• CYTOMEGALOVIRUS OCULAR INFECTION

• LATE CAPSULAR BLOCKAGE SYNDROME
Journal of
The College of Ophthalmologists of Sri Lanka

Editors
Dr. Mangala Gamage, DO, MS, FRCS
Consultant Eye Surgeon

Dr. Binara Amarasinghe, DO, MS, FRCS
Consultant Eye Surgeon

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College of Ophthalmologists of Sri Lanka
National Eye Hospital, Colombo 10, Sri Lanka.
Email: ophsleye@gmail.com
Telephone: 94+11-2693924
Fax: 94+11-2693924
Website: www.cosl.lk

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**Editorial**

**Starting in research**

*The Journal of the College of Ophthalmologists of Sri Lanka* 2015; 21: 1

The intention is to give an overview of the requirements for setting up a research study. Research drives progress in ophthalmology. The research requires researchers, ophthalmologists who are full of curiosity and who enjoy solving problems.

Any young doctor interested in research should start early in training. It is ideal if a person is in a training centre that already has people and infrastructure to support research. People with ideas, facilities and contact with industry which will allow you to access to new design and new tools are all essential for conducting a research.

However all is not lost if you are training at a place where it does not have lot of active research going on. This may be challenging but, not impossible. With regard to trainees if they have a good idea is to try to win over the support of senior person or find a mentor off sight even in a different country. Reading journals and trade publications, attending conferences, keeping an eye out for unresolved questions will help anybody to have a good idea about a field of research. It is also best to get involved with a randomized clinical trials.

The first step is to do a literature search, and need a good questionnaire, right method and write equipments. The common problem is not having enough subjects in the study and this underscore the importance of consulting a statistician.

In a randomized trial going thorough ethical committee, enrolling patients, informed consent and so on would be hassles to everybody. But it is worth the trouble.

Aside from satisfying scientific curiosity, there is a carrier building aspect to research. Through research a person will have to read a lot, and will gain extra knowledge and experience you wouldn’t have had otherwise. Therefore whether or not you continue on the research track the experience is extremely valuable and this will put you into better position to provide your patients with the best possible care.

Considering the research ethics important aspects are autonomy/respect persons, beneficence, non-maleficence and justice. Guides for best practice of all research activities would come under ethics, science, information, health, safety and employment and finance and intellectual property.

Dr. Mangala Gamage (DO, MS, FRCS)

Dr. Binara Amarasinghe (DO, MS, FRCS)

*Joint Editors*
Towards eliminating avoidable blindness

Lalitha Senerath¹


My theme for the year 2014 is the advances in ophthalmology in our Nation, which go hand in hand with the great development taking place in our beautiful country which make the mission a success, “protect the eye to see the world”.

A snap shot of the world population which indicates the increase in the elderly population as apposed to the decline in the percentage of the younger population which reflects the improvement of the health care system. These population pyramids show the increase in the numbers of the middle and elderly population aged above 40 years.

¹President, College of Ophthalmologists of Sri Lanka, 2014.
With the improvement of the Health Care System, Sri Lankan figures fall within a range similar to that of the United States, thus signaling a need to facilitate and improve health care of most noninfectious and non-traumatic eye ailments as they are more common amongst the middle aged and elderly people.

According to the WHO figures, 285 million people are visually impaired and 39 million people are blind in the world. 65% of those who are visually impaired and 82% of those who are blind are above the age of 50 years. Women have a higher risk of visual impairment. From those who are visually impaired 80% are due to avoidable blindness that may have been preventable or treatable. Thus; the prevention of blindness should be our main target and common goal.

The leading causes of blindness may differ from country to country but the most prevalent cause common to all countries is cataract.
To fulfill the Mission of our College, “protect the eye to see the world”, what should be our role as the College members in our country?

Couching

When we look back into the history of ophthalmology, as opposed to the past there now exists great advancements in technology and treatment modalities.

For example with regard to cataract surgery, the great Indian surgeon Susrutha was considered to be the father of cataract surgery in 800 BC. Couching was the first surgical procedure practiced. In this procedure cataracts were being deliberately dislocated into the vitreous by using a needle so that it would make the visual axis clear and offer some improvement of vision to the patient. This method was practiced from the 5th century BC until 18th century, and still is being practiced today in some countries.

The modern method of cataract extraction was first described in 1745, by the French ophthalmologist, Jacques Daviel who successfully removed a cataract through a large incision in the cornea, and corrected the vision with aphakic glasses. These glasses were unfortunately very thick and imposed great inconvenience.

Cataract surgery with intraocular implants performed today is started after accidental discovery by a British surgeon named Harold Ridley in 20th century. He noticed that shattered particles of lightweight Plexiglas airplane canopies lodged in airmens’ eyes did not cause rejection. Deducing that Plexiglas, technically called polymethyl methacrylate, was biologically inert, Ridley devised a polymethyl methacrylate “intraocular” lens which he successfully implanted in a post-cataract eye in 1949. Later cataract surgery was further refined to the extra capsular cataract extraction and lens implant Charles Kelman was honored by introducing phacoemulsification in 1967 after being inspired by his dentist’s ultrasonic probe. Phacoemulsification revolutionized the modern cataract surgery with the advantage of having a rapid postoperative recovery of vision with minimum complications and became popular all over the world.

Laser assisted cataract surgery is the latest technological development in modern world. In the coming years I am sure FSL will revolutionize the way we perform cataract surgery. These methods have already shown excellent results in performing a precise and self-sealing corneal incision, a highly circular strong and accurate capsulorhexis, and a safer and less technically difficult phacofragmentation which may facilitate trans lenticular hydro dissection with minimum stress on the lens capsule and use of less ultrasound energy in phacoemulsification to be expended inside the eye.

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Towards eliminating avoidable blindness

One of the biggest challenges in restoring vision is uncorrected refractive errors. 153 million people are affected with refractive errors world wide.

These results in blurred vision, which can be so severe that it causes blindness. The most common refractive errors are: Hypermetropia, myopia, astigmatism.

These refractive errors were corrected using magnifying glasses in the early days. Later custom made lens powers were introduced. Spectacles remain the simplest and the most popular way of correcting refractive errors. The contact lens is the next development in this sphere which is cosmetically and optically much better though handling, maintenance and cleaning may be cumbersome and also carries the risk of infection.

Apart from optical corrections there are numerous surgical procedures for the correction of all types of refractive errors, such as radial keratotomy and relaxing limbal incisions to alter the corneal curvature. With the development of laser procedures radial keratotomy is rarely used today and is considered an obsolete procedure.

Corneal transplant is another procedure opted to alter the surface irregularities as well as corneal opacities.

The greatly in “Vogue” procedure of LASIK has gained much popularity amongst the younger age groups. This utilizes controlled laser beams to fashion and reshape the corneal curvature and correct refractive errors.

Corneal curvature adjustment has advanced to such a level that today it is possible to use intra corneal implants (INTACS) to correct these errors.

Another advancement has been the phakic intraocular lens: Designed for patients who are too nearsighted for LASIK and PRK. This phakic implant is inserted through a small incision and placed in anterior chamber or posterior chamber while the eye’s natural lens is left in place. Another such procedure is the PRELEX which stands for presbiopic lens exchange: A multifocal intraocular lens implant is done by removing the clear lens with phacoemulsification to keep them free of glasses.

Glaucoma

The second leading cause of global blindness is glaucoma. Which is known as the “Silent stealer of the vision”, is an optic neuropathy. The main causative factor is high intraocular pressure. In managing glaucoma three modes of therapies are available.

How do we manage

The roots of modern surgical devices and procedures are clearly evident in the mid-1800s. Since 1856, Von Graffe performed an iridectomy for angle-closure glaucoma. The first external filtration procedure recorded is the anterior sclerectomy, subsequently cyclodialysis and cyclo-cryo therapy.

Since 1968 trabeculectomy is the gold standard for surgical management of glaucoma.
The modern era of glaucoma surgery has clearly placed an improved safety for patients. Examples of this trends include the Moltano implants, the Ex-Press shunt, AB-Interno implants like, SOLX and iStent, are the latest trends in surgical management of glaucoma.

As common to all diseases prevention is better than cure, we here hope to improve our screening and detection procedures to detect a larger number of glaucoma suspected patients and prevent its progression to blindness. Medical personnel who are going to carry out the screening include, medical officers, ophthalmic technologists and optometrists. These programs are being carried out by our energetic focal points of the Vision 2020 program.

Creating awareness amongst school children with the help of attractive awareness posters on common cause of childhood blindness and how to minimize ocular trauma at schools and with the help of animated videos in school libraries or which are uploaded into a web site to educate children on the common ophthalmic problems, causes of ocular trauma and how they can protect their eyes. Health tips to be announced at school during lunch interval in an attractive way by the way of a song or rhyme. These proposals have been approved by the College and forwarded to the Ministry of Education. These will be implemented at schools in future as a measure to prevent childhood blindness.

Diabetes and the eye

Even though I have mentioned cataract, refractive errors and glaucoma as leading causes for visual impairment, I consider childhood blindness as being a priority. This is considering the number of years the child would have to live with the impairment and the possibility of correction with a high success if detected early.

The following proposals are forwarded by the College to work in collaboration with the Vision 2020, Ministry of Health and Ministry of Education for control of childhood blindness. They include visual acuity screening of every child once in two years, starting from preschool age. Currently school screening is done at year 1, 4 and 7.

Diabetes is the commonest cause of visual impairment in working age group. Of those who are 40 years and above 25% are known to have impaired glucose tolerance.

Long standing diabetes with poor glycemic control may lead to many ocular complications. Common ocular complications are cataract, glaucoma, diabetic retinopathy, retinal vascular occlusions, cranial nerve palsies, orbital and ocular infections.

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Diabetes is a multisystem disease. It progressively damages the capillaries causing micro vascular occlusion and micro vascular leakage resulting damage to many target organs and one of the foremost being the eye. Strict glycemic control may decrease the progression of the complications and aid in the treatment process of diabetic retinopathy.

But nevertheless as ophthalmologists we are concerned by what we can do for prevention of blindness by diabetic retinopathy. Our objectives are,

1. To provide regular screening.
2. To provide laser coagulation facilities islandwide.
3. Provision of Anti-VEGF treatment
4. To provide facilities for vitreo-retinal surgical units.

Other high risk factors such as hypertension, smoking, sedentary life style, obesity, and hyper-lipideamia may drag one faster towards all the systemic complications of diabetes. A healthy life style may keep one away from sight threatening complication of diabetes.

Preventive measures and management protocols of diabetic retinopathy include retinopathy screening of all diabetic patients by a physician, general practitioner, medical officer or optometrist at the time of their diagnosis with the use of a direct ophthalmoscope. Detail funduscopy with indirect ophthalmoscope or slit lamp bio-microscopy can be done at eye clinics.

For mass screening we can use a fundus camera for fundus photography.

Early management is utmost important. Laser treatment is the best mode of therapy in controlling the progression of retinopathy. Currently mainstay of the adjunct treatment is intra vitreal injection of Anti Vascular Endothelial Growth Factor (Anti VEGF). End stages of diabetic retinopathy could be managed with the latest vitrectomy procedures.

Retinopathy of prematurity is one of the biggest challenges for ophthalmologists and neonatologists. With the improvement of neonatal care the prevalence of ROP is on the rise and it is a blinding disease if left untreated. Preventive measures includes: adequate perinatal care and appropriate intensive care which lessens the tissue hyperoxia/hypoxia swings.

Ophthalmic management includes screening for retinopathy of high risk infants. The treatment of acute severe ROP includes retinal photocoagulation or retinal cryo-therapy. Intra-vitreal anti VEGF is considered to be the most recent advancement in the treatment of ROP. Vitrectomy surgery is indicated in late stages of disease with tractional retinal detachment. Despite advances in ophthalmic management, number of infants go blind from ROP each year.
Prevention of ROP by regular screening according to guidelines is of utmost importance. Specific screening criteria for ROP have been established, although they vary in different parts of the world. In the US, screening examinations are performed in all children younger than or equal to 32 weeks gestational age and less than 1500 g at birth. In addition, we also screen children who, neonatologists believe are at risk for ROP. Often, these are children with an unstable course or severe systemic illnesses such as sepsis.

The College of Ophthalmologists of Sri Lanka has taken the following steps with the collaboration of Family Health Bureau and the Ministry of Health to minimize blindness from ROP. Updated the ROP guidelines have been circulated to all neonatologists and ophthalmologists. A leaflet has been designed on ROP to improve awareness of the parents. A standard referral letter has been formulated to be sent by neonatologists to the relevant consultant ophthalmologist and a record sheet and feedback forms give the summary of clinical finding and the management plan.

As I mentioned earlier, the Sri Lankan population is considered to be one of the fastest growing aging populations in the world. Age related macular degeneration (AMD) is a leading cause of progressive visual loss in people more than 60 years of age, causing significant visual disability in our country.

Symptoms of age-related macular degeneration (ARMD) would be, distortion of images and straight lines which may progress to a gradual loss of central vision. The presentation of ARMD is usually insidious and often detected during routine fundus examination.

Mainstay of treatment of ARMD is anti VEGF therapy. In Wet AMD anti angiogenic protein inhibits vascular endothelial growth factor (VEGF) which stimulates abnormal vascular growth. Anti VEGF medication is absorbed into the tissue of the macula and reduces the level of VEGF activity and pauses formation of the leaky blood vessels. The level of VEGF in the eye is reduced and growth of the abnormal blood vessels halted and regressed. Controlling angiogenesis and related swelling stabilizes vision and further damage to the macula. Some patients treated with anti VEGF for AMD regain some form of vision.

When all treatment modalities fail the patient becomes blind but there is still a chance and hope to make our patients independent through low vision services.
Visual disability poses major impact to our society. People with visual disabilities, find it difficult to get on with their day to day activities. They have reading difficulties which may cause frustration and depression. Their physical immobility leads to a higher prevalence of medical morbidities. Daily tasks such as managing currency is impossible and affects their independence and security.

We have a strong network of low vision service centers throughout the country. All visually disabled patients have free accessibility to these centers. The low vision devices are given free of charge at these centers. Students sitting for A level and O level are given extra benefits like additional time. Universities now accept and allow low vision candidates to use computers at their examinations. Special education facilities for visually impaired children are in place. There are tactile guide paths and electronic audible road crossing signals for visually disable pedestrians available in a few cities. Tactile features in currency notes is a great invent of our country.

Latest developments in Low Vision care is Hi tech glasses which make the most of the existing sight, with additional images appearing in the line of sight to give extra information about who or what is in front of them. The Bionic Eye is an implant placed in the back of the eye. It uses the eyes’ natural image processing capabilities beyond the light detection stage to produce a visual perception in the patient that is stable and follows their eye movement. This has improved quality of life for patients suffering from vision loss caused by retinitis pigmentosa and age-related macular degeneration.

The College of Ophthalmologists of Sri Lanka is in the process of implementing a register for the blind to identify their needs to help them throughout the life through social services, extend and facilitate rehabilitation centers, help them at school with special attention, and educate them in special blind schools.

To end “only thing worse than being blind is having sight but no vision” – Quote by Helen Keller.
Introduction
Keratoplasty or corneal transplant is accepted as one of the most successful of all transplants done in the body, with a fairly low rejection rate. However, this is only in cases where immunological isolation of the cornea is preserved. Even today, in the 21st century, there are cases in which keratoplasty is doomed to failure. For very severe ocular surface disorders with bilateral loss of vision, such as severe Stevens’ Johnson syndrome with keratinisation, severe chemical burns, ocular pemphigus with significant dry eye, disorganised anterior segments due to trauma, any cause of bilateral total stem cell loss or deficiency, severely vascularised recipient eyes etc, keratoplasty will not work and should not be attempted. The world over, the search for the perfect keratoprosthesis (KP) is a continuous process for such cases. There are several dozens of KP invented over the years. Only a handful however are currently in use and stood the test of time. The Daljit Singh champagne cork KP also known as the Worst-Singh KP has perhaps the largest number implanted till date (over 5000 - personal communication). The others are the Modified osteo-odonto keratoprosthesis (MOOKP) and the pintucci bio-integrated keratoprosthesis (PBIKP). The Dohlman or Boston keratoprosthesis is useful in less severe eye conditions such as vascularised corneal opacities, repeated failed grafts, chemical burns and Stevens’ Johnson syndrome without keratinisation. For the Boston keratoprosthesis (BKP), some degree of tear secretion and a normal blink mechanism are essential for long term success. For any KP, it is essential to have accurate light perception and to rule out pre-existing end stage glaucoma or a retinal detachment. The PBIKP and the BKP are the two which the author has personal experience. The latter will be described in this article.

The Boston keratoprosthesis (BKP)
This is the most commonly implanted keratoprosthesis worldwide today. The Type 1 is implanted in eyes with good tear secretion. There is also a Type 2 which has a longer PMMA cylinder and can be implanted to project through the closed upper lid or through an opening created between the sealed upper and lower lids. However, the author has no experience with Type 2, hence only the Type 1 will be described.

Surgical technique
The surgery is done in a single stage. First the donor cornea of 8.5 mm is punched out as usual in a penetrating keratoplasty using a Teflon block and a trephine of one’s choice. A 3mm hole is made in the centre of the donor cornea using a special disposable dermatological trephine, which is supplied with the BKP. The BKP is then assembled as follows. The front mushroom plate is kept plate down on a flat surface.

The current design is a 3 piece structure.
1. The front part is a mushroom shaped structure with a stem (all PMMA). The front plate is 5mm in diameter while the stem is 3.35mm.
2. The back plate, made of PMMA with 8.5mm diameter, has a central hole and 16 holes of 1.2mm each. It earlier had only 8 holes, but has been modified to double the number of holes.
3. A titanium locking ring which fits posterior to the back plate.

There is also another version called the “Lucia” model, where the locking ring is eliminated. Instead the back plate with holes is made of titanium. However, this is cosmetically not as appealing and is not commercially available on a wide scale at the time of writing this article (July 2015).

Two types are available, a BKP for aphakic eyes and one for pseudophakic eyes. Depending on the case, the appropriate one is ordered. If the eye has an anterior chamber IOL or an ill-fitting PC IOL, it is better to remove the IOL at time of surgery. Also, if the eye still has a crystalline lens, the crystalline lens has to be removed at time of surgery and either no IOL is implanted or a zero powered PC IOL can be implanted. In all these cases, an aphakic type BKP is ordered. It is necessary to send the axial length measurement to the supplier to obtain the appropriate powered DKP. If the eye is pseudophakic with a well centered PC IOL in situ, one can order a pseudophakic BKP, which comes in standard power, so no axial length information is necessary.
Visco-elastic is applied to the stem. The donor cornea with the central hole punched out is then slid onto the stem, with the epithelial side closer to the plate. The endothelium is coated with viscoelastic and then the back plate is pushed into place, with the central hole accommodating the end of the stem. Finally the titanium ring is pushed onto the stem and locks into position with an audible snap. Once the BKP along with the donor cornea is assembled it can be placed back into the MK medium container while attention is now paid to the recipient.

A central corneal button of a diameter 0.5mm less than the donor cornea is partially trephined, again with a trephine of the surgeon’s choice. The Anterior chamber (AC) is gently entered with a sharp knife and the button is excised with right and left corneal scissors as with any penetrating keratoplasty. A peripheral iridectomy is done. If the patient has a posterior chamber IOL already in place in the bag, it need not be disturbed. Any ill-fitting IOL is removed. If the eye is phakic it is made either aphakic (leaving posterior capsule intact) or pseudophakic with the appropriate IOL inserted to give emmetropia. If the eye is already aphakic with no posterior capsule or if vitreous presents into the AC during the surgery, a central core vitrectomy is recommended. The BKP assembly is then inserted into the central opening and the donor cornea is sutured with interrupted 9/0 or 10/0 nylon sutures. The knots are buried. A large diameter special soft lens that is provided with the BKP is inserted to cover the ocular surface. This is from Kontur and is a Plano lens with 16 mm diameter with a 9.8 mm base curve.

Post op treatment
Dr. Dohlman’s group from Boston recommends vancomycin (14mg/ml) eye drops at least once a day for life and claims that the incidence of post op endophthalmitis have dropped to almost nil after this regime has been started. The author has been using vancomycin drops for the first month q.i.d and then switching to the commercially available fourth generation fluoroquinolone eye drops tapered to once a day for life.

Topical steroids are used 4 times a day and tapered off within one to 2 months, unless the eye is inflamed, when they may be continued for longer. If there is glaucoma, they may be stopped earlier or replaced with milder steroids.

Anti-glaucoma drops may be used if glaucoma is suspected by finger palpation method and confirmed by disc and visual field changes. In case glaucoma still persists an Ahmed glaucoma valve or Baerveldt glaucoma drainage device implantation surgery may be necessary.

The contact lens is recommended to be worn as an extended wear lens for life and replaced every 2 months or earlier if it has too many deposits.

Reason for success
The BKP (Type 1) is done for less severe indications – chief among them being failed grafts. Careful case selection, rejecting cases with very dry eyes and inadequate blink and those with a keratinised ocular surface have enhanced the success rate. The problems with the earlier screwed on back plate have been eliminated by having a snap-on titanium ring locking the assembly into place. The use of long term topical antibiotic and the Kontur lens have reduced the complication rate considerably.
Comparison of anterior segment changes, before and after laser peripheral iridectomy (PI) by using anterior segment optical coherence tomography (AS OCT) in eyes suspected of narrow anterior chamber angles

J. M. W. Wajirani¹, U. A. K. Thennekumbura¹, D. H. H. Wariyapola²


Abstract

Objectives:

1) To compare pre and post conventional Laser PI, angle and anterior chamber dimensions in eyes with angle closure suspects by using anterior segment OCT (visante).

2) To identify types of angle closure suspects such as plateau iris.

Methodology: A prospective observational study in 40 eyes of 20 patients recruited from the Eye Clinic at SJGH from January 2014 to July 2014. AS OCT images of temporal and nasal angles and anterior chamber taken in each eye before and after PI. Main outcome measures were, temporal and nasal trabeculo-iris angles (TIA), central anterior chamber depth (ACD). Comparison made between pre and post AS dimension data.

Results: 58 eyes of 29 subjects were analysed. Pre and post Laser PI anterior chamber data were compared. There were significant increase in TIA and ACD following PI.

Conclusion: In eyes suspected of having angle closure, Laser PI resulted in significant angle widening and anterior chamber deepening based on AS OCT imaging.

Introduction

Angle-closure glaucoma (ACG) affects an estimated 16 million people worldwide. The global presence of ACG is approximately one-third that of open-angle glaucoma. The number of people blind due to ACG (3.9 million) is nearly equal to that blinded by OAG.

The anterior segment optical coherence tomography (AS OCT) provides an objective method to assess the anterior segment of the eye. Anterior segment OCT uses the principle of low-coherence interferometry. It produces high-resolution, cross sectional images of the anterior segment of the eye. The wave length is 1310 nm.

Objectives

1) To compare pre and post conventional Laser PI, angle and anterior chamber dimensions in eyes with angle closure suspects by using anterior segment OCT (visante).

2) To identify types of angle closure suspects such as plateau iris.

Methodology

It is a prospective observational study. 58 eyes of 29 patients who are suspects of having narrow anterior chamber angles attended the Eye Clinic SJGH from December 2013 to July 2014 were included to the study. Gonioscopy performed inorder to define the narrow angles. AS OCT imaging was performed by single examiner, tomographical cross sections of the anterior chamber in horizontal meridian were taken. The line joining the scleral spurs of temporal and nasal angles was used as a fixed reference to obtain the measurements.

Measurements taken

1) Central anterior chamber depth (cACD).

2) Angle opening distance 500mic (AOD 500) of temporal and nasal angles were measured.

3) Iris and angle morphology were observed qualitatively.

Routine YAG Laser PI were performed at 10 to 11 o’clock position of right eyes and 2 o’clock position in the left eyes of patients with narrow angles (based on slit lamp and gonioscopic confirmation).

¹Senior Registrar in Ophthalmology, ²Consultant Ophthalmologist, Sri Jayewardenepura General Hospital, Sri Lanka.
Post PI, AS OCT performed in all eyes at least after two weeks and above mentioned measurements were repeated by the same examiner using anterior segment OCT.

Eyes with peripheral anterior synchia, pigments, pseudoexfoliation and neovascularization in the anterior chamber angle were excluded.

Eyes with significant cataract were excluded.

**Results**

There were ten male and 18 females included in the study. Age distribution of patients were between 35yrs to 80yrs. By using anterior segment OCT photographs, 20 patients with plateau iris configuration identified and 13 patients with pure narrow angles identified, while 25 patients identified as having mixed features of both narrow angles and plateau iris configuration.
Results

Plateau iris group

Mean pre PI, central anterior chamber depth was 2.46 mm while post PI central anterior chamber depth was 2.56 mm. There was a statistically significant increase in central anterior chamber depth after PI. Mean pre PI angle opening distance at 500mic in nasal angle was 0.18mic while post PI nasal angle opening distance at 500mic was 0.28mic. There was no statistically significant increase in nasal angle opening distance at 500mic after PI. Mean pre PI angle opening distance at 500mic in temporal angle was 0.31mic while post PI nasal angle opening distance at 500mic was 0.77mic. There was no statistically significant increase in temporal angle opening distance at 500mic after PI.

<table>
<thead>
<tr>
<th>Mean value</th>
<th>Pre op</th>
<th>Post op</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>cACD (mm)</td>
<td>2.46 ± 0.22</td>
<td>2.56 ± 0.21</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>AOD nasal (µm)</td>
<td>0.18 ± 0.01</td>
<td>0.28 ± 0.02</td>
<td>P&gt;0.05</td>
</tr>
<tr>
<td>AOD temporal</td>
<td>0.31 ± 0.03</td>
<td>0.77 ± 0.04</td>
<td>P&gt;0.05</td>
</tr>
</tbody>
</table>

Narrow angle group

Mean pre PI central anterior chamber depth was 1.90mm while post PI central anterior chamber depth was 1.99mm. There was a statistically significant increase in central anterior chamber depth after PI. Mean pre PI angle opening distance at 500mic in nasal angle was 0.16mic while post PI nasal angle opening distance at 500mic was 0.20mic. There was no statistically significant increase in nasal angle opening distance at 500mic after PI. Mean pre PI angle opening distance at 500mic in temporal angle was 0.11mic while post PI nasal angle opening distance at 500mic was 0.18mic. There was statistically significant increase in temporal angle opening distance at 500mic after PI.

<table>
<thead>
<tr>
<th>Mean value</th>
<th>Pre op</th>
<th>Post op</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>cACD (mm)</td>
<td>1.90 ± 0.02</td>
<td>1.99 ± 0.12</td>
<td>P&lt;0.05</td>
</tr>
<tr>
<td>Nasal AOD 500(µm)</td>
<td>0.16 ± 0.12</td>
<td>0.20 ± 0.02</td>
<td>P&gt;0.05</td>
</tr>
<tr>
<td>Temporal AOD 500</td>
<td>0.11 ± 0.02</td>
<td>0.18 ± 0.03</td>
<td>P&lt;0.05</td>
</tr>
</tbody>
</table>

Mixed group

Mean pre PI central anterior chamber depth was 2.24mm while post PI central anterior chamber depth was 2.31mm. There was a statistically significant increase in central anterior chamber depth after PI. Mean pre PI angle opening distance at 500mic in nasal angle was 0.19mic while post PI nasal angle opening distance at 500mic was 0.29mic. There was no statistically significant increase in nasal angle opening distance at 500mic after PI. Mean pre PI angle opening distance at 500mic in temporal angle was 0.18mic while post PI nasal angle opening distance at 500mic was 0.27mic. There was statistically significant increase in temporal angle opening distance at 500mic after PI.

<table>
<thead>
<tr>
<th>Mean value</th>
<th>Pre op</th>
<th>Post op</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>cACD (mm)</td>
<td>2.24 ± 0.02</td>
<td>2.31 ± 0.12</td>
<td>P&gt;0.05</td>
</tr>
<tr>
<td>Nasal AOD 500(µm)</td>
<td>0.19 ± 0.12</td>
<td>0.29 ± 0.02</td>
<td>P&gt;0.05</td>
</tr>
<tr>
<td>Temporal AOD 500</td>
<td>0.18 ± 0.02</td>
<td>0.27 ± 0.03</td>
<td>P&lt;0.05</td>
</tr>
</tbody>
</table>
Comparison of anterior segment changes, before and after laser peripheral iridectomy

Discussion

Based on AS OCT findings all eyes with narrow angles showed significant increase in central anterior chamber depth measurements after Laser PI compared to pre PI measurements. Eyes with plateau iris configuration did not show statistically significant increase in nasal and temporal AOD 500mic after PI. Both the narrow angle and mixed groups demonstrated significant increase in temporal AOD at 500mic after PI while no significant increase in nasal AOD 500mic in both groups.

The iris changed from convexity to flattening in all eyes with pure narrow angles based on AS OCT imaging.

<table>
<thead>
<tr>
<th>Mean value</th>
<th>Pre op</th>
<th>Post op</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>cACD (mm)</td>
<td>2.24 ± 0.22</td>
<td>2.31 ± 0.23</td>
<td>P&lt;0.05</td>
</tr>
<tr>
<td>Nasal AOD 500(µm)</td>
<td>0.19 ± 0.01</td>
<td>0.29 ± 0.06</td>
<td>P&gt;0.05</td>
</tr>
<tr>
<td>Temporal AOD 500</td>
<td>0.18 ± 0.01</td>
<td>0.27 ± 0.12</td>
<td>P&lt;0.01</td>
</tr>
</tbody>
</table>

Conclusion

In eyes suspected of having narrow angles, Laser PI resulted in significant angle widening and anterior chamber deepening based on AS OCT imaging.

AS OCT is an useful method in diagnosis and follow up of angle closure suspects.

References


Li M, Liu X, Zhong YM, Zeng YF, Kong XY, Cao D, Guo XX. Comparison of anterior segment changes before and after laser peripheral iridectomy by anterior segment optical coherence tomography in eyes with primary acute angle closure glaucoma.
Early presentation of severe ROP in Sri Lanka
Hiranya Abeysekera¹, Dharma Irugalbandara², Charith Fonseka³

Abstract

Introduction: Retinopathy of Prematurity (ROP) is a major blinding condition in immature neonates. Early diagnosis and treatment of ROP is critical in saving the vision in these children. This study was designed to find out the timing of the presentation of threshold ROP in Sri Lanka.

Method: Retrospective analysis of patient records of neonates screened for ROP at the Eye Unit of the Lady Ridgeway Hospital for Children during 1st June 2013 to 31st May 2014.

Results: Any Zone 1 ROP with plus disease, Zone 2 Stage 2 ROP with plus disease and Zone 2 Stage 3 ROP with or without plus disease were considered as threshold for treatment. Of the total 568 babies screened during the period 106 babies were in the above categories. All the babies diagnosed to have Threshold ROP were given 532nm Green Laser and 54 (50.94%) babies received Intravitreal Bevacizumab injections additionally. Mean age at the diagnosis of Threshold disease was 4.51 weeks postnatal with a range of 2-13 weeks. 32 babies (5.6% from total screened and 30.2% from all the babies with Threshold ROP) developed threshold ROP during the first 2-4 weeks of life.

Conclusions: Significant proportion of threshold ROP present before 4 weeks of age in Sri Lanka. If the first screening of ROP not done before 4 weeks of age, the diagnosis will be delayed in these cases which will lead to blindness.

Introduction
Retinopathy of prematurity (ROP) is a major blinding condition in the premature infants1-9. Development of ROP has been associated to the Post Menstrual Age (PMA) according to the studies done on the natural history of the condition7,8. Therefore, guidelines for screening for ROP throughout the world aim to start screening with the onset of the disease. In most neonatal units first screening examination is carried out at a PMA of 30-31 weeks or 4 weeks post natal1-9. In Sri Lanka, it was noted that few babies went blind with tractional retinal detachment when ROP screening was carried out in accordance with the above criteria. This was noted mostly, but not exclusively in babies who were born at a PMA less than 30 weeks. Therefore, the current study was designed to find out whether a proportion of babies develop severe ROP sooner than 4 weeks of chronological age.

Materials and methods
Eye Unit at the Lady Ridgeway Hospital for Children (LRH) serves as a tertiary level referral centre for ROP management. In addition the staff at the Eye Unit also carry out screening in the local Premature Baby Units in the De Zoysa Maternity Hospital (DMH), Castle Street Hospital for Women (CSWH) and the LRH. Each baby screened is registered separately in a register which is exclusively reserved for premature babies.

Criteria to screen for ROP includes babies born on or before 32 weeks of gestation, birth weight 1500g or less and the babies who had acute illnesses such as septicaemia, meningitis or major surgeries during the first few weeks of life10. Screening examination was carried out at the premature baby unit or in the Eye Clinic. Pupils were fully dilated with 0.5% Tropicamide and 2.5% Phenylephrine solution. Dilatation begins approximately 30 minutes before the intended time of examination. Dilatation drops were repeated 3-4 times. proparacaine 0.5% drops were instilled 5 minutes before the examination and soon before the insertion of the speculum. Baby is wrapped in warm cloth and held by a trained nursing officer to minimise the movement of the limbs and the neck. ‘V’ Shaped paediatric speculum is inserted without touching the cornea. Retinal indenter is used to manipulate the globe very gently to get the full view of the retina up to Ora Serreta. Indirect ophthalmoscopy is done with the 20D bio-microscope lens. Findings are recorded in the patients’ clinic notes and handed over to the parents or caretaker and an identical entry is made in the clinic register. Important clinical findings were photographed in the RETCAM wide field paediatric retinal imaging system.

¹Acting Consultant Paediatric Ophthalmologist, ²Consultant Paediatric Ophthalmologist, Lady Ridgeway Hospital for Children, ³Vitreoretinal Surgeon, National Eye Hospital of Sri Lanka.
Table 1 summarises the indications for treatment of ROP in Sri Lanka, herein referred as “Threshold ROP”.

<table>
<thead>
<tr>
<th>Criteria to Treat (Threshold ROP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Zone I ROP with Plus Disease</td>
</tr>
<tr>
<td>Zone II Stage 3</td>
</tr>
<tr>
<td>Zone II Stage 2 with Plus Disease</td>
</tr>
</tbody>
</table>

If laser treatment was required it was carried out on the same day under topical anaesthesia. If there was an indication to give intravitreal bevacizumab injection, RETCAM photos are e-mailed to the vitreoretinal surgeon’s opinion. Injection of intravitreal Bevacizumab was also done on the same day under topical anaesthesia.

Current study used the patient records during May 2013 and June 2014. Following parameters were extracted from the patient register. Post menstrual age (PMA) at birth, PMA at diagnosis, birth weight, ROP Stage, Zone and presence of plus disease, type of treatment and the referring centre was recorded.

### Results

Total number of babies screened at the Eye Unit of the Lady Ridgeway Hospital for Children during June 2013 and May 2014 was 568, of which, 136 babies were tertiary referrals from other hospitals. Rest of the 432 babies was from the Premature Baby Units of LRH, DMH and CSHW. 214 (37.6%) babies had some degree of ROP. From this group, only 106 (18.66%) had Threshold ROP (Table 1) and required treatment according to the local guidelines. Most of the treated ROP was Zone 2 disease (Table 3). All the babies with Zone 1 ROP with Plus disease received Laser and Intravitreal Bevacizumab (IVB) treatment. All the babies with Zone 2 Stage 3 ROP received Laser treatment, and in addition 54% of them received IVB.

Nine babies who received treatment (8%) presented with Threshold ROP during the third week of their lives. Another 23 (22%) babies had threshold ROP during the 4th week of life (Table 2). Therefore, 32 babies (30.2% from all babies who had threshold disease) had their threshold ROP diagnosed and treatment initiated before the 28th day of life. This group of babies who developed Threshold ROP is recognised as “early presentation group” in this paper. The mean PMA of the early presentation group was 30.1 weeks (27-33) with a Standard deviation of 1.72. Out of these 32 babies 20 (62.5%) were born between a PMA of 27 to 30 weeks.

### Table 2. Presentation of Threshold ROP according to the postnatal age

<table>
<thead>
<tr>
<th>Post natal age</th>
<th>Number of babies</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 14-20</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Day 21-28</td>
<td>23</td>
<td>22</td>
</tr>
<tr>
<td>Day 29-34</td>
<td>31</td>
<td>29</td>
</tr>
<tr>
<td>Day 35+</td>
<td>43</td>
<td>41</td>
</tr>
<tr>
<td>Total</td>
<td>106</td>
<td>100</td>
</tr>
</tbody>
</table>

50% of the babies who had Zone 1 ROP with Plus disease, 31% of the babies who had Zone 2 Stage 3 ROP and 26% of the babies who had Zone 2 Stage 2 ROP belong to the early presentation group (Table 3).

### Table 3. Management of threshold ROP according to the Stage

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>No. of Babies</th>
<th>Laser Treatment %</th>
<th>Intravitreal Bevacizumab Injection %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone I ROP with Plus Disease</td>
<td>6</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Zone II Stage 2 ROP with Plus Disease</td>
<td>46</td>
<td>100</td>
<td>33</td>
</tr>
<tr>
<td>Zone III Stage 3 ROP</td>
<td>54</td>
<td>100</td>
<td>54</td>
</tr>
<tr>
<td>Total</td>
<td>106</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comparison of the mean PMA and the Birth Weight of the two groups is summarised in table 4. Application of the Student’s t test revealed that there is no statistically significant difference between the maturity of the two groups (p<0.05).
81% of the babies of early presentation group were from Base Hospitals and General Hospitals away from Colombo. In the group where Threshold ROP developed after 4 weeks of age only 32% from those outstation Hospitals. There was a highly significant statistical difference between the two groups in regards to the place of referral where early onset babies tend to be from Base and General Hospitals away from Colombo (p<0.005).

On a separate inquiry, the researchers found that none of these peripheral neonatal centers were manned by a consultant neonatologist. Furthermore, none of these premature baby units had the facility of delivering blended oxygen at the time of the study. In these neonatal centers cumulatively there was only one pulse oximeter for 4.5 babies whom receive oxygen.

Table 5 describes the timing of diagnosis of each individual case according to the new criteria (first visit at 2 weeks post natal) versus previous guidelines (first visit 4 weeks post natal or 31 weeks whichever occur later). Threshold ROP was diagnosed in these early presentation group at a mean 33.3 weeks PMA. According to the previous guidelines, the first visit would have been made at a 34.5 weeks PMA.

Table 4. Characteristics of babies who develop Threshold ROP before 4 weeks of age (early presentation group) and babies who developed Threshold ROP after 4 weeks of age

<table>
<thead>
<tr>
<th>Presentation &lt;4/52 (Early Onset Group) n=32</th>
<th>Mean</th>
<th>Range</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>POG (weeks)</td>
<td>29.9</td>
<td>27-33</td>
<td>1.621</td>
</tr>
<tr>
<td>Birth Weight (g)</td>
<td>1214</td>
<td>900-1900</td>
<td>255.65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Presentation &gt;4/52 n=74</th>
<th>Mean</th>
<th>Range</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>POG (weeks)</td>
<td>28.8</td>
<td>25-33</td>
<td>1.82</td>
</tr>
<tr>
<td>Weight (g)</td>
<td>1164</td>
<td>700-1950</td>
<td>274.8</td>
</tr>
</tbody>
</table>

Table 5. All early presentation group cases. Advancement of diagnosing threshold ROP by screening for ROP early

<table>
<thead>
<tr>
<th>Case Number</th>
<th>Born at PMA weeks</th>
<th>Threshold ROP diagnosed PMA weeks</th>
<th>First screening according to the previous guidelines</th>
<th>Age at the time of diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>27</td>
<td>30</td>
<td>31</td>
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<td>2</td>
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</table>

(Continued)
## Early presentation of severe ROP in Sri Lanka

<table>
<thead>
<tr>
<th>Case Number</th>
<th>Born at PMA weeks</th>
<th>Threshold ROP diagnosed PMA weeks</th>
<th>First screening according to the previous guidelines</th>
<th>Age at the time of diagnosis</th>
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<tbody>
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<td>5</td>
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Discussion

Screening for ROP is being carried out as a national policy in most of the countries, albeit the screening protocols slightly differ. Most screening protocols would agree that the babies born before 26 weeks of PMA would be seen around a PMA of 30-31 weeks. The babies born at a PMA longer than 27 weeks would have their first ROP screening examination at 4 weeks of age. There was an observation in Sri Lanka that severe ROP was recognised with tractional retinal detachment when the babies seen at 4 weeks of age or 30-31 of PMA. Therefore, screening at the LRH and satellite clinics at DMH and CSWH was advanced to 2 weeks post-natal irrespective of the PMA at birth. Soon, the referring centres also adapted this screening protocol.

Presence of severe ROP at such an early age has never been described in the literature. Those children who developed ROP early were from peripheral hospitals where the service of a consultant neonatologist is unavailable and the oxygen delivery and monitoring facilities are limited.

It was difficult to analyse all the risk factors for the development and progression of ROP due to the retrospective nature of the study.

Majority of the early presentation ROP babies were born at a PMA between 27 to 30 weeks and the only statistical difference between the early onset group from the rest of the babies who developed Threshold ROP was the place of referral.

If the babies seen at 30 weeks or 4 weeks postnatal, these early onset group babies would be seen at a PMA of 34.5 weeks. Since the first screening was advanced to the 3rd week of life, the diagnosis of Threshold disease was made at a PMA of 33.3 weeks. Therefore, in these babies, the diagnosis of Threshold ROP was also advanced by 1.2 weeks.

Conclusion

Threshold ROP was present within the first four weeks of life in a significant proportion of ROP cases. These early onset ROP cases were mostly from Premature Baby Units away from Colombo. Vast majority of the babies in the early onset ROP group were born at a POA between 27 and 30 weeks. These babies developed threshold ROP within the first 2-4 weeks of life. Herein, we recommend carrying out first ROP screening in premature babies during the third week of their life to prevent these early onset babies going blind. Once the Premature Baby Units develop better oxygen delivery and monitoring facilities this guideline can be revised in few years time.

Case No: 21 (Table 5) POG 31 weeks Birth Weight 1280g. Seen at 23rd day of life. Posterior Zone 2 Stage 3 with Plus disease. 532nm Green Laser and Intravitreal Bevacizumab injection done.
References


10. Screening Guidelines for Retinopathy of Prematurity College of Ophthalmologists of Sri Lanka.
Cytomegalovirus ocular infection: A series of atypical presentations

T. S. Keragala¹, M. T. K. Perera¹, M. Gamage²


Cytomegalovirus (CMV) is an enveloped, double stranded DNA virus and like other viruses in herpesviridae family to which it belongs, stays latent for long periods following infection. It is transmitted systemically by way of infected blood products, secretions, or via trans placental route³⁶⁴. CMV is a common causative agent of viral infection with sero-prevalence rates which can be varying from 30-100% in different study populations⁵⁷. Incidence of CMV seropositivity also increases with age⁵⁸. Ocular CMV infections are proven to be the causative agent in presumed CMV retinitis in 1964. But ocular CMV infection was a disease so extraordinarily rare that few ophthalmologists ever observed a case before the start of the acquired immunodeficiency syndrome (AIDS) pandemic¹². CMV retinitis has now emerged as a common cause of infectious retinitis worldwide. In immunocompetent persons, CMV infection rarely produces clinical disease. However, CMV is an important cause of morbidity and mortality in immunocompromised individuals. Due to the advances in antiviral therapy, visual prospects following active CMV infection has improved greatly.

Although serological tests are now widely available, due to high and variable seropositivity among different populations diagnosis of CMV ocular infection is dependent upon high level of clinical suspicion. The hallmark lesion of CMV retinitis is a necrotizing, full-thickness retinitis with areas of active retinitis having a granular, dirty-white appearance that results due to retinal cell destruction. As the virus attacks the endothelial cells of blood vessels commonly leading to focal haemorrhage. CMV often initially affects retinal tissue adjacent to major retinal blood vessels or the optic disc. Juxtaposition of retinal haemorrhages with large zones of white, granular necrosis has led appearance of CMV retinitis to be described as either “pizza-pie” or “cottage cheese and ketchup”. The retinal arteries and veins, in the areas of necrosis commonly appear sheathed, secondary to vasculitis. A second pattern of CMV retinitis has been labelled “granular” or “brushfire border”. In this appearance, the focal granular infiltrates enlarge slowly across a line, leaving ever-increasing areas of destroyed retina and atrophic retinal pigment epithelium behind. The brushfire border is commonly seen in CMV retinitis lesions anterior to the equator and haemorrhages, vitreous cells are being less prominent features with this pattern.

However typical CMV retinitis features occur at a very low CD count levels and may have different presentations²³⁸. Awareness of the typical as well as the atypical presentations of ocular CMV infection provide a distinct advantage to the clinician and present an opportunity for early identification, prompt and proper management. Failure to identify these early and essential features would lead to devastating visual outcome. Authors here aim to shed light upon atypical presentations of serologically confirmed CMV ocular infection to raise awareness among clinicians.

Case series

We present four serologically confirmed CMV infections with atypical ocular manifestations, presented to the National Eye Hospital of Sri Lanka, during the period of 2012 to 2014.

Case 1

Ms. PC, 19 year old patient was diagnosed with Acute Lymphoblastic Leukaemia (ALL) was on treatment. She had completed one cycle of chemotherapy which contained prednisolone, vincristine, and anthracycline. She was referred to us by the oncology team due to a development of unilateral blurring of vision over 2-3 weeks which was later accompanied by photophobia. She had no other co-morbidities apart from clinical features of depression for which she was already receiving counselling and treatment. On examination best corrected visual acuity was 6/6 on right and 6/60 on left with normal intra ocular pressures. She had corneal precipitates with cells (3+) in anterior chamber. Dilated examination revealed a vitreous inflammation with small segment of peri-vascular haemorrhages along the superior arcade with prominent macular star formation on the affected side.

¹Registrar in Ophthalmology, ²Consultant Ophthalmologist, National Eye Hospital of Sri Lanka.
Routine investigations carried out revealed a WBC count of 3,700 (N- 63% , L- 33% ), haemoglobin (Hb) 9.2 g/dl with normocytic, normochromic cell indices and a platelet count of 162,000/mm³. Erythrocyte sedimentary rate (ESR) was 38 mm/ 1st hour and blood glucose levels were normal. Due to her clinical background serology tests were performed and Cyto-megalovirus Ig G and Ig M were both positive, HSV serology negative and Venereal Disease Research Laboratory test (VDRL) was non-reactive. Patient was treated with intra-vitreal gancyclovir and was suggested to start intra venous gancyclovir. However patient developed myelo suppression during chemo-therapy for the primary pathology followed by a super added lung infection to which the patient did succumb.

Case 2

Mr. HN 26 year old patient diagnosed with ALL about 1 year ago, after being investigated for pyrexia of unknown origin. He was on maintenance therapy and developed deterioration of vision over 2-3 weeks with associated photophobia and an eye pain more severe on left side.

On examination, his visual acuity was 6/60 on left side, and 6/18 on right side. Intra ocular pressure was 20 mmHg in the left side and 16 mmHg in the right. He had a left sided hypopyon and occasional cells on right anterior chamber. Right side patient had an early posterior polar cataract. Dilated fundus examination of the left side revealed vitreous inflammation with areas of burned out necrosis with areas of granular exudates with haemorrhages along peripheral infero-temporal arcade. Routine investigations revealed WBC count of 7,800 / mm³ (N- 85% L- 14%), Hb 9.0 g/dl with normal cell indices and a platelet count of 140,000 / mm³. Blood picture showed normocytic normo-chronic anaemia with few megaloblastoid forms with a mild thrombocytopenia.
Cytomegalovirus serology revealed reactive Ig G titre and equivocal Ig M titre. Other investigations such as ESR, mantoux, VDRL and HSV serology all were within normal limits. Aqueous paracentesis was done and sample was sent for a real time PCR (qPCR) and patient was treated with intra-vitreal injections of gancyclovir on clinical grounds. qPCR results reported up as strongly positive. As advised by infectious diseases specialist he was started on Intravenous Ganciclovir 14 days and received the regime under medical supervision due to the possibility of myelo-suppression along with tropical steroids. Patient improved clinically following treatment with left sided BCVA improved to 6/9 and anterior segment was quiet and vitreous inflammation subsided.

Case 3

Previously apparently healthy, 47 year old teacher, Mr SR presented with deterioration of vision of about two months duration. His visual acuity was recorded 6/60 on right side and 6/9 on the left. IOP and anterior segment examination was unremarkable. On fundal examination vitreous was inflamed and large whitish yellow exudates found along with a haemorrhagic areas. His routine investigations were normal. CMV IgG and IgM were positive but the rest of the serological tests including HIV screening, HSV antibodies, anti nuclear antibodies (ANA) were negative. Patient was referred to immunologist to assess patient’s immune competency and common causes of immune deficiencies were ruled out. Intra vitreal gancyclovir were administered. However patients vision on right side could not be improved beyond 6/36 even after resolution of active inflammation.

Case 4
Mr. LA, 49 years old, self employed patient presented with reduction in vision and ocular discomfort for 2/52 duration. No previous ocular diseases were noted and he was detected to be having elevated blood glucose level 6 months back and was on dietary control only. General examination revealed no significant findings with VA on right side being 6/60 and left side 6/24. He had keratic precipitates and active anterior chamber inflammation. Dilate fundus examinations were grade II nuclear sclerosis with vitreous cells, left eye being more severe. Investigations revealed an increased fasting blood glucose value of 148 mg/dl with HbA1c over 10. ANA, VDRL, HSV serology and HIV screening all were negative. CMV serology showed a rising titer done over two weeks apart. A dose of intra vitreal gancyclovir (4mg in 0.1 ml) administered with topical steroids followed by sub tenon steroid injection to right side and inflammation subsided with BCVA of 6/36 on right and 6/9 on left side.

Discussion

Although CMV ocular infections are mostly associated with immune deficient states and cause essential threat to sight if not treated prompt and properly reported cases of CMV retinitis in apparently “immune competent” patients are found in literature. Systemic review completed by Rafailidis et al. showed 89 articles reporting on severe CMV ocular infections in 290 immunocompetent adults with several other studies.

Although CMV retinitis commonly seen in advanced stages AIDS (i.e. when CD 4 counts < 50). But many evidences of early occurrences has been documented. Apart from HIV infection other immunodeficiency conditions are also known to associate with CMV ocular infections, haematological malignancies such as leukemia, primary immune deficiencies.

Clinically most characteristic features of active CMV retinitis would be, perivascular yellow white lesions with focal hemorrhages giving rise to “Cottage cheese and ketchup” appearance or vascular sheathing and perivascular inflammation leading to “frosted branch” appearance, periphery sparing macular involvement in CMV retinitis is also reported as seen with the above case.

Though not a common etiological agent, CMV also well known to involve anterior segment often mild but at times may even be severe enough to give rise to a hypopyon.

Awareness of the typical as well as the atypical presentations of ocular CMV infection provide a distinct advantage to the clinician by presenting an opportunity for early identification prompt and proper management leading to prevention of sight threatening complication of CMV ocular infections.

References


Visual rehabilitation in pediatric cataract
Kalpana Narendran1


Background
Pediatric cataract is a major cause of decreased vision and blindness in children worldwide. Though the trend towards early cataract surgery, understanding of the critical sensitive period and refinement in surgical techniques have improved the visual outcome, the continuous threat for amblyopia poses a big challenge in front of pediatric ophthalmologists. Factors like age, laterality and associated systemic anomalies are non-modifiable but the understanding of modifiable factors like residual refractive status and amblyopia therapy can improve the visual outcome.

Why so challenging?
Pediatric eye is not the miniature adult eye. Significant amount of variation in refractive change/myopic shift, lack of accurate intraocular lens (IOL) formulae, increased risk of surgery and IOL related complications often leaves the surgeon in dilemma1. Also, post operative visual rehabilitation poses special challenges due to compliance and increased risk of amblyopic if not done properly.

In this article we will be focusing on pediatric aphakic rehabilitation, post op amblyopia management and low vision aids including social and environmental modification.

Primary IOL implantation
Primary IOL implantation is the preferred modality of treatment following cataract extraction in older age group though controversial in early age2,3. Advantages of early IOL implantation include optimal visual rehabilitation, improved visual acuity, BSV and less chances of strabismus but it is associated with increased rate of visual axis opacification and resurgeries. Recently finished IATS concluded that contact lens provide similar visual outcome though IOL implantation proves to be costly and the chances of resurgeries are more with primary IOL implantation in infants1,4, although pseudophakes will require optical rehabilitation in form of glasses and/or contact lens which will be discussed later in the article.

Whether or not to implant IOL
Minimal age at surgery for an IOL implantation varies from surgeon to surgeon and varies between unilateral and bilateral cataracts. Though as general consensus, bilateral cataracts operated at an early age are left aphakic with the intention of secondary IOL implantation later, there has been a recent trend (though controversial) in implanting IOL in infants. The IATS states that primary IOL implantation does not provide any visual benefit when followed upto five years. Economic burden and resurgery rate is also more with IOL implantation5. Other relative contraindications of primary IOL implantation include associated uveitis, severe microphthalmia such that IOL size is not feasible to implant, persistent fetal vasculature, inadequate capsular support. Other

![Figure 1a. Child with bilateral congenital cataract](image1a.png)

![Figure 1b. Child with RE- PCIOL, LE- Lamellar cataract](image1b.png)
important concerns are selecting an IOL power and the higher rate of visual axis opacification.

IOL power calculation

Implantation of a fixed power IOL in an eye that is still growing makes it difficult to choose the IOL power to implant. Several nomograms have been published in literature to decide on IOL power (Table 1). There are various factors which influence IOL power implantation, which include age, laterality, status of the fellow eye, hereditary factors (refractive status of the parents and siblings). Associated posterior segment pathology should also be kept in mind, for example patients with lazered and post-cryo retinopathy of prematurity (ROP) have higher myopic shift than normal infants, on the other hand patients with persistent fetal vasculature tend to have shorter eyes. That’s why it is recommended that IOL power should be customized for every child rather than sticking to the mentioned nomograms.

Several groups advocate initial myopia or emmetropia instead of hyperopia. Table 2 outlines the advantage of the various options.

IOL formulae

There is lack of accurate IOL formulae which takes into account the small pediatric eyes and variable factors. IOL power has to be customized according to various factors mentioned above.

Newer technologies

Recently, there has been a trend in using Multifocal IOLs in children by some pediatric ophthalmologists. However, predictability of IOL power, unstable refractive error, potential for amblyopia due to loss of contrast sensitivity are the limitations of multifocal IOLs in children. Multifocal IOLs should be limited to older children who can communicate regarding their experience with multifocal IOLs.

Table 1. Recommendations for IOL power calculation from various studies

<table>
<thead>
<tr>
<th>Age at surgery</th>
<th>Crouch et al (targeted postoperative refraction) (D)</th>
<th>Axner et al (targeted postoperative refraction) (D)</th>
<th>Hutchinson et al (decreased calculated IOL power for emmetropia) (D)</th>
<th>Dorothy et al (decreased calculated IOL power for emmetropia) (D)</th>
<th>Dahan et al (of calculated IOL power for emmetropia) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+4</td>
<td>+4</td>
<td>25% of first 6 months, 20% for next 6 months</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>+3.5</td>
<td>+4</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>+2.5</td>
<td>+3</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>+2.5</td>
<td>+3</td>
<td>90</td>
<td></td>
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<tr>
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<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>+1</td>
<td>Emmetropia</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>+1</td>
<td>Emmetropia</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Emmetropia</td>
<td>Emmetropia</td>
<td>90</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2. Primary IOL implantation
Table 2.

<table>
<thead>
<tr>
<th></th>
<th>Advantage</th>
<th>Disadvantage</th>
<th>Adult refraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial hyperopia</td>
<td>Hyperopia improves as age grows</td>
<td>Initial spectacles/contact lens</td>
<td>Low myopia/hyperopia/emmetropia</td>
</tr>
<tr>
<td>Initial emmetropia</td>
<td>No spectacles/Contact lens in initial period</td>
<td>Large myopic shift</td>
<td>Moderate to high myopia</td>
</tr>
<tr>
<td>Initial myopia</td>
<td>Correction to prevent amblyopia</td>
<td>Large myopic shift</td>
<td>Very high myopia</td>
</tr>
</tbody>
</table>

Aphakic glasses

Patients who are left aphakic primarily need optical rehabilitation in the form of glasses or contact lens in the post operative period till the secondary IOL is planned. Aphakic glasses are commonly used for the correction of bilateral aphakia in children. Due to increase trend towards primary IOL implantation and contact lens, the availability and technology for high power plus lens (> 10 D) have declined. Primarily three type of aphakic glasses are available.

<table>
<thead>
<tr>
<th>Type of lens</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lenticular lenses</td>
<td>Prescribed power at the centre of lens surrounded by ring of no power. Inferior to other lens. Only option when requiring &gt; 20 D</td>
</tr>
<tr>
<td>Aspheric lenticular lenses</td>
<td>Aspherical central area surrounded by ring of no power. Available 10-20 D. optically superior to lenticular lens</td>
</tr>
<tr>
<td>Multidrop lenses</td>
<td>Spherical central zone that flattens into aspherical zone which further blends with ring of no power. Far superior to other options</td>
</tr>
</tbody>
</table>

Frame selection is very important in pediatric age group. Whenever possible the child should be included in decision making for the frame. Frame selection is based on several factors including activity level and type of activities the patient is involved in. Plastic is the material of choice for most children as it is more elastic and durable. Frame temple are available in various shapes including comfort coil type, skull temple piece and paddle piece. In general, a plastic frame and comfort coil temple is the best choice for infants and toddlers. For a small infant paddle temple with a holding strap can be very useful (Figure 3).

Contact lens

Pediatric aphakia can be successfully treated with contact lens. Studies have proved that better binocular vision and stereopsis is gained in patients who show excellent compliance with contact lens postoperatively. Advantages of contact lens include easy adjustability with the changing refractive error. Good lens fit, care and hygiene compliance can prove to be an excellent alternative to primary IOL implantation, though inability to match these requirements can lead to hazardous results.

Contact lens in pediatric age group is quiet challenging for adults. Daily wear and removal of contact lens can be bothersome for the parents and child and might lead to loss of compliance. Extended wear contact lens
can provide with an easier option. Measuring the eye parameters for such young children is not easy and assessing the fit on slit lamp can be challenging.

There are three main type of lens material available.

a) Hard (PMMA) or rigid gas permeable lens
b) Hydrogel (extended wear lens)
c) Silicone lens

PMMA lens are available in wide range of prescriptions, can be customized to power and base curve and can neutralize astigmatism and spherical error in most of the patients. Disadvantages of PMMA include its need to be removed daily which can be cumbersome for the parents, and occasional breakage associated.

Hydrogel lens can be used for extended wear, though they are difficult to insert and do not correct the residual astigmatism.

Silicon lenses provide superior corneal oxygenation and durability and can be fitted with ocular measurement or trial techniques. Silicon lenses are costly and its availability may vary in different parts of the world. It is available in limited powers and can be uncomfortable initially. Also silicon lens do not provide UV protection. If silicon lens cannot be worn by a child, an RGP lens can be tried. RGP lens may be ordered with UV blockers which provide a theoretical advantage over silicon lens.

**Daily vs extended wear**

In ideal situation, extended wear is the best available option for pediatric aphakic eyes. But due to the complication rate like giant papillary conjunctivitis, neovascularization, abrasions and infective keratitis that have been reported more with the use of extended wear lens, experts recommend use of daily wear lens in pediatric aphakics.

Although the US FDA approves up to 30 days use of extended wear lens, risk of ulcerative keratitis increases with the duration of lens wear. It is advisable to disinfect the lens every week.

**Initial fitting**

Initial fitting of the lens is recommended at the time of surgery only. The need for high refractive power leads to relatively more central thickness. Hence to avoid decentration, lens diameter must be as large as cornea and relatively steep base curve is indicated.

**Consideration and complication of CL:**

a) **Non compliance** of both the parents and patient is a major hindrance in CL practice. It is more common in unmotivated patients and in unilateral aphakes where the vision of other eye is good. Daily insertion and removal is the main contributing factor.

b) **Infection:** Parents should be properly educated regarding insertion, removal and hygiene maintenance of CL. Slightest of the conjunctival redness should be addressed to the ophthalmologist and CL should be removed in both eyes simultaneously as amblyopia can quickly develop. Aphakic glasses should be worn until the refitting.

c) **Power changes:** Frequent follow up is required as power changes occur rapidly.

d) **Lens loss:** A spare set of lens should always be available.

e) **Parental stress:** Psychological stress can be an important obstacle for CL compliance. Though initial resistance is more commonly seen, most patients tend to become compliant after some time.

f) **Outdoor activities:** Hygiene is to be maintained while involved in outdoor activities and games. Major concern raised by parents is regarding swimming. Well fitted goggles should be used. Cleaning and disinfection of lens is extremely important.

**Low vision aids**

These devices enable the patients to improve their visual performance and help them to reach their full capacity. Depending on the age and affordability of the patient different low vision devices and assistive technologies may be considered. The primary mode of optical assistance is convex lenses in various forms.

These devices are 1) Standard additional bifocals 2) Hand magnifiers 3) Stand magnifiers 4) Electronic magnifiers 5) Telescopes 6) Computer adaptations, closed circuit television. (Figures 4-a, b, c)

Patients and their family members should be encouraged to use these devices. Good visual results depend on the severity of visual impairment and any associated comorbid conditions.

**Amblyopia in paediatric cataract**

Deprivation amblyopia is the main barrier to successful visual outcome in the management of pediatric cataract. Amblyopia develops because of the absence of equal quality of visual input to each eye during the critical period. A report from Elston and Timms suggests that the first 6 weeks of life represents the critical period for binocular development. Therefore unilateral cataract has more risk of amblyopia than bilateral cataract and...
hence needs to be operated as early as possible (within 6 weeks of age).

Surgical correction of bilateral cataract should occur in close succession (within 2 weeks) if the cataracts are symmetrical\textsuperscript{15}. Prolonged interval between the two eyes could result in dense deprivation amblyopia in the untreated eye. Asymmetrical bilateral cataract that require surgical removal presents an unique challenge as deprivation amblyopia may be present in the worst eye.

Amblyopia can also develop postoperatively due to anisometropia, strabismus or visual deprivation due to posterior capsule opacification\textsuperscript{16}.

**Predictors of amblyopia treatment success**

Age at which cataract develops, cataract density and age of surgery influence success of amblyopia treatment. Early age of surgery and early rehabilitation offer better visual outcome\textsuperscript{17, 18}. Nystagmus and strabismus are often observed in patients where the treatment was delayed or who showed poor compliance with post operative visual rehabilitation.

**Amblyopia treatment**

Amblyopia therapy remains the most critical step in the rehabilitation of postoperative eyes. Treatment should start as early as possible following surgery. Occlusion of the sound eye remains the mainstay of amblyopia therapy. The schedule is based on the visual acuity and age of the child. It is assumed that the occlusion treatment must continue throughout childhood or at least till the visual acuity has reached a plateau.

However compliance remains the main challenge in amblyopia treatment. Therefore family members need to be counseled regarding amblyopia management even before surgery (Figure 5).

**Conclusion**

Cataract is one of the most significant and treatable causes of visual impairment in children. Even with
the advancement in the surgical techniques and instrumentation successful management of cataracts in children is one of the most difficult challenges in pediatric ophthalmology. The actual treatment starts after the surgery.

The main concern is amblyopia for which appropriate optical correction and patching in unilateral cases is to be started as soon as possible. These children need to be followed up regularly and monitored for vision and change in refraction.

Whenever IOL implantation is not a feasible option, contact lens provide the best rehabilitation method for pediatric cataracts at least in unilateral cataract. Aphakic glasses provide a reasonable option for bilateral aphakes. When it is not possible to use CL or aphakic glasses, it may be necessary to implant secondary IOL. Contact lens usage requires maintenance of proper hygiene, compliance and regular follow ups for the continuous refractive change.

Visual rehabilitation in pediatric cataract depends upon the surgeon, availability of options, ocular associations and compliance of the patient.

References
Late capsular blockage syndrome


The Journal of the College of Ophthalmologists of Sri Lanka 2014; 20: 33-34

Introduction

Late capsular blockage is a rare (0.3%) complication seen in phacoemulsification with posterior chamber intraocular lens (PC-IOL) implants where a continuous curvilinear capsulorhexis is made.

It leads to capsular blockage and accumulation of opaque fluid between the lens implant and the posterior capsule (PC). The result is a reduction of visual acuity (VA) associated with a myopic shift shallowing of anterior chamber depth (ACD) and anterior bowing of iris is also seen frequently.

Case details

A 57 year old male patient had posterior chamber intraocular lens insertion done bilaterally. The right eye was done 5 years ago, with the left being done 1 year later. He developed progressive reduction of vision over a period of two months, with the right being more severely affected.

Best corrected visual acuity (refracted) was OD 6/12 (-1.00 -1.00 × 80) and OS 6/12 (-1.00 -0.50 × 60). Slit lamp examination was performed, where late capsular blockage (R > L) was diagnosed.

In Anterior segment OCT (ASOCT) was used to aid in the diagnosis, which showed anterior chamber depths of 3.21 mm OD and 3.25 mm OS.

¹Registrar in Ophthalmology, ²Research Assistant, ³Consultant Ophthalmologist, Sri Jayawardenapura General Hospital, Kotte.
Laser posterior capsulotomy, with Neodymium Yttrium-AIuminium-Garnet (Nd:YAG) laser, is the usual treatment. This patient underwent bilateral treatment and was on an intensive course of steroids that reduced the inflammation. Postoperative data was collected after 2 weeks.

Post YAG capsulotomy improved BCVA to 6/6 OU, with reversal of myopic shift, refraction showing OD -0.25 -0.25 × 80 and OS -0.25 -0.25 × 90.

Post treatment ACD deepened to 4.25 mm OD and 4.12 mm OS.

Discussion
Late capsular blockage is diagnosed on slit lamp examination aided by AS-OCT. This constitutes one of the many different types of PC opacities. Nd: YAG posterior capsulotomy released the colloidal suspension within the capsular bag posterior to the IOL optic, which lead to the improvement of visual acuity. Post procedure, the myopic shift had reversed and with an increase in ACD shown on AS-OCT. Consider late capsular blockage syndrome as a culprit in late myopic shift following a PC-IOL implantation.

References


A study on anatomical variations in the relation of the optic chiasma and pituitary gland in a Sri Lankan adult population

E. D. P. S. Fernando, W. M. R. D. Wijesundara, A. A. M. M. S. L. Perera, W. M. S. Dilshani, N. A. D. P. Niwunhella, K. A. Salvin, R. Hasan


Abstract

Pituitary gland is an endocrine gland located in the base of the brain. An important relation to pituitary gland is the optic chiasma located superior to it. Variations of the relation between these two structures have been reported. Because of these variations, the lesions of the pituitary gland, especially those that exert mass effect on the surrounding structures result in different presentations, such as various visual field defects.

In this study the anatomical variations in the relationship between the optic chiasma and the pituitary gland were evaluated using 10 sagittally dissected adult brains. The distance between the pituitary gland and the centre of the optic chiasma was measured. From the 10 optic chiasma 10% was post fixed, 10% was pre fixed and 80% was overlying the pituitary gland. Mean distance between the pituitary gland and anterior border of optic chiasma was 8.31mm with a standard deviation of 1.16.

Keywords: Optic chiasma, pituitary tumours.

Introduction

Pituitary gland is considered as one of the most important endocrine gland in the body. It lies in the bony depression in the skull base, sella turcica, and is covered with the dural fold, diaphragma sellae. Pituitary stalk extends from base of the brain through the diaphragma sellae.

Due to the limited space inside the cranial cavity, many important structures lie closely related to each other. One such important relation to pituitary gland is the optic chiasma located superior to it.

One of the common pathologies in the gland is tumor. There can be microadenomas and macroadenomas. Macroadenomas give rise to variety of clinical symptoms when compared with microadenomas, which are due to increased intracraniel pressure caused by the growth, mass effect causing compression of surrounding structures and also due to the excessive or suppressed secretion of hormones by the gland. Later is the usual presentation of microadenoma and presents early.

Variations of the relation between the optic chiasma and pituitary gland have been reported. Depending on the anatomical location of chiasma in relation to the pituitary gland, it can be defined prefixed, post fixed or overlying the pituitary gland.

Macroadenomas which grows upward are known to cause bitemporal hemianopia. Apart from this they might also present with complex sensory defects such as post fixational blindness and hemi field slide phenomenon. This is a consequence of the enlarged pituitary gland compressing the nerve fibres that crossover within the optic chiasma.

Nevertheless there can be cases where the presentation of pituitary adenoma is not as typical as it is described, due to the differences in the directions of growth of adenoma or due to the differences in the relationship between the gland and the optic chiasma.

In such instances the diagnosis of pituitary adenoma would be delayed, especially in a peripheral unit where imaging studies are not freely available. Thus the knowledge on the anatomical variations in the relationship of optic chiasma to pituitary gland can be utilized in early diagnosis of different presentations of visual field defects associated with pituitary adenoma, in turn improving patients' outcome and also quality of medical care.

Methodology

This was a descriptive study done at Department of Anatomy, Faculty of Medicine, Ragama, using adult cadavers donated to the Department of Anatomy, Faculty of Medicine, Ragama. The study was done with the approval of the Ethical Review Committee of Faculty of Medicine, Ragama.

10 adult cadavers were selected, age 40 years to 60 years, preserved in formalin for 3 to 6 months. Cadavers donated after head injury were excluded.

Routine dissections were done in the head and neck region including a sagittal sectioning of brain and the basal aspect of the skull.
The relations of optic chiasma and pituitary gland were evaluated. Depending on the positioning of the optic chiasma in relation to the pituitary gland, antero-superior position (over tuberculum selle) was taken as a pre fixed chiasma, posterior-superior position (over dorsum selle) was taken as post fixed chiasma, and chiasma directly above the gland (over diaphragm sella) was taken as chiasma overlying the pituitary.

The distance between the centre of pituitary gland and the centre of the optic chiasma, antero-posterior length of pituitary, antero-posterior length of chiasma were marked off with a divider and transferred it to vernier calliper from which the measurements were taken.

Analysis of data was done using SPSS software.

Results

From the 10 optic chiasma in the study sample, 1 (10%) was post fixed, 1 (10%) was pre fixed, 8 (80%) were overlying the pituitary gland.

The measurements taken are shown in the table 1.

Table 1. Distance between the centre of the pituitary gland to centre of the optic chiasma, antero-posterior length of pituitary, antero-posterior length of chiasma and the position of optic chiasma

<table>
<thead>
<tr>
<th>Antero-posterior length of pituitary</th>
<th>Antero-posterior length of chiasma</th>
<th>Distance A*</th>
<th>Position of the optic chiasma</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.26</td>
<td>9.12</td>
<td>6.14</td>
<td>Pre fixed</td>
</tr>
<tr>
<td>8.22</td>
<td>8.38</td>
<td>7.24</td>
<td>Overlying</td>
</tr>
<tr>
<td>7.44</td>
<td>9.4</td>
<td>7.32</td>
<td>Overlying</td>
</tr>
<tr>
<td>8.06</td>
<td>8.46</td>
<td>8.16</td>
<td>Overlying</td>
</tr>
<tr>
<td>8.24</td>
<td>9.04</td>
<td>8.36</td>
<td>Overlying</td>
</tr>
<tr>
<td>8.18</td>
<td>9.34</td>
<td>8.44</td>
<td>Overlying</td>
</tr>
<tr>
<td>7.16</td>
<td>9.44</td>
<td>9.02</td>
<td>Overlying</td>
</tr>
<tr>
<td>8.12</td>
<td>8.46</td>
<td>9.1</td>
<td>Overlying</td>
</tr>
<tr>
<td>8.36</td>
<td>9.32</td>
<td>9.28</td>
<td>Overlying</td>
</tr>
<tr>
<td>9.18</td>
<td>9.22</td>
<td>10.1</td>
<td>Post fixed</td>
</tr>
</tbody>
</table>

*Distance from centre of the pituitary gland to centre of the optic chiasma

Mean antero-posterior length of the pituitary gland 8.02mm. Mean antero-posterior length of the optic chiasma 9.01mm.

Mean distance between the centre of the pituitary gland and centre of the optic chiasma was 8.31mm with a standard deviation of 1.16.

Discussion and conclusion

The pituitary, also known as “the master gland” is responsible for controlling most of the important endocrine functions in the body. This gland is subjected to certain pathological conditions similar to other organs in the body. The adenomas are considered as the most common pathological condition.

The adenomas are uncovered due to the specific symptoms and signs they show. These symptoms are related to the hormones secreted by the adenomas which secrete excessive amount of hormones (eg: growth hormone secreting adenomas), enlarging adenoma compressing the gland and causing hypopituitarism (eg: hypothyroidism), or due to the mass effect caused by the adenoma on surrounding structures. There is also a certain percentage of adenomas which do not manifest any symptom. The only approach of discovering such a tumour is by imaging studies. These kinds of adenomas are known as incidenomas.

Optic chiasma being closely related to the pituitary gland is known to create visual disturbances when compressed by a pituitary adenoma. Some of the common manifestations are bitemporal hemianopia, complex sensory defects such as post fixational blindness and hemi field slide phenomenon².

In this study we questioned the probability of the presence of variations in the relation of optic chiasma to the pituitary gland. The variations in their relationship can manifest different types of visual disturbances, which is to be further studied. These can be used for early diagnosis of pituitary adenomas.

The frequencies of the types of the optic chiasma in this study population were similar to the frequencies of the position of the optic chiasma in the literature. This concludes that the position of the optic chiasma in relation to the pituitary gland in Sri Lankan population is similar to the values in other regions of the world.

References


Safe and easy access to public services: awareness of facilities available for the visually impaired

N. Atapattu¹, H. P. M. K. Gunawardena², N. G. I. R. De Silva², J. M. W. G. Wajirani³


Introduction

In keeping with the theme of the 11th SAARC Congress of Ophthalmology, it is appropriate to address the issue of improving the quality of life of the visually impaired.

Enhancement of the facilities and services available in public places for the above group of population, encourages independence, improves safely and empowers them to contribute to society by reaching their full potential.

Objectives

- To evaluate awareness and availability of the facilities and services that are available in public places for the visually impaired at provincial level in Sri Lanka.
- Compare these with countries in the region and the developed world.

Methodology

Three groups were interviewed with an investigator administered questionnaire.

1. Visually impaired persons – O/L students, teachers and past pupils of 2 blind schools in the country (Ratmalana and Monaragala).
3. Members of general public.

Awareness of public facilities in 5 areas (accessing health care, public facilities, public transport, pedestrian movement and education) were assessed and studied.

A literature search was done to explore the facilities in Sri Lanka at a provincial level, countries of the SAARC region and those in the developed world.

Data was collected from 78 subjects.
- 32 visually impaired persons
- 17 Healthcare workers
- 23 Members of general public

<table>
<thead>
<tr>
<th></th>
<th>Visually impaired</th>
<th>Medical Personnel</th>
<th>General public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age</td>
<td>24.7</td>
<td>32</td>
<td>38.5</td>
</tr>
<tr>
<td>Male: Female</td>
<td>17:7</td>
<td>3:2</td>
<td>5:2</td>
</tr>
</tbody>
</table>

All of the visually impaired were aware of all facilities available for them in Sri Lanka. Only 60% of medical personnel and 47% of the general public were aware of their existence.

Most of the general public were aware of the disable seating in buses. Knowledge about the 3% govt. job quota, currency features and audio buzzer was very low amongst both healthcare personnel and the public.

¹Registrar, ²Post Graduate Trainee in Ophthalmology, ³Senior Registrar, Sri Jayewardenepura General Hospital, Kotte.
General facilities for the visually impaired include priority disabled seating on buses, tactile denominations of currency notes and the 3% quota of jobs reserved for the disabled.

The Sri Lankan data revealed that facilities for the visually impaired were only seen in the Western, Central and Eastern provinces.

<table>
<thead>
<tr>
<th>Facilities Available</th>
<th>Facilities Not Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Province</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Tactile paving</td>
</tr>
<tr>
<td></td>
<td>• Crosswalk with audio buzzer</td>
</tr>
<tr>
<td></td>
<td>• Inclined ramps on pavement</td>
</tr>
<tr>
<td></td>
<td>• High-contrast staircase</td>
</tr>
<tr>
<td>Central Province</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• High-contrast staircase</td>
</tr>
<tr>
<td>Eastern Province</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• High-contrast staircase</td>
</tr>
<tr>
<td></td>
<td>• Tactile paving</td>
</tr>
</tbody>
</table>

![Map of Sri Lanka showing facilities availability in different provinces](image)
Many countries in the SAARC region had passed acts, guidelines and circulars affording the visually handicapped equal rights and access to public services. However the practical implementation of these have been quite limited.

These include
- Tactiles - India
- Audio ATMs – India, Pakistan
- Braille signage – India, Pakistan
- Audio alerts for public transport – India
- Auditory devices at traffic signals – India
- Braille bank forms – Pakistan
- Free postage for braille material – Pakistan

Developed countries have been implementing these systems a few decades. Japan started installing tactiles back in the ’70s. Some of the newer facilities include

- Universal Design in public buildings – Australia, USA, Sweden
• Alternative forms of important information (large print, audio tape, braille or electronic format) – Japan, UK, Australia, USA

• Braille signage – Japan, Singapore, UK

• Tactiles – Japan, Singapore, UK, Australia, USA

• Audio ATMs – Japan, Singapore, UK, Australia, USA

• Audio alert for MRT and train – Japan, Singapore, UK, USA
• Braille and Audiobook Libraries – Singapore, USA, UK
• Barrier-free public pathway – UK, Australia
Conclusions
Awareness of facilities for the visually impaired amongst the general public is very poor. The visually impaired appear to be poorly educated about the newer facilities that are being incorporated in to public works.

The few facilities that are available in Sri Lanka are concentrated around Colombo and a few other major cities. Though facilities are being incorporated in the other SAARC countries as well, more work needs to be done to reach the level of services that are available in the developed countries.

References


**Fellowship Awards**

**Presenting, Dr. C. A. B. Makuloluwa for the honorary fellowship of the College of Ophthalmologists of Sri Lanka**


Dr. C. A. B. Makuloluwa graduated with honours from the University of Peradeniya, in 1980. Thereafter he initiated his ophthalmic career at Eye Hospital, Colombo in 1982.

He underwent his postgraduate ophthalmic training under Doctors P. A. Wirasinha, Sri Skandaraja, Upali Mendis and M. H. S. Cassim. He was awarded the degree, Master of Surgery in Ophthalmology by the University of Colombo in 1985.

In 1996, after obtaining his post-doctoral training at the Eye Hospital Colombo, he proceeded to UK for his overseas training. There at Prince Charles Eye Unit, Windsor he trained under Mr. Jack Kanski, Mr. Richard Pakard and Mr. James Mc Allistar.

Following his board certification, he started his career in Ophthalmology, as a Consultant Ophthalmic Surgeon at the Eye Hospital, Colombo in 1987. He continued his service here until 2005, when he relinquished his illustrious and memorable career in the government sector. At present he is a visiting Consultant Ophthalmic Surgeon at Nawaloka Hospital, Colombo and Lanka Hospital, Colombo.

He was awarded the Certification of Completion of Specialist training of UK in 2004, and is in the Specialist Register of the General Medical Council since then.

A very passionate educator, Dr. Makuloluwa dedicated himself to train many undergraduates, and postgraduates during his tenure at the Eye Hospital, Colombo.

He was a visiting lecturer at Medical College, Colombo and Jayawardenapura. He has been a member of PGIM Ophthalmology MCQ Core group for a span of 13 years and was the tutor in Ophthalmology for the post graduate trainees as well.

Also was a member of the Board of Study Ophthalmology from 1999 to 2005, and served in the capacity of secretary and was appointed Chairman, Board of Study in 2002/2003.

In recognition of his valuable contribution to the post graduate training Dr. Makuloluwa was appointed as an examiner for DO/MS/MD ophthalmology examinations by the PGIM. He was also the chief examiner at several examinations.

In recognition of his knowledge and skills gained through his involvement over a decade as an examiner in post graduate examinations in Sri Lanka, he was invited as an external examiner for the fellowship examination in Ophthalmology in Pakistan in 2004 and 2005.

The extensive list of publications with his name on them are many. They have appeared in the *Journal of Ophthalmic Society of Ceylon, Journal of College of Ophthalmologists of Sri Lanka, Asia Pacific Journal of Ophthalmology* and *Journal of Cataract and Refractive Surgery*.

Dr. Makuloluwa received the prestigious Presidents Research Award in 2005 from the President of the Democratic Socialist Republic of Sri Lanka for his authorship of ‘Cataract surgery under topical anaesthesia’ published in the *Journal of Cataract and Refractive Surgery* in 2004.

Dr. Makuloluwa surgeon extraordinaire, has shared his medical and surgical skills with his colleagues both locally and internationally in a range of academic, professional and community audiences and received many
awards and honours. He was the recipient of the Best Video Presentation at the Asia Pacific Academy of Ophthalmology Congress in 2001.

He has made pioneering contribution to the development of IOL surgery, Phacoemulsification, Lasix surgery, Lameller corneal surgery and collagen cross linking in Sri Lanka.

His current research interests are, treatment paradigms in the management of Keratoconus.

Dr. Makuloluwa has earned an international reputation being a member of the Asia Pacific intraocular implant Surgeons, and American Society of Cataract and Refractive Surgeons.

A noteworthy contribution he made towards the improvement in ophthalmic training in Sri Lanka, was his initiative role in the formation and the establishment of our College in 1988 while being the vice president of the Ophthalmological Society of Ceylon.

He worked untiringly as the chairman of the steering committee to ensure that the formation of the College was a reality. He served as the treasurer of the College for several years and was elected President of the College of Ophthalmologists in the 1st year of the millennium 2000/2001.

During his capacity as the President of the College he led its many hybrid activities in protecting its heritage in surgery, research activities and provision of medical education, all in the interest of enhanced patient care.

He was Secretary from 1986-1996 to Eye Care Sri Lanka, an organization which conducted eye camps in rural Sri Lanka headed by Dr. P. A. Wirasinha.

He has also contributed in many ways to Dharmaraja College, Kandy his Alma Mater where he served as the vice president of the OBU. Further his involvement in Buddhist activities and his knowledge on the heritage of our country is noteworthy.

Today the name Dr. Makuloluwa is a well known name across the country, not because of his distinguished career in Ophthalmology only but also because of his contribution towards eye care, in Sri Lanka.

I have presented you a Ophthalmic Surgeon par excellence, worthy of this honorary fellowship of the College of Ophthalmologists.
Presenting, Dr. Champa Priyadarshini Banagala for the conferment of the honorary fellowship of the College of Ophthalmologists Sri Lanka

The Journal of the College of Ophthalmologists of Sri Lanka 2015; 21: 45-46

Born to a respectable family from Nugegoda, her father Prof. Kaluarachchige Jinadasa Perera was a former vice chancellor of University of Sri Jayawardenepura. Her mother, Mrs. Karuna Mahathanthila was a graduate teacher. She was the second in a family of six.

She had her primary and secondary education at Visakha Vidyalaya, Colombo, and excelled in studies as well as extra-curricular activities.

She entered Colombo Medical Faculty in April 1974. She was outstanding in her undergraduate career and obtained second class honours, in second, third and also in the final MBBS with distinctions in physiology and obstetrics and gynaecology.

After graduating in June 1979, she did her internship at General Hospital, Colombo under Prof. K. Dharmadasa and at the De Zoysa Maternity Hospital under Prof. Dr. D. E. Gunathilaka in 1979 and 1980 respectively. Following a short spell at the Central Blood Bank, she joined Eye Hospital, Colombo in September 1981. She obtained her DO in July 1983 and MS in October 1985. Her overseas training, was at King Edward the 7th hospital, Windsor UK and she obtained the FRCS.

Having returned from United Kingdom, she was board certified, in October 1987 and since January 1989, she served as a consultant ophthalmologist at the National Eye Hospital, Colombo, until her retirement in 2013 after a glorious innings.

During her 32 year stay at the Eye Hospital she did an extra ordinary amount of work as a surgeon, trainer, examiner, administrator and also as a social worker.

From the beginning of her career as a consultant, she was a great teacher. We who were lucky enough to work with her, knew that she would cultivate, a great trust of capabilities in the trainee’s mind. It would be a miss, if I didn’t comment on her brilliance, as an anterior segment surgeon, who can deal with many complicated ophthalmic situations.

Her keen interest in training, teaching and examinations, is showcased by her involvement in the Board of Study for the last 16 years in various capacity. She held the position of the Chairperson of the Board of Study, for two consecutive terms over a period of 6 years and saw to it that the ophthalmology training remains of highest standard. A land mark during her tenure was the establishment of the subspecialties in ophthalmology. She has been an examiner for MS/MD part one and two and DO since 1996.

In addition to the post graduate teaching, she actively participated in under graduate teaching at the Colombo Medical Faculty and was a member of the special senses module.

She was a founder member of the College of Ophthalmologists of Sri Lanka and a member of the committee that drafted the constitution of the College at its inception. She held the position of the Secretary of the College in 1994-95 period, the prestigious post of President of the College in 2003 and an advisor since 2008 to date. During this time, there is no doubt that she rendered an immense service to the College. During a very successful presidency in 2003, she took the College to new heights.

She was also the Organizing Secretary of the SAARC Ophthalmological Congress held in Sri Lanka in year 2000. She was the College nominee for International Council of Ophthalmology and the Council of Women in Ophthalmology – Asia Pacific Academy of Ophthalmology.
In 2007 when the Eye Hospital administration was in turmoil, she stepped in as the acting director and along with the goodwill of every category of staff, ran the hospital with great success.

She has also held many responsible positions, within the Ministry of Health, being a member of the Medical Devices Registration Committee, Drug Registration Committee and functioning as the national focal point for prevention of blindness programme from 2000 to 2006 and national focal point for cataract in vision 2020 programme since 2007.

She has rendered her services, not only to doctors but also to the paramedical staff by being the director of the ophthalmic technologist programme since 2006.

She has been a keen researcher as well and has several publications to her credit which appeared in the annual *Journal of College of Ophthalmologists of Sri Lanka*.

Humanism has been very dear to her, in addition to all the academic endeavours, she undertook a lot of social work. She is a council member of Helpage Sri Lanka, to date and is an honorary member of JICA. She was a member and later treasurer of Eye Care Sri Lanka. She has organized numerous eye camps, including surgical camps, in remote parts of Sri Lanka, giving sight to thousands of poor people all over the country.

She is happily married to Dr. Upali Banagala, Consultant Orthopaedic Surgeon and blessed with two lovely children. Her daughter, Ishani is an English teacher at a leading International School in Colombo and son Dr. Dileepa is a post graduate trainee in Orthopaedics at National Hospital, Colombo. She is a budding photographer and loves travelling.

Madam President, without any doubt she has enabled all her trainees to become fine ophthalmologists in our country, therefore her contribution to the College of Ophthalmologists of Sri Lanka is immense. I honestly could not think of a candidate who deserves this honorary fellowship from the College, more than Dr. Champa Priyadarshini Banagala.

Madam President, I proudly present Dr. Champa Priyadarshini Banagala for the conferment of the honorary fellowship from the College of Ophthalmologists of Sri Lanka.