

Eyelights

The Newsletter of **GLAUCOMA NZ**
TO SAVE SIGHT

Message from the Chairman

This issue of Eyelights marks the completion of five years of publication. Glaucoma NZ has brought you a wide range of articles from the science of vision and glaucoma to useful hints on living with glaucoma and its treatment. We are currently compiling a "Best of Eyelights" publication for release early next year. Eyelights, Fact Sheets and our website form the core of our written information for people interested in glaucoma. The thirst for knowledge about glaucoma grows and cannot be satisfied. That is just what we want: a New Zealand public asking important questions and making sure that they receive satisfying and correct answers.

What confidence can you have in what you read? This is a most important question particularly in our commercial environment where the "consumer beware" motto should always be our first thought. Talking straight science is fine, covering daily life with glaucoma is sharing useful tips, but when it comes to firm recommendations that contain a price tag for either individual or for government, questions can and should be raised. Effective and cost-efficient delivery of health care is the challenge of the

century and no one is doing it well. Glaucoma is no exception. We want glaucoma detected early. We want it treated effectively, but only when it is present. When it is definitely going to occur we want it prevented. In this regard the critical questions are: When should "testing" for glaucoma occur, what "tests" should be done and how frequently should they be repeated?

Glaucoma NZ has taken a conservative position with its "45 + 5 glaucoma eye examination". (See P5.) But there is a safety clause! The examination must assess all known risk factors that person may have for glaucoma. Identifying risk factors assures that the correct "tests" are done when required and that the appropriate follow up is recommended. In 2008 Eyelights will be informing you further on risk factors for glaucoma.

I wish you all the best for Christmas and the New Year.

Dr Ken Tarr,
Chairman



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Electrophysiological Testing of the Visual Pathway



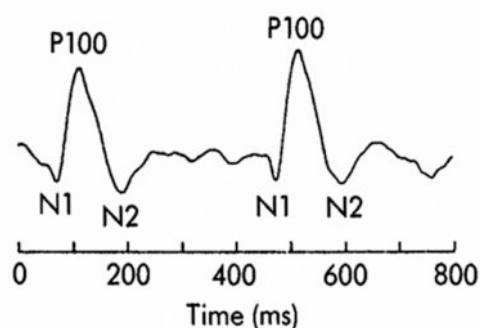
Ophthalmologists often see patients who complain of reduced vision but the cause cannot be explained as the patient's eyes appear normal. This is when a Visual Evoked Potential (VEP) test may be used to determine the

integrity of the visual pathway. The visual pathway refers to the channels in the brain that lead from the eye to the seeing area of the brain located at the back of the head, (the visual area of the brain). Thus the VEP measures the electrical response of the brain's visual area to a sight stimulus.

To measure the electrical response, you first place three electrodes on the scalp. One electrode measures the response itself and goes over the visual area at the back of the head. Another electrode is placed at a reference location, typically on the forehead or top of the head. The third electrode, for grounding, goes on the ear.

Most clinical VEP recordings involve placing a patient in front of a black and white checkerboard pattern displayed on a video monitor. The checks alternate from black/white to white/black. Every time the pattern alternates, the patient's visual system generates an electrical response that can be detected by the electrode on the back of the head. A typical Pattern VEP response comprises of a well-defined positive peak called P100. The length of time it takes the signal to go from the eye to the visual area of the brain (normally about a tenth of a second), gives an indication as to how fast the electrical conduction is travelling in the nerve tissue of the visual pathway. Therefore in diseases which affect the optic nerve such

as optic neuritis, recording of the P100 is typically delayed. When the optic nerve is badly damaged e.g. from glaucoma or trauma, then the amplitude of the wave form will be reduced.

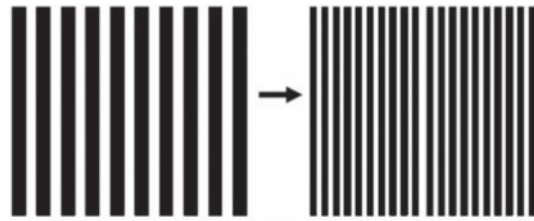


The "flash VEP" can be used with uncooperative or unconscious patients, where instead of a patterned monitor, a flash is used to stimulate an electrical response in the visual pathway.

The VEP is especially useful in young infants, or in children who are unable to tell us or show us how much they can see. This is particularly the case in infants who are suspected to have poor vision. For example, the case of a baby who does not react to toys being shown to them or does not recognise familiar faces. A sweep VEP (SVEP) can be used to estimate their visual acuity or ability to see.

The sweep VEP uses the same patterned monitor as the pattern VEP, however the display will alternate vertical bars instead of checks. The black bars become white, the white bars become black, and the stripes become narrower and narrower. The bars go from very wide to very narrow. The big ones make big signals and the small ones make smaller signals until you can no longer distinguish them from the ongoing electrical activity of the brain. The decreasing size of the bar will allow for an estimation of visual acuity

in the patient. The key benefit of this test is that it is completely objective. It does not depend on the response of the individual being tested. Depending on the protocol selected, a typical sweep takes from 10 to 45 seconds.



Glaucoma NZ Research Grant for 2008

Glaucoma NZ is pleased to announce the award of a grant for glaucoma research in 2008. The grant is awarded to Dr Narme Deva and Associate Professor Helen Danesh-Meyer for their study "Connexin43 and Glaucoma Surgery".



Dr Narme Deva explains:

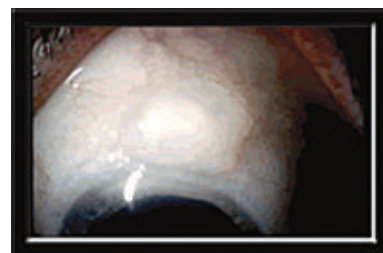
Connexin43 and Glaucoma Surgery

Glaucoma is the second leading cause of blindness in the world. It is generally treated with eye drops to lower the eye pressure, but if this fails then glaucoma filtration surgery (GFS) such as a trabeculectomy, is required. This involves the formation of a "drainage bleb" on the exterior aspect of the globe. This "bleb" acts as an alternate route of exit for the fluid formed inside the eye, thereby lowering pressure. However, there is often an excessive inflammatory response at the surgical site, which leads to scarring and ultimately failure of the surgery. There are agents available to modulate the scarring response, but their effects are non-specific and toxic, with potentially blinding side effects.

Professor Colin Green and his research group have developed Connexin43 anti-sense oligodeoxynucleotide (Cx43 AS ODN) gel and studies show that a single topical application of this to a skin wound results in decreased inflammation and decreased scar formation.

We propose that this new Cx43 AS ODN gel may modulate wound healing in GFS when applied at the time of surgery. The gel is highly specific in its action, and has shown no side-effects to date.

We aim to trial the Cx43 AS ODN gel on a well established rabbit model for GFS. We believe that a single application during surgery will decrease subsequent scar formation and as a consequence, reduce the rate of bleb failure. The wound healing response in rabbits is far more aggressive than in humans and if it is successful here then we can expect the gel to have a beneficial response in humans. Such a benefit, especially with its lack of side effect profile will be revolutionary in the management of glaucoma surgery.



Bleb after trabeculectomy

Moving House?

Don't forget to include Glaucoma NZ when you are doing your change of address cards. Remember, we have no way of knowing your new address if you don't tell us!

World Glaucoma Congress and Risk Assessment

The second only World Glaucoma Congress was held in Singapore in July. This four-day meeting covered all aspects of glaucoma in the light of research and studies that had been done in many different countries. One topic with wide implications for our community addressed the question: "When should eye pressure be lowered before the onset of glaucoma damage?" Ocular hypertension is the term used for this situation. It is not glaucoma because there is no evidence of damage to the optic disc nor defect of the visual field. However the patient is at risk of developing glaucoma either because the eye pressure alone is very high or it is raised along with other risk factors.

The reader should, by now, be aware that there often are no clear-cut answers to clinical questions in glaucoma or, in fact, in medicine. Many clinical decisions in regard to a patient's problem are based on experience of a treatment's effect, within a framework of knowledge of the natural and treated course of the condition. If the outcome of the decision is quickly known then the clinician has useful feedback on the correctness of the decision. However, with chronic medical conditions such as glaucoma and particularly with pre-symptomatic disease such as ocular hypertension, this feedback is largely absent, and the practitioner cannot fine tune decisions on personal experience. Into its place steps "risk modelling" based on evidence especially from randomised clinical trials.

At the World Glaucoma Congress "risk modelling" was comprehensively covered. Based on the best of medical evidence it provides an estimate of the expected outcomes. And the one we are interested in is the risk of a given individual developing glaucoma. In two words it is "instant experience"! There

are limitations but one model has been validated in a separate study: The European Glaucoma Prevention Trial. The outcome is the STAR II "Scoring Tool for Assessing Risk" for conversion to glaucoma from ocular hypertension. This "tool" provides the five year predictive risk of developing glaucoma based on five key factors: age, baseline eye pressure, central corneal thickness, the visual field (the pattern standard deviation) and an assessment of the optic disc (specifically the vertical cup / disc ratio). Pfizer Ltd provides the STAR II tool.

How valid is this STAR II tool?

This is as good as it gets. There is no alternative process to assimilate risk factors for conversion to glaucoma. The clinician cannot be smarter than to use the STAR II tool to assess the risk from the five key risk factors. Clinical experience cannot be called upon to predict risk. However there are additional risk factors including family history, pseudoexfoliation, disc haemorrhages, pigment dispersion and myopia. These are factors found on examination of the eye under the microscope.

The best decision for the patient remains for the clinician to decide, but full use of STAR II is a wise choice. What you can expect, if you are on glaucoma treatment but you do not have glaucoma, is that all known risk factors will be assessed in making the best decision for you.



Glaucoma NZ Public Meetings

Were you able to attend a Glaucoma NZ public meeting this year? More than 1400 people did. Fourteen presentations were held at different venues around the country during 2007. Glaucoma NZ is grateful to the ophthalmologists who voluntarily gave of their time to be guest speakers, and to many others who helped to make the meetings a success – local Lions Clubs members, optometrists, nurses and venue staff.

Since 2003 Glaucoma NZ has held 64 public information presentations across the length and breadth of the country. This map shows the locations of the 64 Glaucoma NZ meetings. Meetings for 2008 will be publicised in local papers, in *Eyelight*s and on the Glaucoma NZ website.



Glaucoma Questions & Answers

Why does Glaucoma NZ recommend eye examinations only every five years from age 45? I have read other recommendations suggesting every two years.

Glaucoma “screening” is a complex matter - it’s not a case of “one size fits all.” Glaucoma NZ has set a realistic, achievable target in the “45 plus 5 glaucoma eye examination”. Everyone by 45 years of age and every five years thereafter needs an eye examination because there is no other way to assess for glaucoma. If everyone had an eye examination five yearly between 45 and 60, then in addition to earlier diagnosis when glaucoma is present, people at higher risk would be identified and monitored more closely. It would be counter-productive in terms of public acceptance and private resources to recommend frequent

testing to those with no risk factors at all except increasing age.

Glaucoma NZ places emphasis on assessing the risk factors for glaucoma when you have an eye examination. Risk assessment for glaucoma requires the best knowledge of all known risk factors. You will be aware of some risk factors yourself such as having a close relative with glaucoma. However, several important risk factors, such as the shape of the angle, the state of the optic disc and the level of intra-ocular pressure can only be identified by an eye examination. At that first eye check your eye health professional should assess your level of risk and tell you how often you need to be examined and why.

More questions on p7.

Effective Eye-Drop Instillation

Various techniques are sometimes recommended for delivering eye drops effectively. The main thing is to find one that suits you and that you can manage. The following technique is the one advocated by the staff of the Wanganui Hospital Eye Clinic. We are grateful to them for sharing it with Eyclights readers.

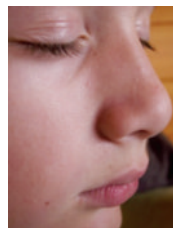
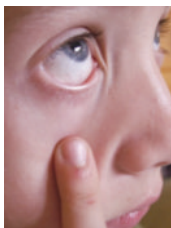
Main Objective

To keep the eyedrop in the eye as long as possible. This is to make sure most of the medication is absorbed into the eye.

1. Wash your hands
2. Shake the bottle
3. Stand in front of a mirror
4. Look up (only enough to still see what you are doing though)
5. For the right eye, use the right hand to squeeze a drop into the lower eyelid pocket. You can create this pocket by using the opposite hand to separate the lower lid from the eyeball. Do not pull down too much or the drop will fall out.



6. Keep looking up for 10 seconds whilst still holding your lower lid down.
7. Close your eye gently for 10 seconds.



8. Repeat for second eye.

9. For the left eye, use the left hand to squeeze a drop into the lower eyelid pocket. You can create this pocket by using the opposite hand to separate the lower lid from the eyeball. Do not pull down too much or the drop will fall out.
10. Keep looking up for 10 seconds whilst still holding your lower lid down.
11. Close your eye gently for 10 seconds.

Tips

Do not pull the lower lid down too far. The drop will fall out.

Do not use the left hand for the right eye and vice versa when holding the bottle. Your nose will get in the way and you will blink. The right hand holds the bottle for inserting drops into the right eye and left hand holds the bottle for the left eye.

Do not blink to spread drop over the eye, it will suck the drop down your tear duct. You want to keep the drop in your eye as long as possible.

Do not put the drop on the eyeball itself, it is the most sensitive surface and you will blink.

Here at our eye clinic we do not recommend holding the inner corners of your eyes when applying drops because you are more likely to pull the drop out with your finger. Most people do not cover their lower tear duct effectively, making it a pointless exercise and there is a tendency to rush.

Poem

Glaucoma

Glaucoma won't let my mother knot:
 fine wool is a problem, her most intricate stitch

no longer viable. Unravelling doesn't require sight.
 Look into her eyeball and you'll see light

receptors twinkling like stars. Ganglion cells die,
 darken the supernovae,

lovely eclipses for others to see
 in our intimate, sighted jelly.

On the coast, each village had a different style
 of fisherman's sweater, they say. The tide

reads blackberry stitch like Braille
 with dexterous pressure, untangling the wool

of tendons. Tears are a retreating sea
 full of dark fish swimming. Knit one, purl three.

(Gwyneth Lewis)

Gwyneth Lewis was appointed Wales's first National Poet from 2005 – 2006. She has published poetry in Welsh and English, non-fiction and libretti Welsh National Opera. Glaucoma NZ is grateful for permission to re-print this poem for Eyelights readers.

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Glaucoma Questions & Answers - cont.

I saw something on TV that suggested over-the counter spectacles are harmful. Is that correct?

Glaucoma NZ is well aware of many people who have presented with severe glaucoma damage after many years of purchasing

"Hobby" spectacles. The harm does not come from the spectacles but from the absence of any eye examination over long periods of time. Adults using or not using spectacles do not create permanent "harm" to their eyes. But failing to have an eye examination will allow glaucoma to blind you.

YES, I would like to help



I would like to become a member of Glaucoma NZ at no cost

I would like to donate \$ _____

I enclose my cheque for \$ _____ made payable to Glaucoma NZ,
or please debit my

Visa Amex Mastercard Name on Card _____

Card No _____ Expiry ___/___ Signature _____

Address _____

_____ Phone No _____

Donations of \$5.00 or more are tax deductible

I would like information on leaving a bequest for Glaucoma NZ

World Glaucoma Day



March 6th 2008 will be the first ever World Glaucoma Day (WGD), a joint global initiative of the World Glaucoma Association (WGA) & the World Glaucoma Patient Association (WGPA).

More details in the first issue of Eyelights next year.

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