2018

The View

News from the Eye Innovation Group at the Save Sight Institute

Welcome to *The View*, a newsletter for patients wishing to stay up-to-date on the latest research developments in ocular repair and regeneration.

The Eye Innovation Group has three major research areas: Serious Ocular Infection, Fight Corneal Blindness! and Therapeutics and Technology.

Our research relies exclusively on external grants and fundraising.

If you are in a position to support our research, please know that we are extremely grateful and that your donation will be well used.

You may also like to consider remembering eye innovation research in your will.

Leader, Eye Innovation
Save Sight Institute

In this issue of The View, I am pleased to introduce the new name for the 'Ocular Repair' group - we will now be called the 'Eye Innovation Group'. This new name better reflects our research activities as we strive to find innovative solutions to restore sight and promote eye health.

I'm pleased to share with you some of our multidisciplinary team of researchers, clinicians, and scientists and our projects in this newsletter. These projects are all working towards improving outcomes for patients with eye disease and improving eye health. I'm especially pleased to introduce you to some of our team members, all passionate and motivated experts in the field of eye research.

A recent highlight for me was being invited to speak at the Golden Alumni lunch held at the Great Hall of The University of Sydney. I had the opportunity to talk about my journey as a corneal specialist and researcher. You can watch the talk on the Save Sight Institute's Youtube channel https://youtu.be/115DJxtCmlY

The work that we do would not be possible without the generosity of donors and supporters. I thank these visionary individuals and organisations for the immense trust that they put in our team.

Unfortunately, funding for medical research in Australia has never been more uncertain, so the contributions of donors and supporters is more critical than ever.

As doctors and clinicians, we are reminded every day of why we do what we do. It is a privilege to care for patients. Ultimately, we hope that the new treatments and insights will make a real difference to people suffering from a variety of eye conditions and treatments.

Left to right: Pauline Khoo, Maria Cabrera-Aguas, Professor Stephanie Watson, James Maberly, Amanda Dinh

Herpes Simplex Keratitis

Herpes simplex keratitis is an important cause of unilateral blindness in the developed world. There was a large disparity between anti-viral medications, formulation and dosages for the management of this infection at the Sydney Eye Hospital. The aims of this study were to determine prescribing trends, and develop and implement treatment guidelines at the hospital to standardise the initial anti-viral therapy. These guidelines will likely improve patient care and rationalise health resources.

Dr Maria Cabrera-Aguas
Research Officer / PhD student

Dr Dana Robaei
Ophthalmologist

Development of Australian guidelines for the management of Herpes Simplex Keratitis (HSK)

Purpose: To determine prescribing trends for the management of HSK, compare the trends to available clinical trial evidence, and develop local guidelines for the management of HSK.

Methods: A retrospective review of all HSK cases aged 18 years and above, at the Sydney Eye Hospital, from January 2012 to December 2013 was conducted. Patients were identified from viral swab results, pharmacy records, and ICD-10 coding data. A literature review of HSK management, pharmacy consultation and a consensus meeting with corneal and uveitis specialists were undertaken.

Results: 301 eyes of 296 patients were included. Anti-viral therapy was given for therapeutic and prophylactic indications at presentation in 256 (85%) and 45 eyes (15%), respectively. Overall, anti-virals prescribed included valaciclovir 500 to 1000 mg 1-3 times daily, aciclovir 200-400 mg 1-5 times daily, topical aciclovir 2-5 times daily and topical trifluridine two hourly or as needed daily; or combined oral and topical anti-virals. Overall, 164 eyes (54%) received 'evidence-based' anti-viral therapy. The hospital's Drug & Therapeutics Committee approved the guidelines. They are available on lanyard cards, email, the hospital's intranet and in out-patients, wards, and emergency.

Conclusions: Prescribing patterns for anti-viral therapy to treat and prevent recurrence of HSK were diverse. The guidelines will standardise the initial antiviral therapy of HSK to improve patient care and rationalise health resources.

Keratoconus

The cornea is the eye's window; its shape is warped in patients with keratoconus resulting in vision loss. The densely innervated cornea is also exquisitely sensitive, such that patients with advanced keratoconus can suffer pain during acute attacks, as well as loss of vision from the disease or its treatment. We carried out this study to investigate if a new surgery called cross-linking aimed at preventing the progression of keratoconus, is safe and effective.

Dr Alexander Ferdi
PhD student

The outcomes of corneal cross-linking for Keratoconus from routine clinical practice across 3 sites in Australia

Purpose: To report the 12-month outcomes of 54 eyes undergoing corneal cross-linking (CXL) for keratoconus performed in 3 routine clinical practices in Australia.

Methods: Outcomes and adverse events were recorded prospectively in a custom-designed database, the Save Sight Keratoconus Registry. Index visit parameters, such as visual acuity (VA, in Logarithm of the Minimal Angle of Resolution [logMAR]), maximum keratometry [Kmax], steep keratometry [K2], pachymetry, as well as treatment parameters (epithelial status, riboflavin type, UV duration) were recorded. Index visit parameters associated with the 12-month VA outcome were identified using mixed effects linear regression.

Prof Peter McCluskey
Ophthalmologist

Results: Median change in VA after 12 months was +4.5 logMAR letters; Kmax -0.3; K2 -0.2 and pachymetry -14.0 microns. There was a significant improvement in VA (p = 0.048), reduction in Kmax (p = 0.027) and reduction in pachymetry at 12 months (p = 0.002).

Adverse events occurred in 31 eyes and included corneal haze (n=28), microbial keratitis (n=2), persistent epithelial defect (n=4), scarring (n=10), and sterile infiltrates (n=3) from a total of 54 eyes within the first 12 months of follow-up. There were 9 episodes of haze in 7 eyes recorded during the second year of follow-up. Eyes that experienced microbial keratitis (1 eye) or scarring (4 eyes) within the first 12 months of follow-up had a median VA loss of -15 and -9 (letters at 12 months, respectively. Eyes that experienced haze (27 eyes), persistent epithelial defect (4 eyes) or sterile infiltrates (1 eye) within the first 12 months of follow-up had a median VA change of +6, +4 and +0 letters at 12 months, respectively.

Conclusions: In routine clinical practice CXL can stabilise visual acuity and keratometric parameters. Although complications such as keratitis or scarring can result in visual loss, corneal haze does not appear to have a detrimental effect on visual outcomes at 12 months.

Ocular Surface Disease

Ocular surface diseases (OSD) are a group of disorders of diverse pathogenesis, which results from the failure of mechanisms responsible for maintaining a healthy ocular surface. People affected suffer from pain, blurred vision and even permanent vision loss with work productivity and quality of life reduced. The purpose of the study was to report the pathology and clinical profile of patients with an OSD and microbial keratitis (a corneal infection).

Pauline Khoo
Research Officer / PhD student

Dr Kenneth Ooi
Ophthalmologist

Microbiological and clinical profile of ocular surface disease and microbial keratitis patients

Purpose: To report the microbiological and clinical profile of patients with an ocular surface disease (OSD) and microbial keratitis.

Methods: A retrospective case series of all patients with a clinical diagnosis of microbial keratitis and OSD (i.e. dry eye, blepharitis and/or meibomian gland dysfunction [MGD]) undergoing corneal scraping at the Sydney Eye Hospital, from January 2012 to December 2016 was conducted. Cases were identified from pathology results and ICD-10 coding. Data was collected from the medical records.

Results: 181 eyes of 169 patients with a mean age of 59.4 years (range 20 - 96) were included. Blepharitis was reported in 148 eyes (82%), dry eye in 48 (27%), and MGD in 4 (2%). 122 (67%) of cases had a positive culture. The most common organisms identified were *Staphylococcus epidermidis* (n = 36), *Staphylococcus aureus* (n = 16), and *Staphylococcus capitis* (n = 15). The most common initial treatments prescribed were fortified antibiotic combination of topical cephalothin and gentamicin (62/181, 34%) and topical ofloxacin alone (62/181, 34%). Median visual acuity at initial presentation 0.49 logMAR (IQR 0.12-1.7) and at final visit 0.30 logMAR (IQR 0.02-1.01). The infection healed in 77% of eyes with a median time of 12 days (IQR 6 - 26).

Conclusions: Microbial keratitis in patients with an OSD is usually caused by Staphylococcus species. Older patients with an OSD may be more likely to have poorer outcomes and delayed healing time. There is a need for appropriate strategies to prevent MK caused by OSD.

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Sign up to receive our newsletter and receive updates on upcoming events and research breakthroughs.

Sign up at http://eepurl.com/dvSQtz OR scan now to sign up

Support Eye Research

We can't do what we do without the support of our patients and community. Our research is funded 100% by grants, donations and bequests. To help us find new and improved ways to save sight please consider making a donation to the Eye Innovation Group via our donation form or online at savesightinstitute.org.au (selecting 'Eye Innovation Group' from the gift form). You can also call (02) 9382 7273 to make a credit card donation. **Donations over $2.00 are tax deductible.** Save Sight Institute is a centre of The University of Sydney.

Our Team:
Professor Stephanie Watson (leader), Dr Maria Cabrera-Aguas, Dr Alexander Ferdi, Professor Nick Di Girolamo, Associate Professor John Foster, Annette Hoskin, Pauline Khoo, Dr Jenny Lauschke, Dr Kenneth Ooi, Dr Dana Robaei and Dr Jack Tan.

Our Supporters:
Sydney Eye Hospital Foundation, Keratoconus Australia, Ophthalmic Research Institute of Australia, NHMRC, Cornea & Contact Lens Society of Australia, NSW Health, and Stem Cells Australia.

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SAVE SIGHT INSTITUTE

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