

The European Ophthalmic Arena – In Brief A Round-up of Trends, Statistics and Clinical Research

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Successful Screening Programme for Diabetic Retinopathy to Expand

A UK screening programme for diabetes patients has been so successful that it is set to expand to cover a larger area. The Nottingham Diabetic Retinopathy Service offers 1,900 screening appointments per month for the early detection of diabetic retinopathy, which can cause blindness if left untreated.

There are nearly 23,000 registered diabetes patients in Nottingham and the Service has so far given almost 11,000 screening appointments, which means it is well on the way to reaching the Department of Health's goal that all diabetes patients should have access to digital eye scans by the end of 2007. The OptoMize iP (Digital Healthcare, Cambridge, UK) software used by the Service enables three staff to manage 80,000 pieces of correspondence to referral clinics and patients every year. The software can monitor changes in eye condition by comparing scans taken at different points in time, and can be loaded onto laptops and thus taken to different locations by staff. Tasso Gazis, Diabetes Consultant at the Queen's Medical Centre and Clinical Leader of the Service, said: "Detection of the disease depends greatly on reaching out to diabetes patients and making it as straightforward as possible for them to attend their screening appointments. A mobile, community-based service is particularly useful for elderly patients and increases the overall take-up rate."

Future plans for the Service include building up screening records over a longer period of time so the software can plan treatment for individual patients, for example by offering more regular appointments to patients at high risk of diabetic retinopathy. ■

Visual Problems Associated with Mortality Risk in Older Adults

Older adults who are visually impaired have higher mortality rates, according to a study published in the July issue of *Archives of Ophthalmology*. It was found that people over the age of 49 years who suffered from cataracts or age-related macular degeneration (AMD) had a higher rate of mortality over an 11-year period than those without these visual impairments.

Researchers from the University of Sydney, Australia, assessed just over 3,600 participants for overall visual impairment in 1992 and 1994, and again in 2003. By 2003, just under one-third of the participants had died: for those with visual impairment the death rate was high (54%) compared with those without any visual impairment (34%). However, the mechanisms behind these findings are not understood. Sudha Cugati, MS, lead author of the study, said: "It remains unclear whether there is a direct or indirect link between visual impairment and death, or if another factor not accounted for in this study affected the results. High mortality associated with visual impairment could be attributed to age-related ocular conditions, such as AMD or cataracts, which can be markers of biological ageing. Alternatively, visual impairment and its related ocular conditions could share similar pathogenesis with other conditions associated with increased mortality."

If a direct or indirect link between visual impairment and mortality risk can be found, regular assessment of vision in older people may lead to early detection, enabling treatment that reduces the impact of visual impairment. ■

High Arterial Pulse Pressure Associated with High-tension Open-angle Glaucoma

People who have high arterial pulse pressure may be at greater risk of high-tension open-angle glaucoma, according to a study published in the June issue of *Archives of Ophthalmology*.

High arterial pulse pressure is the difference between the systolic and diastolic – top number

and bottom number – blood pressure. The role of vascular factors in open-angle glaucoma has been examined before, since the disease was often associated with high intraocular pressure (IOP). Researchers from the Academic Medical Centre, Amsterdam, and the Erasmus Medical Centre, Rotterdam, The Netherlands, looked at data obtained from 5,317 individuals between 1990 and 1999, including 215 people who had definite or suspected open-angle glaucoma. The patients received eye examinations as well as having their blood pressure and arterial stiffness measured. The patients with glaucoma were classified as having high-tension open-angle glaucoma (IOP >21mmHg) or normal-tension open-angle glaucoma (IOP <21mmHg).

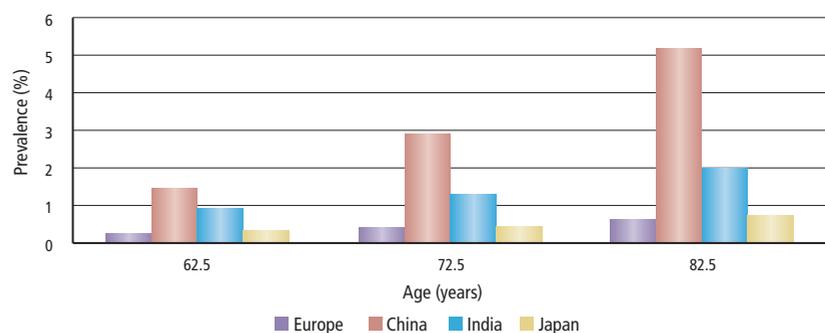
Analysis showed that high-tension open-angle glaucoma was associated with high pulse pressure and, possibly, increased carotid arterial stiffness. The authors state that, although the findings need to be confirmed in other population-based studies and the number of cases was low, the mechanisms involved in the aetiology of high-tension open-angle glaucoma may be different from those in normal-tension open-angle glaucoma. ■

Custom-made Contact Lenses Improve Visual Acuity in Keratoconic Eyes

Patients with keratoconic eyes may benefit significantly from custom-made soft contact lenses, developed by researchers at the University of Rochester.

Keratoconic eyes are rare – about one in 2,000 people suffer from the disease – but cause

Prevalence of Angle Closure Glaucoma by Age – Selected Geographies



Source: HA Quigley et al.

profound optical problems, including halos and double or triple images. The eye also appears cone-shaped when viewed from the side. Laser vision correction is not a treatment option for these patients, who have a very thin cornea around the apex. While glasses are hard to tolerate, the remaining treatment options – wearing hard contact lenses or receiving corneal transplants – also come with complications. Conventional soft contact lenses are unsuitable for keratoconic eyes, since they conform to the conical cornea shape. In contrast, the custom-made lenses are made using wavefront sensors to measure exactly how light enters each patient's eyes through the cornea. An oscillating tool then sculpts the front surface of the lens, resulting in a contact lens that can correct specific aberrations of the cornea and crystalline lens.

The custom-made lenses improved visual acuity by an average of 2.1 lines compared with conventional lenses, and all three patients who received them reported significant improvements in their vision. These results suggest that more patients may benefit from custom-made lenses in the future. ■

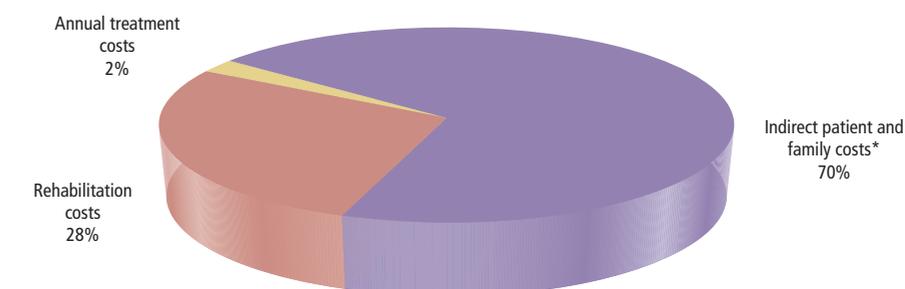
Consensus of Global Glaucoma Specialists – Fluctuation in Intraocular Pressure Is Key

An international panel of leading glaucoma experts has reached its first consensus on the role of intraocular pressure (IOP) management in patients with glaucoma. The panel presented its findings at the annual meeting of the Association for Research in Vision and Ophthalmology (ARVO) in May.

Glaucoma, which affects 70 million people worldwide, can lead to blindness if untreated and is the second leading cause of blindness in the world. Increased IOP is thought to play a key role in the progression of glaucoma, so in the past treatment primarily focused on lowering IOP. However, the use of mean IOP as the primary measure in IOP control and the significance of fluctuations in IOP have been areas of debate in which no agreement could be reached. The consensus panel, chaired by George A Cioffi, examined areas of agreement in long-term IOP fluctuation and when it should be assessed in both patients with progressing glaucoma and those who have their IOP under control.

The panel concluded that peak IOP levels and long-term IOP fluctuation are clinically significant and highlighted the use of medications such as prostaglandins to reduce

Glaucoma in Europe – Mean Annual Cost per Patient



*Includes lost productivity.
Source: Poulsen et al.

long-term IOP fluctuation. While this consensus will likely improve the assessment and management of glaucoma in the future, there are many other parameters around IOP control in glaucoma that remain unclear and require further investigation. ■

Optical Coherence Tomography Advances to Real 3D

Researchers at the Massachusetts Institute of Technology (MIT) have developed a laser that takes high-resolution 3D images of the retina, improving the speed of data capture by 10-fold compared with conventional scanning devices. The laser, announced at the Conference on Lasers and Electro-Optics and the Quantum Electronics and Laser Science Conference in Baltimore in May, could lead to improved diagnosis of many eye diseases.

The retina is the part of the eye that converts light to electrical signals that carry to the brain. The new imaging system is based on optical coherence tomography (OCT), which was developed in the 1990s by James Fujimoto and Eric Swanson and their collaborators at MIT and is now a standard diagnostic tool in ophthalmology. OCT obtains high-resolution cross-sectional images of the eye by reflecting light back and forth across the eye, measuring the echo time delay along micrometre-scale lines that combine to form a 3D image. Conventional OCT can capture only a limited amount of data, as patients can typically keep their eye still for only around one second. However, the new imaging system is capable of scanning at 10 times the speed of conventional OCT, with record speeds of 236,000 lines per second.

This development means that, with further clinical studies, it may be possible for ophthalmologists in the future to take highly detailed 3D snapshots of the eye that contain comprehensive volumetric information about the microstructure of the retina. ■

Americans Unaware of Age-related Eye Disease Risk

America is facing an eye disease epidemic as the nation's 78 million baby boomers increasingly fall into the over-65 age group – the most at-risk population for eye disease. However, only a small proportion of the population is aware of, or concerned about, age-related eye disease.

These findings come from a survey conducted for the American Academy of Ophthalmology (AAO) by Greenberg Quinlan Rosner Research. The survey found that only 11% of Americans – including those in high-risk populations, such as the elderly and those with a family history of eye disease – perceived themselves as being at high risk of eye disease. It was also found that the majority of people are more concerned about weight gain or pain in the back or joints than vision loss, with only one-quarter claiming to be 'very concerned' about losing their sight.

One of the most worrying findings of the survey was that over one-third of over-65s do not have annual eye examinations. The AAO recommends that adults should receive a baseline screening for eye disease at the age of 40 years, after which the ophthalmologist can determine the interval for future examinations.

"In the same way as mammograms and diabetes screenings do, eye disease screening can help identify signs of disease at an early stage, when many treatments can have the greatest impact," said H Dunbar Hoskins, Jr, Executive Vice President of the AAO.

To this end, the AAO is partnering with EyeSmart, a new public initiative that aims to educate Americans about the risk of eye disease. The EyeSmart website offers eye disease and risk information, as well as a searchable database of local ophthalmologists. ■