, the need for surgery will increase dramatically not only because of an

***Corresponding author:** Swati Srabani Nayak, Department of Bioscience and Biotechnology, Fakir MohanUniversity, Balasore, Orissa, Email: swati_srabani@omicsonline.org

Received April 19, 2011; **Accepted** June 03, 2011; **Published** June 05, 2011

Citation: Swati Srabani N, Sridevi K, Shalini B (2011) Salient Features of New Therapies in Ophthalmology. J Clinic Experiment Ophthalmol S10:001. doi:10.4172/2155-9570.S10-001

increased proportion of elderly citizens but also because of a tendency towards surgery earlier in the disease process.

A case report was taken of 46-year-old Hispanic man with a history of retinal detachment (RD) in the left eye presented ten years later with worsening superior field visual defect due to inferior serous RD in the right eye. Choroidal and ciliary body detachments were present. A diagnosis of Olopatadine Idiopathic Uveal Effusion Syndrome (IUES) [9,43] was made after exclusion of other etiologies, and he underwent placement of sclera windows. Absence of vortex veins was noted intra-operatively. Histological analysis of the sclera specimen showed abnormal arrangement of collagen fibrils with the deposition of Glycosoaminoglycan (GAG). His vision gradually improved postoperatively, and the retina completely attached within four months.

A research was done to investigate the levels of Tumor Necrosis Factor-α (TNF-α) and Interleukin-6 (IL-6) [10,32] in the aqueous humor and plasma of human eyes with primary open-angle glaucoma, (POAG) and to correlate their concentrations with the severity of glaucoma. TNF-α and IL-6 levels were significantly higher in aqueous humor of POAG patients with respect to the comparative group of cataract patients ($P<0.001$). No significant difference in the levels of TNF-α and IL-6 in plasma of POAG and cataract patients. A positive correlation was found between TNF-α and IL-6 in aqueous humor of POAG patients ($P<0.001$). Significant correlation was found between TNF-α or IL-6 levels and severity of visual field loss in moderate stage ($P<0.001$). Increased levels of TNF-α and IL-6 aqueous humor may be associated with POAG. In addition, TNF-α and IL-6 may be useful pro inflammatory cytokines levels in aqueous humor of POAG patients. TNF-α and IL-6 concentrations in aqueous humor are significant with visual field loss in patients with POAG.

A research was done to clarify the association of *complement factor H (CFH)* gene polymorphisms with the effects of photodynamic therapy (PDT) in Polypoidal Choroidal Vasculopathy (PCV) [11,41,36,45]. The genotype and allelic frequency of rs1061170 (Y402H) and rs1410996 were significantly different between PDT responders and non-responders. In these SNPs, the risk alleles for PCV prevalence were beneficial for PDT response. In the time course analysis, the cases with C/C genotype in rs1410996 showed a significant increase of mean visual acuity at 6 and 12 months after the first PDT. The coding variants in *CFH* may be associated with the effects of PDT in PCV.

A research was done to evaluate the efficacy of vitreous surgery for high myopic eyes with Myopic Traction Maculopathy, and the result showed that Vitrectomy and ILM peeling[12,38] with Gas Tamponade leads to resolution of MTM and good visual improvement.

A case report including of 132 patients suggested that Povidone Iodine (Videne®) [13] is safe for preoperative disinfection in ocular surgery.

Radiation maculopathy is a major cause of vision loss after Brachytherapy or localized radiation treatments. According to a case report of a patient with bilateral radiation maculopathy and macular edema treated with Ranibizumab and Panretinal laser photocoagulation [14]. Vision loss from radiation maculopathy can be successfully treated with off-label Ranibizumab in the short term. However, visual improvement is limited by macular ischemia, which had a larger effect on final visual acuity than reductions in CST, TCV, or CAT. Our study and others suggest that larger clinical trials to determine the dose, timing, and duration of Ranibizumab treatment could benefit patients with Radiation Maculopathy.

A research was done to evaluate the efficacy of intra operative sub-conjunctival injection of Bevacizumab as an adjunct régime to Trabeculectomy for the treatment of refractory glaucoma, and the result showed that Trabeculectomy with Intraoperative Sub-conjunctival injection[15,30] of Bevacizumab may offer a useful option for improving the outcome of filtering bleb in refractory glaucoma.

A research was done to examine the effect of Recombinant Baculovirus expressed human tumstatin protein on the corneal neovascularization in the *in-vitro*, *in-vivo* alkaline induced burn of corneal neovascularization models and the result showed that Recombinant tumstatin protein[16,41] significantly inhibited corneal neovascularization both *in-vitro* and *in-vivo*. Compared with saline treated corneal neovascularization in control mice, expression of VEGF was significantly inhibited in tumstatin treated mice. These results demonstrate that tumstatin may be a useful Endogenous Angioinhibitor for the treatment of endovascular related corneal diseases.

A research was done to evaluate the clinical and histological side effects of a prototype stereotactic radiotherapy system delivering microcollimated external beam radiation through pars plana in porcine eyes. Histological and gross changes to eye structures including conjunctiva and lens were minimal at all doses. Fundus, FA, and SD-OCT of the targeted region failed to disclose any abnormality in the control or 21 Gy treated animals. In the 42 and 60 Gy animals, hypopigmented spots were noted after treatment on clinical exam, and corresponding hyper fluorescent staining was seen in late frames. The research resulted that no evidence of choroidal hypo perfusion was seen. The histological specimens from the 60 Gy animals showed photoreceptor loss and displacement of cone nuclei. Transcleral Stereotactic [17] radiation dosing in porcine eyes can be accomplished with no significant adverse events as doses less than 42 Gy.

An experiment was done to show that the classic Knapp procedure [18] when used for treatment of monocular elevation deficiency may not correct it completely especially when associated with pseudoptosis and to suggest a treatment option. The result showed that after Knapp procedure, hypotropia was moderately improved and pseudoptosis appeared worse in three of the five patients. On the other hand, a good lid height and an improvement in hypotropia were achieved after resecting the contra lateral inferior rectus muscle for all patients.

An experiment was done to investigate the modification effect of ocular vitreous matrix gel on Bevacizumab activity [19]. Experiment results demonstrated for the first time the inhibitory proteomic modification or disruption of Bevacizumab molecule by native vitreous protein matrix. The effects were probably enzymatic modifications of Bevacizumab molecules in vitreous, rather than simple diffusional or imbibitional loss of Bevacizumab into the retina. The implication of this vitreal modification of Bevacizumab molecule should not be underestimated as it may carry important clinical bearing on the actual pharmacodynamic therapeutic effect of Bevacizumab at choroidal vascular tissue level.

A case study was done to analyze the mid-term effect of filtering surgery in patients with Corticosteroid –Induced Glaucoma [20,40]. This case-series study consisted of 20 eyes of 15 corticosteroid-induced glaucoma patients who received trabeculectomy or non-penetrating trabecular surgery (NPTS) from March 2005 to March 2008. Both preoperative and postoperative intraocular pressure (IOP), cup –disk ratio, Humphrey visual fields, number of glaucoma medications were recorded, and finally the result showed that the mid-term glaucoma

management in CIG patients undergoing surgery indicated a successful outcome in final IOP and fairly good prognosis for visual function, without ant glaucoma medication.

An experiment was done to evaluate Intravitreal 0.5 mg Ranibizumab [21,43] plus laser with 0.3 mg pegaptanib plus laser with focal/ grid laser alone for treatment of diabetic macular edema (DME), the result showed that Ranibizumab and Pegaptanib with prompt focal/grid laser proved to be more effective than prompt focal/grid laser alone in treatment of center involved DME. There was no statistical difference in the visual gain achieved in the two intravitreal groups.

An experiment was done on a 14-year-old male patient with Graves' orbitopathy presented with a downward gaze restriction in the left eye. Magnetic resonance imaging (MRI) revealed an edematous left superior rectus muscle. Retrobulbar injection of triamcinolone acetonide [22,44] (20 mg) was administered in the left orbit. However, edema was still evident in the left superior rectus muscle on MRI, 3 months after the injection, and new inflammation was detected in bilateral inferior rectus muscles. The patient then underwent three cycles of steroid pulse therapy (1 cycle: methylprednisolone 10 mg/ kg/ day × 3 days). One week after the steroid pulse therapy, eye movement was improved and the inflammation in the left superior rectus muscle and the bilateral inferior rectus muscles subsided on MRI. However, the patient noticed diplopia during upward gaze 2 months later, and MRI showed recurrence of edematous changes in bilateral inferior rectus muscles. The patient was treated with the same protocol of steroid pulse therapy. One month after the second steroid pulse therapy, ocular motility was improved and the inflammation in both inferior rectus muscles had almost resolved. This case illustrates the detailed clinical course of edematous extraocular myopathy in a pediatric Graves' orbitopathy patient, followed-up by successive MRI.

A research was done to study the feasibility and efficacy of removal of the subluxated lens and sclera fixation of a foldable intraocular lens on top of the decentered preserved capsular bag, the result showed that combined sulcus and scleral fixation of Foldable Intraocular [23] is a safe and effective method. This technique of keeping the decentered bag attached to the stretched zonules will prevent IOL tilt and avoid working on the vitreous with its known complications. Scleral fixation of the foldable IOL guarantees the long term stability and gets the benefits of small incision surgery.

An experiment was performed to evaluate efficacy and safety of combined Intravitreal Triamcinolone Acetonide (IVTA) [24,82] injection plus Panretinal Photocoagulation (PRP) in comparison with PRP in proliferative diabetic retinopathy (PDR), the result was IVTA injection is a relatively safe method which might have prophylactic role against visual acuity exacerbation and macular edema secondary to PRP in PDR eyes.

A survey was done to assess the safety and efficacy of treating patients with macular edema secondary to Central Retinal Vein Occlusion (CRVO), Hemiretinal Vein Occlusion (HRVO) or Branch Retinal Vein Occlusion (BRVO) with Intravitreal Bevacizumab (Avastin®) [25]. Results of Intravitreal Avastin® in BRVO and CRVO cases appears promising, they were superior to BVOS and CVOS results and comparable with BRAVO and CRUISE study (using intravitreal ranibizumab). However, large prospective randomized control trial is necessary to evaluate the safety and efficacy of Intravitreal Avastin®.

A survey was done on 50 eyes to evaluate the efficacy of Intraoperative Sub-Conjunctival injection of Bevacizumab as an adjunct regiem to trabeculectomy for the treatment of refractory glaucoma, and the result was that Trabeculectomy [26] with intraoperative sub-conjunctival injection of bevacizumab may offer a useful option for improving the outcome of filtering bleb in refractory glaucoma.

An experiment was done to evaluate Intravitreal 0.5 mg Ranibizumab plus laser with 0.3 mg Pegaptanib plus laser with focal/ grid laser alone for treatment of diabetic macular edema (DME). The result showed that Ranibizumab and Pegaptanib [27] with prompt focal/grid laser proved to be more effective than prompt focal/grid laser alone in treatment of center involved DME. There was no statistical difference in the visual gain achieved in the two intravitreal groups.

An experiment was done to evaluate the efficacy and safety of Intravitreal injection [28] of Bevacizumab without laser as primary therapy in patients with threshold disease in difficulties or lack of facilities for laser as Al Qassim region, the results revealed that Intravitreal injection of Bevacizumab is an easy, safe and effective modality of therapy for threshold disease ROP especially in presence of difficulties for laser photocoagulation.

A survey was done to evaluate safety, efficacy and tolerability of 0.1% and 0.05% Cyclosporine A eye drops in Mexican children with Steroid Dependent Vernal Keratoconjunctivitis., results revealed that Cyclosporine A in aqueous solution was safe and effective in both concentrations. Topical 0.1% Cyclosporine was better than topical 0.05% Cyclosporine for improving signs and symptoms of Vernal Keratoconjunctivitis patients [29]. Tolerability was equal for both groups. Cyclosporine treatment also allowed the cessation of topical steroid treatment.

The monoclonal antibodies can selectively target specific molecules, proteins or receptors in the body responsible for pathogenesis of a particular disorder. Some cytokines play key role in the development of proliferative diabetic retinopathy, neovascular age related macular degeneration, glaucoma and many other inflammatory conditions of eye. Monoclonal antibodies against VEGF and TNF-alpha such as Bevacizumab, Ranibizumab, Infliximab and Adalimumab [46] have been used to control Neovascularization and inflammation in eye with significant positive results whereas others have been used to target CD20, CD52, CD11a, and IL-2. The growing interest in these drugs with current progress in biotechnology and genetic engineering has kindled active research and with more understanding of the molecular basis of many ocular disorders these antibodies are being explored in a variety of different pathological conditions of the eye. Various sight threatening serious eye disorders which are resistant to the conventional available therapy have responded favorably to these drugs. Despite the limitations of high cost and uncertainty around long term safety profile, rational use of the monoclonal antibodies holds immense promise in management of various ocular conditions.

A survey was done to determine whether prolonged vascular endothelial growth factor inhibition is toxic to the retina by using pattern Electroretinographic imaging in participants with neovascular age-related macular degeneration (AMD). This survey found no decrease in P50 and N95 amplitudes in participants treated with Ranibizumab [47] for neovascular AMD. These findings indicate that vascular endothelial growth factor inhibition with monthly injections of Ranibizumab for 6 months likely does not lead to retinal damage.

Numerous randomized clinical trials have demonstrated the safety and efficacy of ranibizumab for the treatment of nAMD. Bevacizumab [48,85], developed, labeled and approved for the management of colorectal cancer, has been used off-label for the management of nAMD. However, given its lower cost and effectiveness, it is commonly

used for many cases of nAMD. Recent clinical trials have demonstrated similar effectiveness between the two compounds in terms of visual acuity and central macular thickness. However, emerging data have suggested that these two compounds may have different ocular and systemic adverse event profiles; bevacizumab has been linked to both a higher risk of severe intraocular inflammation and a higher risk of incident arterial thromboembolic events. This incremental risk for both ocular and systemic adverse events may have an impact on the incremental cost-effectiveness ratio derived from health economic models that directly compare one anti-vascular endothelial growth factor (VEGF) compound to the other.

An experiment was performed to analyze whether topical application of corticosteroids inhibits inflammatory corneal Lymphangiogenesis and to study the potential underlying Antilymphangiogenic mechanisms. Corticosteroids [49,78,67,55] are strong inhibitors of inflammatory corneal Lymphangiogenesis, with significant differences between various corticosteroids in terms of their Antilymphangiogenic potency. The main mechanism of the Antilymphangiogenic effect seems to be through the suppression of macrophage infiltration, Proinflammatory cytokine expression, and direct inhibition of proliferation of lymphatic endothelial cells.

An experiment was done to demonstrate superiority of Ranibizumab 0.5 mg monotherapy or combined with laser over laser alone based on mean average change in best-corrected visual acuity (BCVA) over 12 months in Diabetic Macular Edema (DME) [50,67,65,74]. Ranibizumab monotherapy and combined with laser provided superior visual acuity gain over standard laser in patients with visual impairment due to DME. Visual acuity gains were associated with significant gains in VFQ-25 scores. At 1 year, no differences were detected between the ranibizumab and Ranibizumab + laser arms. Ranibizumab monotherapy and combined with laser had a safety profile in DME similar to that in age-related macular degeneration.

A survey was done to evaluate the effect of low-fluency Photodynamic Therapy (PDT) [51,69,70] on central retinal sensitivity and fixation stability as compared with standard-fluency PDT for treating chronic central serous chorioretinopathy (CSC). The study shows a significant improvement in macular sensitivity after PDT in eyes with chronic CSC, with greater efficacy in low-fluency-treated eyes. Microperimetry data suggest that low-fluency PDT may be a good treatment option in patients with chronic CSC.

Tacrolimus (FK506) [52] has been used successfully as a systemic Immunomodulator for more than 2 decades, and numerous studies have investigated its mechanisms of action. Systemic and topical tacrolimus have been investigated as treatments for ocular surface disorders that may have an immune-based inflammatory component. In these studies, tacrolimus has shown efficacy in corneal graft rejection, inflammatory conjunctival and corneal diseases, uveitis, and graft-versus-host disease. As these disorders are often refractory to other available treatments, ophthalmic or systemic tacrolimus is a welcome nontoxic adjunct or replacement to potentially toxic topical or systemic immunosuppressive therapies.

Large drusen is a known risk factor for the development of late complications of Age-related Macular Degeneration (AMD) [53] and Drusen reduction has been found by our previous study. A case study was done taking 10 persons to prospectively evaluate the efficacy and safety of prophylactic laser treatment in Chinese patients with bilateral soft drusen, where we examined the structure and function of the macula 8 years after treatment. No choroidal neovascularization was seen in the laser-treated eyes or control eyes. The treatment was associated with a reduction in retinal pigment epithelium thickness elevation compared with the contra lateral eyes. Macular function was not impaired.

A case report of recurrent Choroidal Neovascularization (CNV) [54] in an eye with chorioretinal coloboma of a 36 year old woman is presented. Funduscopy and fluorescein angiography (FA) showed CNV in the superior extrafoveal region with chorioretinal coloboma reaching just inferior to the optic disc. No other cause for CNV was observed except for the chorioretinal coloboma. BCVA improved to 20/30 after laser photocoagulation. Photodynamic therapy (PDT) was followed by three consecutive Intravitreal bevacizumab injections (IVB) for the subfoveally-located CNV. However, the CNV persisted with the appearance of a fresh subretinal hemorrhage. Additional PDT was combined with IVB on the same day 6 months after the initial PDT. The CNV regressed 3 months after treatment and has not recurred as of 8 months after the last treatment. This case suggests that PDT combined with IVB can be an alternative treatment for the management of recurrent CNV after laser photocoagulation in eyes with chorioretinal coloboma.

A survey was done to report long-term results of Intravitreal (IVT) Bevacizumab [55] as first local treatment for Choroidal Neovascularization (CNV) secondary to uveitis. Fifteen eyes from fifteen patients were included, results depicted that,First-intention IVT bevacizumab for inflammatory CNV showed transient improvement in BCVA and CFT, in eyes under controlled inflammation. Reinjection was needed in most cases. Further work should conclude about safety related to repeated injections.

Ultraviolet (UV) lasers have the capability to precisely remove tissue via ablation; however, due to strong absorption of the applicable portion the UV spectrum, their surgical use is currently limited to extra ocular applications at the air/tissue boundary. A survey was done and it reports a method for delivering the fifth (213 nm) and fourth (266 nm) harmonics of a Nd:YAG [56] laser to the surface of immersed tissue, the reliability and stability of the system has been characterized, and proof of concept via tissue ablation of porcine ocular tissue demonstrates the potential for the intraocular surgical application of this technique.

Allergic conjunctivitis was a chronic inflammatory disease, usually associated with rhinitis. Several modalities of treatment were available, but few studies mentioned of immunotherapy which might had benefits in chronic and severe cases. LCIT [57] treatment significantly reduced CPT scores which indicated that the patients were able to tolerate the antigen better than their counterparts. However, LCIT alone at short period did not alleviate symptoms and signs of allergic conjunctivitis from multiple allergens.

A survey reports clinical outcomes of the treatment of ocular Demodex folliculorum with oral Ivermectin. Ivermectin [58] successfully reduced the number of D. folliculorum found in the lashes of patients with refractory blepharitis. Oral Ivermectin may be very useful as a complement in the treatment of D. folliculorum infestation with ocular manifestation, especially in cases of unsuccessful treatment related to patient compliance.

A survey was done to evaluate the effect of systemic Oxygen Therapy [59] in the management of acute ocular chemical and thermal burns result showed that in the acute phase of ocular chemical or thermal burns, oxygen therapy improves limbal ischemia, accelerates epithelialization, increases corneal transparency, and decreases Corneal Vascularization. It also may improve visual acuity and reduce complications.

An experiment was done to establish a novel, targeted lent virus-based HSV-tk (herpes simplex virus thymidine kinase)/GCV (ganciclovir) [60] gene therapy system to inhibit lens epithelial cell proliferation for treatment of posterior capsular opacification (PCO) after cataract surgery. The enhanced specific lent viral vector combination selectively and effectively expressed HSV-tk in HLECs. A concentration of 20 μg/ml, GCV is effective against the proliferation of HLECs in vitro. This cell-type-specific gene therapy using a Cre/loxP lent virus system may be a feasible treatment strategy to prevent PCO.

An experiment was done to determine the benefit of early addition of corticosteroids to antibiotics in the treatment of corneal ulcers. No benefit was demonstrated in the primary outcome for using steroids in combination with antibiotic therapy in treatment of corneal ulcers. This experiment suggests that the early addition of Steroids [61,71,73] to the antibiotic treatment of corneal ulcers does not seem to be harmful when employed in a closely monitored clinical setting.

An experiment was done to evaluate the safety and efficacy of topical diclofenac sodium 0.1% after femtosecond laser-assisted Laser in situ Keratomileusis (LASIK) [62]. The experiment enrolled 100 eyes of 50 patients, result depicted that pain after femtosecond laser-assisted LASIK was mild and was reduced with a single dose of topical diclofenac sodium 0.1% given immediately after surgery.

An experiment was done to evaluate the effectiveness of pre-seasonal treatment with topical Olopatadine [63]on the reduction of clinical symptoms of seasonal allergic conjunctivitis (SAC), the result depicted that at the onset of allergy symptoms, and the VAS score in the pretreatment eyes was statistically significantly lower than that in the control eyes. The VAS score in the control eyes decreased with time but did not decrease to the level seen in the pretreatment eyes until four weeks later, finally to suppress clinical symptoms in patients with SAC, pre-seasonal treatment with topical Olopatadine is effective. The effectiveness of treatment correlates with the tear level of substance.

Conclusion

This review addresses on recent advances in therapeutic options for a variety of eye diseases including glaucoma, cataract , age-related macular degeneration, allergic conjunctivitis ,choroidal neovascularizationa are in leading forum for the sharing and learning about new drugs and exciting new therapeutic approaches in the field of Opthalmalogy. These advances combined with improved understanding of disease processes through genomics, therapeutics & diagnostic instruments offer the prospect of treatment and prevention of these disorders that will be more powerful, yielding fewer side effects than ever before.

References

1. http://en.wikipedia.org/wiki/Ophthalmology
2. Nguyen P, Barte F, Shinada S, Yiu SC (2010) Management of Corneal Graft Rejection – A Case Series Report and Review of the Literature. J Clinic Experiment Ophthalmol 1:103.
3. Michele V, Anna M, Paolo F, Giuseppina C, Paolo T, et al. (2010) Intraocular Pressure Measurement after Photorefractive Keratectomy : Does Contact Area Matter? J Clinic Experiment Ophthalmol 1:102.
4. Kooner KS, Joseph A, Shar A, Marquardt FA, AlBdoor M, et al. (2011) Dallas Glaucoma Registry: Preliminary Results. J Clinic Experiment Ophthalmol 2:164.
5. Sayanagi K, Jo Y, Ikuno Y (2011) Transient Choroidal Thinning after Intravitreal Bevacizumab Injection for Myopic Choroidal Neovascularization. J Clinic Experiment Ophthalmol 2:165.
6. Wonneberger W, Friman V, Zetterberg M (2011) Unilateral Anterior Uveitis and Amaurosis Fugax in a Patient with Familial Mediterranean Fever. J Clinic Experiment Ophthalmol 2:168.
7. Paula JS, Shinsato RN, Queiroz WS, Ribeiro JAS, Jorge R (2011) Longterm Intraocular Pressure Control in a Case of Neovascular Glaucoma Treated with Repeated Intravitreal Bevacizumab Injections. J Clinic Experiment Ophthalmol 2:170.
8. Kessel L, Haargaard B, Boberg-Ans G, Henning V (2011) Time Trends in Indication for Cataract Surgery. J Clinic Experiment Ophthalmol 2:174.
9. Bhagat N, Tu Y, Zarbin MA (2011) A Case of Vortex Vein Aplasia and Recurrent Idiopathic Uveal Effusion Syndrome. J Clinic Experiment Ophthalmol 2:116.
10. Ghanem AA, Arafa LF, Elewa AM (2010) Tumor Necrosis Factor-α and Interleukin-6 Levels in Patients with Primary Open-Angle Glaucoma. J Clinic Experiment Ophthalmol 1:118.
11. Bessho H, Honda S, Kondo N, Nishimura K, Negi A (2011) Positive Association of Complement Factor H Gene Variants with the Effect of Photodynamic Therapy in Polypoidal Choroidal Vasculopathy. J Clinic Experiment Ophthalmol 2:122.
12. Lashay A, Abdollahi A, Sadabadi HR, Namavari A, Mirsahi A (2011) Vitrectomy and Gas Tamponade with Internal Limiting Membrane Peeling for Myopic Tractional Maculopathy. J Clinic Experiment Ophthalmol 2:123.
13. Papanikolaou T, Islam T,Hashim A, Mariatos G (2011) Tolerability and Safety Profile of Povidone Iodine in Pre-Operative Skin and Eye Disinfection Prior to Intraocular Surgery. J Clinic Experiment Ophthalmol 2:125.
14. Yuan A, Singh RP (2011) Radiation Maculopathy Treated with Ranibizumab. J Clinic Experiment Ophthalmol 2:129.
15. Ghanem AA (2011) Trabeculectomy with or without Intraoperative Subconjunctival Injection of Bevacizumab in Treating Refractory Glaucoma. J Clinic Experiment Ophthalmol 2:131.
16. Gunda V, Wang S, Sheibani N, Sudhakar A (2011) Inhibitory Effect of Tumstatin on Corneal Neovascularization Both *In-vitro* and *In-vivo*. J Clinic Experiment Ophthalmol 2:132.
17. Singh RP, Shusterman M, Moshfeghi D, Gardiner T, Gertner M (2011) Evaluation of Microcollimated Pars Plana External Beam Radiation in the Porcine Eye. J Clinic Experiment Ophthalmol 2:134.
18. Samir A, Hakim O (2011) A New Approach for Management of Monocular Elevation Deficiency. J Clinic Experiment Ophthalmol 2:136.
19. Liu DT, Xu L, Pang C, Lam DS, Yam GH (2011) Disruption of Bevacizumab (Avastin) Activity by Vitreous Matrix Gel. J Clinic Experiment Ophthalmol 2:140.
20. Fu J, Mou DP, Li SN, Wang XZ, Hao L, et al. (2011) Mid-Term Results of Filtering Surgery in Corticosteroid-Induced Glaucoma Patients. J Clinic Experiment Ophthalmol 2:142.
21. Atul K, Saptorshi M, Azad RV, Raj SY, Parijat C, et al. (2011) Comparative Evaluation of Pan Anti-VEGF with Selective Anti-VEGF with Laser for Diabetic Macular Edema in Indian Eyes: A Randomized Prospective Study. J Clinic Experiment Ophthalmol 2:143.
22. Kakizaki H, Takahashi Y, Ichinose A, Iwaki M (2011) Clinical Course of a Pediatric Graves' Extraocular Myopathy Patient Followed-up by Magnetic Resonance Imaging. J Clinic Experiment Ophthalmol 2:144.
23. Samir A, Gad AM (2011) Sulcus Suture Fixation of a Foldable IOL over Preserved Capsule for Managing Lens Subluxation in Marfan's syndrom. J Clinic Experiment Ophthalmol 2:145.
24. Faghihi H, Mirshahi A, Shenazandi H, Iashay A, Abdollahian M, et al. (2011) Intravitreal Triamcinolone Injection as an Adjuvant to Standard Laser Therapy in Management of Proliferative Diabetic Retinopathy. J Clinic Experiment Ophthalmol 2:149.
25. Chan WM, Tang EWH, Li WWT (2011) A Retrospective Case series to assess the Safety and Efficacy of Bevacizumab (Avastin®) in the Treatment of Macular Edema secondary to Retinal Vein Occlusion. J Clinic Experiment Ophthalmol 2:150.
26. Ghanem AA (2011) Trabeculectomy with or without Intraoperative Subconjunctival Injection of Bevacizumab in Treating Refractory Glaucoma. J Clinic Experiment Ophthalmol 2:131.
27. Atul K, Saptorshi M, Azad RV, Raj SY, Parijat C, et al. (2011) Comparative

Evaluation of Pan Anti-VEGF with Selective Anti-VEGF with Laser for Diabetic Macular Edema in Indian Eyes: A Randomized Prospective Study. J Clinic Experiment Ophthalmol 2:143.

28. Salman AG (2010) Intravitreal Bevacizumab Injection as a Primary Therapy for Threshold Disease (ROP) in Al Qassim Region. J Clinic Experiment Ophthalmol 1:113.
29. Baiza-Duran LM, González-Villegas AC, Contreras-Rubio Y, Juarez- Echenique JC, Vizzuett-Lopez IV, et al. (2010) Safety and Efficacy of Topical 0.1% And 0.05% Cyclosporine A in an Aqueous Solution in Steroid-Dependent Vernal Keratoconjunctivitis in a Population of Mexican Children. J Clinic Experiment Ophthalmol 1:115.
30. Chen M (2010) A Study to Compare Single Piece IOL (SN60WF) Vs. Multipiece IOL (MA30AC) in Accommodation Using Cycloplegic Auto Refraction. J Clinic Experiment Ophthalmol 1:111.
31. Turgut B, Kaya M, Coskun S, Aydemir O, Deniz N (2010) Ocular Hemodynamic Response to Intravitreal Pegaptanib in Eyes with Exudative Age-Related Macular Degeneration. J Clinic Experiment Ophthalmol 1:109.
32. Salman AG (2010) Value of Fresh Amniotic Membrane Graft in Management of Resistant Non Infected Corneal Ulcer. J Clinic Experiment Ophthalmol 1:108.
33. Rossi GCM, Pasinetti GM, Briola A, Bianchi PE (2010) Effect of Glaucoma Medications on Quality of Life Examined by Generic and Vision Specific Instruments. J Clinic Experiment Ophthalmol 1:106.
34. Michele V, Anna M, Paolo F, Giuseppina C, Paolo T, et al. (2010) Intraocular Pressure Measurement after Photorefractive Keratectomy : Does Contact Area Matter? J Clinic Experiment Ophthalmol 1:102.
35. Sun LL, Warrier S, Beckingsale P (2011) Pterygium and Rate of Dysplasia in Surgical Specimens. J Clinic Experiment Ophthalmol 2:166.
36. Sayanagi K, Jo Y, Ikuno Y (2011) Transient Choroidal Thinning after Intravitreal Bevacizumab Injection for Myopic Choroidal Neovascularization. J Clinic Experiment Ophthalmol 2:165.
37. Duong HQ, Westfield KC, Singleton IC (2011) Comparing Three Post- Op Regiments for Management of Inflammation Post Uncomplicated Cataract Surgery. “Are Steroids Really Necessary?” J Clinic Experiment Ophthalmol 2:163.
38. Faghihi H, Mirshahi A, Shenazandi H, lashay A, Abdollahian M, et al. (2011) Intravitreal Triamcinolone Injection as an Adjuvant to Standard Laser Therapy in Management of Proliferative Diabetic Retinopathy. J Clinic Experiment Ophthalmol 2:149.
39. Samir A, Gad AM (2011) Sulcus Suture Fixation of a Foldable IOL over Preserved Capsule for Managing Lens Subluxation in Marfan’s syndrom. J Clinic Experiment Ophthalmol 2:145.
40. Fu J, Mou DP, Li SN, Wang XZ, Hao L, et al. (2011) Mid-Term Results of Filtering Surgery in Corticosteroid-Induced Glaucoma Patients. J Clinic Experiment Ophthalmol 2:142.
41. Werdich XQ, Ruez T, Singh RP (2011) Prevalence and Severity of Blepharitis Symptoms and Signs amongst Patients with Age-Related Macular Degeneration. J Clinic Experiment Ophthalmol 2:141.
42. Samir A, Hakim O (2011) A New Approach for Management of Monocular Elevation Deficiency. J Clinic Experiment Ophthalmol 2:136.
43. Schellini SA, Hoyama E, Shiratori CA, Marques MEA, Padovani CR (2011) Eyelid Alterations in Involutional Ectropion. J Clinic Experiment Ophthalmol 2:135.
44. Singh RP, Shusterman M, Moshfeghi D, Gardiner T, Gertner M (2011) Evaluation of Microcollimated Pars Plana External Beam Radiation in the Porcine Eye. J Clinic Experiment Ophthalmol 2:134.
45. Bahar I, Vinker S, Kaiserman I (2011) The Effect of Topical Steroids on Blood Glucose Profile in Diabetic Patients. J Clinic Experiment Ophthalmol 2:133.
46. Biswas NR, Das GK, Dubey AK (2010) Monoclonal antibodies in ophthalmology. Med Coll J 12: 264-271.
47. Sheybani A, Brantley MA Jr, Apte RS (2011) Pattern electroretinography in age-related macular degeneration. Arch Ophthalmol 129: 580-584.
48. Abouammoh M, Sharma S.Curr (2011) Ranibizumab versus bevacizumab for the treatment of neovascular age-related macular degeneration. Opin Ophthalmol 22: 152-158.
49. Hos D, Saban DR, Bock F, Regenfuss B, Onderka J, et al. (2011) Suppression of inflammatory corneal lymphangiogenesis by application of topical corticosteroids. C.Arch Ophthalmol 129: 445-452.
50. Mitchell P, Bandello F, Schmidt-Erfurth U, Lang GE, Massin P, et al. (2011) The RESTORE study: ranibizumab monotherapy or combined with laser versus laser monotherapy for diabetic macular edema. Ophthalmology 8: 615-625.
51. Reibaldi M, Boscia F, Avitabile T, Uva MG, Russo A, et al. (2011) Functional retinal changes measured by microperimetry in standard-fluence vs low-fluence photodynamic therapy in chronic central serous chorioretinopathy. J Ophthalmol 151: 953-960.e2.
52. Zhai J, Gu J, Yuan J, Chen (2011) Tacrolimus in the treatment of ocular diseases. J.BioDrugs 25: 89-103.
53. Huang YX, Xiang LN, Wang YL, Li MM, Hu YX (2011) Long-term effect of prophylactic laser treatment for bilateral soft drusen. Chin Med J(Engl) 124: 541-545.
54. Ahn JK, Yu HG (2011) The development of recurrent choroidal neovascularization in a patient with choroidal coloboma. Korean J Ophthalmol 25: 63-65.
55. Julián K, Terrada C, Fardeau C, Cassoux N, Français C, et.al (2011) Intravitreal bevacizumab as first local treatment for uveitis-related choroidal neovascularization: long-term results. Ophthalmol 89: 179-184.
56. Miller J, Yu XB, Yu PK, Cringle SJ, Yu DY (2011) Development of a fiber-optic laser delivery system capable of delivering 213 and 266 nm pulsed Nd:YAG laser radiation for tissue ablation in a fluid environment. Appl Opt 50: 876-885.
57. Kasetsuwan N, Chatchatee P, Reinprayoon U (2010) Efficacy of local conjunctival immunotherapy in allergic conjunctivitis. Asian Pac J Allergy Immunol 28: 237-241.
58. Holzchuh FG, Hida RY, Moscovici BK, Villa Albers MB, Santo RM, et al. (2011) Clinical treatment of ocular Demodex folliculorum by systemic ivermectin. Ophthalmol 151: 1030-1034.e1
59. Sharifipour F, Baradaran-Rafii A, Idani E, Zamani M, Jabbarpoor et al. (2011) Oxygen therapy for acute ocular chemical or thermal burns: a pilot study. J Ophthalmol 151: 823-828.
60. Jiang YX, Lu Y, Liu TJ, Yang J, Chen Y, et.al. (2011) Using HSV-TK/GCV suicide gene therapy to inhibit lens epithelial cell proliferation for treatment of posterior capsular opacification. Mol Vis17: 291-299.
61. Blair J, Hodge W, Al-Ghamdi S, Balabanian R, Lowcock B, et al. (2011) Comparison of antibiotic-only and antibiotic-steroid combination treatment in corneal ulcer patients: double-blinded randomized clinical trial. Ophthalmol 46: 40-45.
62. Parker J, Tandon A, Shtein RM, Soong HK, Cooney TN, et al. (2011) Management of pain with diclofenac after femtosecond-assisted laser in situ keratomileusis. Cataract Refract Surg 37: 569-573.
63. Shimura M, Yasuda K, Miyazawa A, Otani T, Nakazawa T (2011) Pre-seasonal treatment with topical olopatadine suppresses the clinical symptoms of seasonal allergic conjunctivitis. Am J Ophthalmol 151: 697-702.
64. Krupin T, Liebmann JM, Greenfield DS, Ritch R, Gardiner S (2011) A randomized trial of brimonidine versus timolol in preserving visual function: results from the Low-Pressure Glaucoma Treatment Study Erratum in: Am J Ophthalmol 15: 671-681.
65. Demetriades AM. (2011) Opin Gene therapy for glaucoma. Curr Opin Ophthalmol 22: 73-77.
66. Yu-Wai-Man P, Griffiths PG (2011) Steroids for traumatic optic neuropathy. Cochrane Database Syst Rev (1):CD006032.
67. Angelos PC, Stallworth CL, Wang TD (2011) Forehead lifting: state of the art. Facial Plast Surg 27: 50-57.
68. Lock JH, Fong KC (2010) Retinal laser photocoagulation. .Med J Malaysia65: 88-94.
69. Moon SW, Kim MS, Kim ES, Yu SY, Kwak HW (2011) Photodynamic therapy combined with intravitreal injection of vascular endothelial growth factor antibody for polypoidal choroidal vasculopathy. Ophthalmologica 225: 169-175.
70. Stein L, Roy K, Lei L, Kaushal S (2011) Clinical gene therapy for the treatment of RPE65-associated Leber congenital amaurosis. Expert Opin Biol Ther 11: 429-439.

71. Viana GA, Osaki MH, Cariello AJ, Damasceno RW, Osaki TH (2011) Treatment of the tear trough deformity with hyaluronic acid. Aesthet Surg J 31: 225-231.

72. Holzchuh FG, Hida RY, Moscovici BK, Villa Albers MB (2011) Clinical treatment of ocular Demodex folliculorum by systemic ivermectin. Am J Ophthalmol 151: 1030-1034.

73. Kasetsuwan N, Chatchatee P, Reinprayoon U (2010) Efficacy of local conjunctival immunotherapy in allergic conjunctivitis. Asian Pac J Allergy Immunol 28: 237-241.

74. Shah PK, Narendran V, Kalpana N.Indian (2011) Large spot transpupillary thermotherapy: a quicker laser for treatment of high risk prethreshold retinopathy of prematurity-a randomized study.J Ophthalmol 59: 155-158.

75. Magdelaine-Beuzelin C, Pinault C, Paintaud G, Watier H (2010) Therapeutic antibodies in ophthalmology: old is new again. MAbs 2: 176-180.

76. Hashemi H, Dadgostar A (2011) Automated lamellar therapeutic keratoplasty with fibrin adhesive in the treatment of anterior corneal opacities. Cornea 30: 655-659.

77. Ojima A, Iida T, Sekiryu T, Maruko I, Sugano Y (2011) Photopigments in central serous chorioretinopathy. Am J Ophthalmol 151 :940-952.

78. Reibaldi M, Boscia F, Avitabile T, Uva MG, Russo A,et al. (2011) Functional retinal changes measured by microperimetry in standard-fluence vs low-fluence photodynamic therapy in chronic central serous chorioretinopathy. Am J Ophthalmol 151: 953-960.

79. Mitchell P, Bandello F, Schmidt-Erfurth U, Lang GE, Massin P, et al. (2011) The RESTORE study: ranibizumab monotherapy or combined with laser versus laser monotherapy for diabetic macular edema. Ophthalmology 8: 615-625.

80. Sheybani A, Brantley MA Jr, Apte RS (2011) Pattern electroretinography in age-related macular degeneration. Arch Ophthalmol 129: 580-584.

81. Yagci A, Bozkurt B, Egrilmez S, Palamar M, Ozturk BT, et al. (2011) Topical anesthetic abuse keratopathy: acommonly overlooked health care problem. Cornea 30: 571-575.

82. Lin Q, Li M, Fang D, Fang J, Su SB (2011) The essential roles of Toll-like receptor signaling pathways in sterile inflammatory diseases. Int Immunopharmacol 11:1422-1432.

83. Biswas NR, Das GK, Dubey AK (2010) Monoclonal antibodies in ophthalmology. Med Coll J 12: 264-271.

84. Jiang YX, Lu Y, Liu TJ, Yang J, Chen Y, et al. (2011) Using HSV-TK/GCV suicide gene therapy to inhibit lens epithelial cell proliferation for treatment of posterior capsular opacification. Mol Vis 17: 291-299.

85. Hos D, Saban DR, Bock F, Regenfuss B, Onderka J, et al. (2011) Suppression of inflammatory corneal lymphangiogenesis by application of topical corticosteroids. C.Arch Ophthalmol 129: 445-452.