Glaucoma and the Brain

Researchers now view glaucoma as a disease of the brain - a neurodegenerative disease - rather than simply an eye disease. Recent research has shown that the complex connection between the eye and the brain is an important key to the disease.

Glaucoma shares a number of features with degenerative brain diseases such as Alzheimer’s, Parkinson’s, and Lou Gehrig’s disease. In all of these diseases, age and family history are significant risk factors, and specific areas of the brain are damaged over time. In glaucoma, the only difference is that the “specific area of the brain” affected is the eye and optic nerve!

Indeed the eye’s retina and optic nerve are a part of the brain: during early development, a small part of the brain pouches out and becomes the retina and optic nerve. Inside the eye, a group of neurons called retinal ganglion cells collect all of the visual information and pass it down their extensions, called axons, through the optic nerve and back to the rest of the brain. The ganglion cell, which collects all the vision information from the other retinal cells, is the one type of cell that is initially damaged by glaucoma.

The optic nerve continues to be a major focus for researching the underlying causes of glaucoma. Whether due to mechanical trauma, decreased blood flow, or other causes, optic nerve axon injury causes changes in retinal ganglion cells, eventually causing cell death. Researchers have observed that specific areas of injured optic nerve axons and retinal ganglion cell loss match the peripheral vision damage from glaucoma.

Because the retinal ganglion cell axon stretches from the retina through the optic nerve to the brain, its surrounding cells also become damaged by glaucoma. Within the retina, other cells, such as amacrine cells, degenerate and rewire their connections after retinal ganglion cells are lost.

There are also changes in the brain within the lateral geniculate nucleus (the main brain target of optic nerve axons), and even the visual cortex, which is the part of the brain that helps us interpret visual information.

Thus, in addition to treatments directed at lowering eye pressure, still the mainstay of glaucoma therapy, there may be opportunities to develop treatments directed at the retina and the brain. Some promising treatments that promote nerve health, called neurotrophic factors, could help at multiple places in the visual pathway.

Continued over page
For example, neurotrophic factors such as ciliary neurotrophic factor (CNTF) may keep retinal ganglion cells from dying, a process called neuroprotection; they may increase axon regrowth down the optic nerve, called regeneration; and they may improve the support between the dying retinal ganglion cells and their surrounding cells in the retina and brain, called neuroenhancement. The understanding that one key to glaucoma is in the connections within the retina and to the brain has led to exciting advances in research that may well lead to new potential treatments.

Article by Jeffrey L. Goldberg, MD, PhD, Professor and Chair of Ophthalmology at the Byers Eye Institute at Stanford University School of Medicine.

In photo L-R: presenters - Dr Allan Simpson, Dr Hannah Kersten, Dr Sonya Bennett, Assoc. Prof. Jennifer Craig, Assoc. Prof. Gordon Sanderson, Dr Hussain Patel, Dr Dean Corbett, Dr Geraint Phillips, Prof. Helen Danesh-Meyer, Prof. Charles McGhee, Dr Shenton Chew, Dr Graham Reeves, Dr Jesse Gale, Dr Alex Buller.

For New Readers

To those of you who have joined Glaucoma NZ since the last issue of Eyelights, we welcome you!

For your information here are some basic facts about glaucoma:

People of all ages can get glaucoma. There are different types of glaucoma, but they all involve damage to the optic nerve, the nerve of sight, which is at the back of the eye.

Glaucoma is not curable. If you have glaucoma it must be monitored for the rest of your life.

A family history of glaucoma means you are at much greater risk of developing glaucoma. Current treatments for glaucoma aim to lower eye pressure. Medication in eye drops can have side effects on other parts of your body. Tell your eye specialist if you notice any change in your general well-being since you started the eye drops.

If you have glaucoma tell your relatives, especially those close relatives like sisters, brothers and adult children. They have an increased risk of developing glaucoma so advise them to have an eye examination. Glaucoma NZ is a registered charitable trust and receives no government funding. We rely solely on donations, sponsorship, grants and fundraising. All the information available to you from Glaucoma NZ is free.

To donate please go to donation coupon on the back of the Eyelights newsletter. To donate on-line, visit www.glaucoma.org.nz

Glaucoma NZ 2016 Christmas Cards Now available

See order form insert
Go to www.glaucoma.org.nz to purchase online
Phone 0800 452 826 for more info
Limited edition – don’t miss out!

The Inaugural Glaucoma New Zealand Glaucoma Symposium for optometrists and other eye health professionals was held on September 18 at Alexandra Park in Auckland. An initiative of GNZ’s Trustees, Professor Helen Danesh-Meyer, Associate Professor Gordon Sanderson, Dr Sam Kain and Dr Mark Donaldson, the Symposium was the first full day optometry event in New Zealand focussing solely on glaucoma. Given the increasing role of therapeutic optometrists in the management of glaucoma, the Symposium was very opportune.

The overall theme of the Symposium was ‘Glaucoma – from Diagnosis to Management’ and the programme was divided into four sessions.

Dr Mark Donaldson welcomed the more than 90 delegates, who came from all over New Zealand, and one who travelled from Australia.

Session One - Glaucoma Diagnosis was opened by Dr Shenton Chew, who spoke about risk factors for glaucoma, and the importance of early detection in order to avoid permanent visual loss. Dr Chew also outlined the role of ocular perfusion pressure and intracranial pressure in glaucoma progression. Next, Dr Sam Kain gave an overview of disc assessment providing a useful insight into the importance of looking at disc size, regularity of the neuro-retinal rim and symmetry between the eyes. Dr Geraint Phillips tackled the challenging topic of visual field progression in glaucoma, including the difficulty in determining the optimum number of visual field tests needed.

Dr Jesse Gale’s first presentation outlined conditions that may mimic glaucoma, including compressive optic neuropathies. Dr Alex Buller followed with a very informative presentation on the difficult topic of gonioscopy, considered to be...
the gold standard of anterior chamber angle assessment. The angle theme continued into the next talk, another by Dr Shenton Chew. Dr Chew advised that some large studies soon to be published may change the way that patients with narrow angles or angle closure glaucoma are referred and managed. Dr Graham Reeves closed the first session with a talk on the disc damage likelihood scale, developed by glaucoma guru Dr George Spaeth. Dr Reeves emphasised that it is essential to pay close attention to the rim to disc ratio, taking the size of the optic disc into account.

Session Two on Special Issues in Glaucoma was opened by Professor Charles McGhee who gave an overview of corneal conditions associated with glaucoma, particularly the ICE syndromes. Dr Hannah Kersten discussed the management of corticosteroid induced glaucoma and ocular hypertension, which is extremely common in patients on long term topical steroid therapy. Dr Allan Simpson, an early adopter of OCT imaging highlighted the importance of OCT in glaucoma management today. Dr Sonya Bennett rose to the challenge of summarising the critical things to look for in the secondary glaucomas, saying to always assume you are looking for something, rather than expecting to see a normal eye. Associate Professor Jennifer Craig drew attention to the extremely common co-morbidities of dry eye and glaucoma. The main culprit is the cytotoxic agent benzalkonium chloride, so striving to reduce the application of preserved eye drops is important. Professor Helen Danesh-Meyer who gave examples of glaucomatous and non-glaucomatous optic neuropathy, and ways to differentiate between them.

Session Three on Glaucoma Management presented a broad range of topics. Dr Dean Corbett discussed the role of selective laser trabeculoplasty, which is increasingly being used as a first-line treatment. Dr Hussain Patel presented two communications in this session. The first outlined the challenge of deciding who to treat, and the pattern of treatment intensification. In his second talk, Dr Patel spoke on trabeculectomy surgery, its post-operative management and what optometrists should be on the look-out for in the late post-operative period. Dr Jesse Gale took the podium on the topic of glaucoma management in pregnancy. The possibility of pregnancy should be considered in all women of reproductive age who have glaucoma. Professor Helen Danesh-Meyer followed with an informative presentation on lifestyle factors and glaucoma, including blood pressure, exercise, diet, stress and supplementation with omega three and ginkgo biloba. Grant Watters concluded the session by discussing the management of glaucoma patients who wear contact lenses. The management of vulnerable groups (patients with keratoconus or diabetes) was also highlighted.

Session 4 was a collection of cases. Associate Professor Gordon Sanderson presented a case that involved forensic optometry. Dr Hannah Kersten outlined two methods of measuring IOP fluctuation. Dr Sam Kain spoke about a rare case of angle closure associated with an iris melanoma. Dr Allan Simpson discussed the diagnosis and management of twins who presented independently with narrow angles. Finally, the question of ‘Is it glaucoma or something else?’ was posed by Professor Helen Danesh-Meyer who gave examples of glaucomatous and non-glaucomatous optic neuropathy, and ways to differentiate between them.

Overall, the symposium was a great success providing comprehensive glaucoma education as well as a platform for discussion between optometrists, ophthalmologists and industry. The feedback from delegates of the day has been very positive, and GNZ is looking to make this an annual event.

GNZ thanks the presenters, who came from all round New Zealand, for giving up their time to speak at the Symposium.

The event was generously sponsored by AFT Pharmaceuticals, Clinicians, and Ophthalmic Instrument Co. Thanks also to Device Technologies and Toomac Ophthalmic for their support.

Julian Glaucoma Annual Awareness Appeal Update

Firstly, Glaucoma NZ would like to thank all those who supported our 2016 Julian Glaucoma Annual Awareness Appeal. It has been extremely encouraging to have so many regular participants willing to help out once again and also some new faces and places joining in. Optometrists and ophthalmologists responded by taking donation boxes and information to display at their practices. Many also made a donation from eye examinations undertaken during July. The ongoing support of pharmacies and ASB Bank branches nationwide continues to have a significant impact on raising awareness and funds.

The participation of a number of businesses added to the overall reach of the Julian Appeal. Lion Breweries, East Tamaki branch ran a month long glaucoma awareness initiative, headed by Kerry Stewart, reliability team leader (see Kerry’s story at right).

Our media campaign reached its target audience “the wider community” many of whom came forward to share their stories with the media, and offer their support. A number of radio interviews, with nationwide reach, were secured as well as articles featuring in a variety of newspapers and online sites. Visit http://www.glaucoma.org.nz/GNZ-News/Whats-Happening.asp to view.

Social media also played a big part with GNZ’s Facebook page launching the Campaign and increasing ongoing engagement with the public.

GNZ’s 0800 line was busy with enquiries from the public wanting to know more about glaucoma, early detection and treatments. Many of these people were subsequently advised to visit their local optometrist for an eye examination.

The Appeal overall has been a great success, lifting the awareness of glaucoma and boosting funds.

Again, Glaucoma NZ appreciates all your efforts during the 2016 Julian Annual Awareness Appeal and your continued support throughout the year working towards eliminating blindness from glaucoma.

Raising funds for Glaucoma NZ to continue with its sight saving work does remain a major focus.

Donations can be made via our website www.glaucoma.org.nz or by completing the coupon on the back page of Eyelights.

Manukau Courier - Fairfax Media

July 7 2016,
by Samantha Smith

“Kerry Stewart doesn’t let his diagnosis affect the way he lives - he still gets out on the water whenever he can.”

Kerry Stewart didn’t have any warning signs of glaucoma.

A family member was diagnosed with it so the whole family got their eyes checked.

Stewart was the only one diagnosed with the disease and he’s thankful he caught it before he had any real issues with his sight.

Glaucoma is a disease that progresses without those afflicted being aware anything is wrong. A person can be legally blind before they notice the symptoms.

The optic nerve fibres progressively die, taking away peripheral vision first.
Are You Ready for Travelling?

It’s especially important for people with glaucoma to follow through with their treatment plans — even when travelling.

Here’s a checklist to help you prepare for a safe and healthy trip:

- Make a list of all medications you normally use, noting each prescription dosage, the medication’s trade name as well as the generic name for the drug. Generic names are especially important if you are travelling abroad, where pharmaceutical manufacturers may use different names from those in your own country.
- Take a sufficient supply of each medication for the length of your trip, and talk to your doctor in advance about getting extra prescriptions, just to be safe.
- Pack your medications in their original pharmacy containers rather than in pill cases or other unlabelled bottles.
- Never pack medications in your check-in luggage, which can be lost. Put them in your carry-on bag.
- Store all medications in a cool environment (below 25°C), protected from light.
- If you’re crossing time zones ask your doctor how you should take your medication. Many doctors recommend adapting your schedule to the local time at your destination, and not worry about missing a dose due to time change. This can simplify your regimen during your stay as well as on your return.
- Traveling on a plane will not affect your eye pressure (IOP) — it is a controlled atmosphere and compensates for changes in altitude. Although make sure you open your medication bottles carefully when you’re first back on land.
- However air travel does affect the volume of gases in the air. This may be of relevance to those who have recently had retinal surgery. At the time of surgery, a gas bubble is placed in the eye to help keep the retina in place. The bubble is usually present for 6-8 weeks. Changes in altitude may cause the gas bubble to expand and cause increased IOP. So those people who have had a gas bubble inserted during retinal surgery are usually advised to avoid air travel for the following couple of months.
- In contrast, gas bubbles are not used for glaucoma surgery, so people with glaucoma usually do not have air travel restrictions after surgery. However, it is always best to consult with your eye doctor before travelling, especially after any kind of eye surgery.
- The air on airplanes is very dry. If you wear contact lenses, frequently apply rewetting solution. In general artificial tears may be helpful for use when flying, especially on a long flight.
- Be safe rather than sorry. If you wear prescription eyeglasses, take an extra pair with you.

Happy travelling!
Christmas Research Appeal

Finding a Cure

PLEASE support us in our efforts to fund research into new and improved treatments for the 91,000 New Zealanders living with glaucoma.

Ongoing research and development play a vital role in the treatment of glaucoma and ultimately finding a cure. Our goal is to raise $50,000 each year to specifically dedicate to worthwhile New Zealand based research projects.

Please help us invest in a future without blindness from glaucoma.

Your support is important to us – we can’t do it alone.

THANK YOU for your continued generosity - every donation counts!

YES! I would like to make a donation to the Christmas Research Appeal

☐ $300  ☐ $100  ☐ $50  ☐ $20
☐ $_________________(other)

Name _____________________________________________

Address __________________________________________
Postcode________

Ph ____________  Email ___________________________

☐ I enclose my cheque made payable to Glaucoma NZ
☐ Please debit my credit card  ☐ Visa  ☐ Mastercard

Name on Card _____________________________________________

Card No ________/__________/__________/________

Expiry Date ____ /____  Signature _______________________

Donations of $5.00 or more are tax deductible and will be receipted.

YES! I would like to receive more information about:

☐ Donating on a regular basis by Automatic Payment
☐ Leaving a gift in my Will to Glaucoma NZ
☐ I have already included Glaucoma NZ in my Will

The Trustees of Glaucoma NZ

Professor Helen Danesh-Meyer (Chairperson)
Dr Mark Donaldson
Dr Sam Kain
Associate Professor Gordon Sanderson (Deputy Chairperson)

Glaucoma New Zealand - CC21421
is a registered charitable entity in terms of the Charities Act 2005.

Accountants - Moore Stephens Markhams

Contact Details

Glaucoma New Zealand
Department of Ophthalmology
The University of Auckland
Private Bag 92019,
Auckland 1142, New Zealand
Telephone: 09 373 8779
0800 GLAUCOMA
0800 452 826
Facsimile: 09 373 7947
Email: info@glaucoma.org.nz

www.glaucoma.org.nz

Entertainment™ Books

A great gift for family and friends – something for everyone!

The Entertainment™ Book is a restaurant and activity guide that provides hundreds of 25-50% off, and 2-for-1 offers from popular restaurants, cafes, cinemas, hotel accommodation and attractions throughout Auckland, Whangarei and Bay of Islands / Waikato and Bay of Plenty / Wellington and Manawatu / Christchurch, Canterbury and Nelson / Dunedin, Invercargill, Queenstown and surrounds, as well as Australia. Glaucoma NZ receives a donation from every book sold.

Order your Entertainment Book now and not only will you receive over $15,000 in valuable offers, valid to 1st June 2017, but you will also help raise vital funds for the ongoing work of Glaucoma NZ.

To purchase your Entertainment Book, including Digital Membership which allows you to redeem offers directly from your iPhone or Android smartphone visit www.glaucoma.org.nz, or phone 0800 452 826.