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Medicine has proliferated immensely throughout times and has remained forever concerned with the maintenance of health, prevention, alleviation and curing of the diseases. To continue its development in new directions, medicine is now looking to Nanomedicine an emerging scientific specialty from the fields of Engineering, Physics, Chemistry, Biotechnology; moving into Medicine with huge potential for expansion over the next decades.

Nanotechnology is generally defined as the branch of science which deals with the things in the range of 0.1nm to 100 nm structures, devices and systems by controlling their size and shape in nanoscale range because nano-materials are similar in scale to atomic, molecular and biologic scales. One nanometer is one billionth of a meter (10 to power -9m) and is the unit for nanosize materials. The human hair or a sheet of paper is some 80,000 nm and this gives an idea of nanoscale materials involved in nanotechnology. The bottom line is the use of this technology in any product, including medicines which greatly improves the efficacy or performance. Why nanotechnology is being regarded an ‘Industrial revolution’. The advanced countries are following vigorously the application of this technology in all their industries and are pursuing it as their national programs. Also they are investing billions of dollars annually in a race to have socio-economic and power lead amongst advanced countries and domination over the poor countries of the world.

As our knowledge of the human body continues to improve, nanotechnology is being developed to monitor, repair and control human biological system at the molecular level. This will offer unique opportunities for developing new therapeutic approaches to diagnose, prevent, treat and eradicate life-threatening diseases such as cancer and diabetes, improving diagnostic, therapeutic and surgical techniques.

Many diseases originate from alterations in biologic processes at the molecular or nanoscale level, mutated genes, misfolded proteins and infections caused by viruses or bacteria, which can lead to malfunctioning of cells, or miscommunication leading to life threatening disorders. These molecules and infectious agents are nano-meter size barriers such as nuclear pores 9 nm diameters. Their chemical properties, size and shape appear to dictate the transport of molecules to specific biological compartments and the inter- actions between molecules.

It is important to understand the principles of nanomedicine, to find its potential medical applications and the benefits of nano-tools over the traditional techniques to diagnose and treat various disorders especially the inherited diseases and its application towards genetic engineering; in other words the therapeutic application of nano-technology. This technology is already in progress in advanced institutions in the direction of drug delivery by using nano-particles. Currently, nanotechnology is being used in Ophthalmology in the measurement of IOP, treating new choroidal vessels, preventing scarring after glaucoma surgery and treating retinal degenerative disorders with gene therapy. In fact, revolutionary treatment for ophthalmic diseases is expected to result from the burgeoning field.

Protein and peptides exert multiple biological actions in human body and they have been identified as showing great promise for the treatment of various diseases due to oxidative stress. These macromolecules are called biopharmaceuticals. Targeted or controlled delivery of these biopharmaceuticals using nano- materials like nanoparticles and dendrimers is an emerging field called nanobiopharmaceutics, and these products are called nanobiopharmaceuticals.

The small sizes of nanoparticles are very useful in oncology, particularly in imaging. Quantum dots (nanoparticles with quantum confinement properties, such as size-tunable light emission), when used in conjunction with MRI can produce exceptional images of tumor sites. These nanoparticles are much brighter than organic dyes and only need one light source for excitation. This means that the use of fluorescent quantum dots could produce a higher contrast image and at a lower cost than today’s organic dyes used as contrast media. Additionally, the small size of nanoparticles allows them to preferentially accumulate at tumor sites (because tumors lack an effective lymphatic drainage system). A very exciting research question is how to make these imaging nanoparticles do more things for cancer. For instance, is it possible to manufacture
multifunctional nanoparticles that would detect, image, and then proceed to treat a tumor? This question is under vigorous investigation; the answer could shape the future of cancer treatment. A promising new cancer treatment that may one day replace radiation and chemotherapy is edging closer to human trials. A 5 year research product to diagnose and treat Cancer & Aids at the cell level is in active pursuance by scientists of NIH (USA). Kanzius., RF therapy attaches microscopic nanoparticles to cancer cells and then “cooks” tumors inside the body with radio waves that heat only the nanoparticles and the adjacent (cancerous) cells. Similarly, at Rice University, a tissue welder has been used to fuse two pieces of dissected organ solving the difficulties of blood leaks caused when the surgeon who tries to re-stitch the arteries that have been cut during a kidney or heart transplant.

According to NATURE™ there are 130 nano-based drugs and delivery systems which are being developed worldwide. Nano-electronic interfaces and nano-electronic based sensors are another field of research. Although molecular technology field is still in infancy, yet it is no longer a speculative field of cell repair, which may revolutionize the field of Medicine.

In the next few years it will ultimately provide a critical overview of these advances as they unfold, helping to shape the future of medicine in this exciting era, especially. Currently, Pakistan has also entered into the field of Nanotechnology and it is very encouraging to learn that the Preston University in Islamabad has started a BS (4 year) undergraduate degree level course in Nano-science & Technology at the newly established Preston Institute (PINSAT) under the guidance of a renowned scientist and a Professor Emeritus from Pakistan Atomic Energy Commission Dr. N. M. Butt., Ph.D., D.Sc., as its Chairman. The institute has its plans to introduce nano-medicine workshops in the medical and dental fields relevant to the national needs.

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Outcomes & Complications of Frontalis Brow Suspension with Silicone Tube in Congenital Ptosis

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ABSTRACT:
Objective: To determine the outcomes and complications of frontalis brow suspension with silicone tube in congenital ptosis.
Study Design: Retrospective, non-randomized, interventional case series
Materials and Method: This study was conducted at L.R.B.T Free Base Eye Hospital, Karachi from 1st March 2008 to 28th February 2011. Twenty patients with age ranging between 5-25 years, and diagnosed with congenital ptosis havinglevator function of 4 mm or less were included in this study. Pre-operative assessment included careful history and complete examination. Frontalis brow suspension was performed under general anaesthesia. Post-operative outcome measures included restoration of cosmesis, function and assessment of complications.
Results: Twenty patients were recruited for the study to undergo ptosis correction by frontalis brow suspension with silicone tube, out of which 16 (80%) patients had bilateral severe congenital ptosis and 4 (20%) had unilateral severe congenital ptosis. Post-operatively 18 (90%) out of 20 patients showed good cosmetic and functional improvement.
Conclusion: Frontalis brow suspension with artificial material like silicone tube provides satisfactory results as well as saves the patient from an added surgical trauma of harvesting fascia lata, along with its associated complications.
Key words: Congenital ptosis, silicone tube, frontalis suspension

INTRODUCTION:
Ptosis is the drooping or sagging of upper lid¹ which is an abnormally low position of the upper lid which may be congenital or acquired. Normally the upper lid margin rests about 2 mm below the upper limbus. Ptosis can be classified as neurogenic ptosis (usually caused by innervation deficit), myogenic ptosis (caused by a myopathy of the levator muscle itself or by impairment of transmission of impulses at the neuromuscular junction), aponeurotic ptosis (caused by defect in the levator aponeurosis), mechanical ptosis (caused by the gravitational effect of a mass or scarring). Congenital ptosis is an uncommon disorder. It may be simple congenital, probably caused by the failure of neuronal migration or development with muscle sequelae, or it may be associated with third nerve misdirection, Marcus-Gunn jaw-winking syndrome or blepharophimosis syndrome. It is usually graded as mild (up to 2 mm), moderate (3 mm) and severe (4 mm or more)².

Surgical correction is required if the ptosis occludes the visual axis causing amblyopia, if there is abnormal head posture or if there is a cosmetic concern. Simple unilateral congenital ptosis rarely occludes the pupil to produce amblyopia². Severe congenital ptosis is usually operated in one of the following ways: frontalis sling with fascia lata (which could either be autogenous, homogenous or heterogenous, or fresh or banked), maximum levator resection, frontalis sling with artificial material like silicone bands, mersilene mesh, artificial sutures (chromic catgut, collagen, polypropylene, silicone, stainless steel, silk, nylon monofilament, polyester and polytetrafluoroethylene-PTFE)³. The present study was conducted to assess the outcomes and complications of frontalis sling procedure with silicone tube in congenital ptosis.

MATERIALS AND METHODS:
This study was conducted in L.R.B.T Free Base Eye Hospital, Karachi from 1st March 2008 to 28th February 2011. Twenty patients, 12 females and 8 males with age ranging between 5-25 years were included in the study. Inclusion and exclusion criteria are given in table 1. A performa was used to record history and examination. History included the age of onset of ptosis, its duration, associated diplopia, variability of ptosis severity during the day and excessive fatigue. If history is ambiguous then reviewing old photographs can be useful. Examination included estimation of visual acuity, pupillary light reflex, inspection for chin elevation and frontalis contraction. Specific ptosis examination included measuring marginal reflex distance (normal is
4-4.5 mm), vertical fissure height (distance between upper and lower lid margin, measured in the pupillary plane in primary position. Normal is 9-12 mm), levator function (by measuring the upper lid excursion from extreme down gaze position to extreme upgaze position, while the frontalis function is negated by placing the thumb firmly against the patient’s brow), upper lid crease (absence of which is an important feature of congenital ptosis), assessment of increased innervation in cases of unilateral ptosis, extraocular motility testing, examination to detect associated signs like fatigability test, jaw-winking phenomenon, Bell’s phenomenon, corneal sensitivity and tear-film stability. Informed consent was taken and frontalis brow suspension with silicone tube was performed under general anaesthesia using the following technique. Stab incisions were made in the lid approximately 2 mm from the lid margin to avoid the lash roots and are made just lateral to the upper punctum and approximately 3 mm from the lateral canthus. Brow incisions were made at a position in line with the medial and lateral canthi. The superior incision was made directly above the mid position of the lid at a distance from the brow incisions to form an equilateral triangle. A Wright fascial needle was used to thread the sling material through the incisions in such a way to have each end exit through the superior incision. Care was taken not to enlarge the stab incisions as the sling material is pulled through. The superior incision was undermined to accommodate the knot. Final lid height was determined by tightening the sling till the lid margin just lifts off the cornea. Vicryl 6/0 was used to reinforce the knot. Incisions were closed with vicryl 6/0. A frost suture was placed for 24 hours. Post-operatively chloramphenicol ointment was used twice daily till the time patient was reviewed after 1 week. Assessment of lid closure was done when the patient was asleep. If the cornea was exposed, lubricants at night were added.

RESULTS:
Twenty patients were operated with frontalis sling using silicone tube. Age of the patients ranged from 5 to 25 years. Eight (40%) patients were male and twelve (60%) patients were female. 16 (80%) out of 20 cases had bilateral congenital ptosis (figure 1), whereas, 4 (20%) out of 20 cases had unilateral ptosis (figure 2). Post-operatively 18 (90%) out of 20 patients had good correction in terms of function and cosmesis. Two cases which had unilateral ptosis had under correction (figure 3) which was subsequently well managed. One patient developed pre-septal cellulitis on the 4th post-operative day which was managed medically and one had granuloma formation on the 6th week of follow-up which was managed surgically. Overall results of this study were satisfactory.

DISCUSSION:
Congenital ptosis usually results from a...
developmental dystrophy of the levator muscle of unknown etiology\(^6\). The levator palpebrae superiors muscle acts as a primary elevator of the lids. Frontalis muscle acts as an accessory elevator of the lids and it takes over the elevating function of the levator palpebrae superiors if the latter is dystrophic as occurs in the case of congenital ptosis\(^4\). Frontalis muscle suspension is the gold standard for the treatment of congenital ptosis with poor levator function\(^7\). It creates a linkage between the frontalis muscle and the tarsal plate of the upper eyelid. There have been various modifications in the technique of sling procedure in recent past\(^8\). A number of sling materials like autologous fascia lata, preserved fascia lata, non-absorbable suture material, mersilene mesh etc have been tried\(^9,10,11\).

Silicone frontalis sling requires small skin incisions and less surgical trauma and can be performed in all cases of ptosis associated with poor levator function. Autologous fascia lata has been proven to be the material of choice in sling surgery for ptosis\(^12,13\) but with reported complications of harvesting fascia lata which include an unsightly scar in the thigh region, hematoma formation, keloid formation and herniation of muscle belly\(^14\).

Silicone tube was used for frontalis suspension in the 20 cases admitted for this study among which 16 (80%) had bilateral ptosis and 4 (20%) had unilateral ptosis. Post-operatively 18 (90%) out of 20 patients had satisfactory results in terms of functional evaluation and cosmetic appearance. Under correction was seen in 2 (10%) of 20 patients which later needed intervention. Literature review revealed that under correction is more common in congenital ptosis and the rate varies from 5% to 35% depending on the series\(^15\). One patient in this study developed pre-septal cellulitis on the 4\(^\text{th}\) post-operative day which was well managed medically. Other studies also documented this complication with the rate ranging between 3% to 7%\(^16,17\). One patient in this study developed granuloma on the 6\(^\text{th}\) week of follow up which was later excised. Various studies reported that the complication rate of granuloma formation varies from 2% to 17\(^{\text{th}}\)\(^18\).

Hussain in 1995 treated 7 cases of severe congenital ptosis with silicone band and followed the patients for two years. Silicone material was thought to be a good alternative to the fascia lata because of easy availability, low cost, easy insertion and reasonable results\(^19\). Lee et al in 2009 compared the results of silicone band with preserved fascia lata for frontalis sling operation in congenital ptosis and found better results cosmetically with lower recurrence rates with silicone material\(^20\).

**CONCLUSION:**

Frontalis brow suspension with silicone tube can be used in patients with severe congenital ptosis with satisfactory and permanent results in the long run. It has a simple learning curve, good cosmesis and less number of sutures with better functional results. However, controlled clinical trials are required to establish its outcome.

**REFERENCES:**

INTRODUCTION:

Pterygium is essentially a triangular encroachment of bulbar conjunctiva onto the cornea in the region of inter-palpebral fissure. Pterygium is a worldwide condition with a “pterygium belt” between the latitudes of 30° north and south of the equator. Ultraviolet radiation UVR-A and UVR-B are the most important in the pathogenesis. It is found chiefly in the sunny, hot, dusty and dry regions of the world. It is also fairly common in Pakistan especially in the hot regions of the country. Pterygium is thought to result primarily from ultraviolet light-induced damage to connective tissues underlying the conjunctiva. The pathological changes consist of elastoid degeneration of the collagen and appearance of sub-epithelial fibro-vascular tissue. The cornea shows destruction of the Bowman’s layer by fibro-vascular in-growth, frequently with mild inflammatory changes. The overlying epithelium may be normal, thick or thin and may show dysplasia.

Most of the time, pterygium is left unnoticed by the patient till the time it has resulted in gross cosmetic problem or has encroached upon the cornea to an extent causing gross visual disturbance. But most commonly patients complain of recurrent soreness. Indications for surgical excision include cosmesis, impending or manifest visual loss from involvement of central cornea or irregular astigmatism attributable to central corneal encroachment, restriction of ocular motility and atypical appearance leading to concerns of squamous neoplasia.

The treatment of pterygium is still controversial, with various treatments being advocated in the scientific literature. Unfortunately there are very few well conducted controlled clinical trials of treatment. But non-controlled studies confirmed that bare sclera closure methods are no longer acceptable because of recurrence rates. Recurrence rate of bare sclera technique varies from 55.9% to 89%. There are numerous early reports that explore the treatment of pterygium. Celsus described a treatment that consisted of lifting the pterygium with a hook, pushing a needle underneath it, tying it with a thread and dissecting it off the cornea with a knife; while the Chinese discussed of medicines which would inhibit the formation of blood vessels in a pterygium. From the recent past some techniques were commonly used such
as excision with simple conjunctival closure, conjunctival auto-graft, limbal auto-graft and amniotic membrane graft6. Besides the surgical procedures, adjunctive therapy has also evolved over time. Among the adjunctive therapies beta radiation is one of the earliest. Others include thiopeta, mitomycin C, laser therapy and daunorubicin7. All these agents aim to minimize the risk of recurrence, but none is without its drawbacks.

Unacceptable recurrence rates have led to the abandonment of bare sclera excision6. Bare sclera technique with post-operative mitomycin C eye drops and free conjunctival auto-grafting are preferred by many as a safe, effective and widely available modality of pterygium treatment.

Mitomycin C, an antibiotic – antineoplastic agent, is a non-cell specific alkylating agent, having anti-proliferative effects on the cells that exhibit an increased rate of mitosis by inhibiting DNA synthesis8. Post-operative administration of topical mitomycin C 0.02% (0.2 mg/ml) drops decreases the recurrence rate of pterygium to a range of 2-11%. However, post-operative complications have been reported. The major reasons for complications were related to uncontrolled and prolonged use of the drug by the patient9. Three risk factors seem to play a major role in corneal complications of use of mitomycin C: advanced age of the patient, concentration of the drug and duration of treatment.

Conjunctival auto-graft placed at the limbus acts as a barrier to re-growth of pterygium. The graft is taken from the supero-temporal bulbar conjunctiva which results in rapid healing, smooth and lustrous surface without corneal neovascularization and restoration of ocular integrity in the short term.

Local studies addressing comparison of recurrence rate of pterygium excision with bare-sclera, free conjunctival auto-graft and amniotic membrane grafts are present but there is no local study comparing the two techniques of pterygium excision with conjunctival auto-graft and bare sclera closure and post-operative topical mitomycin C eye drops.

MATERIALS AND METHODS:

This experimental clinical study was conducted at the out-patient department of LRBT Free Base Eye Hospital, Karachi from 1st October 2009 to 30th September 2010. Eighty cases were selected for this study and randomly divided into 2 groups of 40 patients each. Inclusion and exclusion criteria are shown in Table 1. Informed consent was taken from the patients and a performa was used to record information. Each patient was examined by slit lamp to note the extent of the pterygium and to exclude any anterior segment pathology. Optic disc was examined with direct ophthalmoscopy for any signs of glaucoma. Post-operatively patients were followed on 1st, 4th, 7th day, weekly for up to 1 month and then every month thereafter for 3 months to look for complications and recurrence.

One hundred and twenty patients were diagnosed as having pterygium. However, eighty patients were selected for the study as having clinically significant pterygium from grade A to grade E.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Encoreachment up to 3 mm</td>
</tr>
<tr>
<td>B</td>
<td>3 to 4 mm</td>
</tr>
<tr>
<td>C</td>
<td>4 to 5 mm</td>
</tr>
<tr>
<td>D</td>
<td>5 to 6 mm</td>
</tr>
<tr>
<td>E</td>
<td>More than 6 mm</td>
</tr>
</tbody>
</table>

The patients included in this study had pterygium of primary nature. The diagnosis of primary pterygium was made on the basis of clinical examination and previous history of any surgical treatment. Patients were inquired especially about their occupation, duration of sun exposure, onset of pterygium, ocular symptoms, and history of glaucoma, diabetes and hypertension. Best corrected visual acuity was recorded after refraction and retinoscopy was performed to assess pre-operative astigmatism. The local examination on slit lamp includes examination of adenexa, eyelids (for infection, deformities, entropion and trichiasis), examination of conjunctiva for presence of symblephron, active inflammation, nature of pterygium, extent of pterygium and degree of vascularization observed. On the basis of degree of vascularization, grading of pterygium is as follows:

1. No vascularization= 0
2. Minimal vascularization= +1
3. Moderate vascularization= +2
4. Severe vascularization= +3

On the basis of vascularization, the nature of growth of the pterygium was noted as, Advanced (vascularization from +1 to +3), Atrophic (whitish appearance, no vascularization). Intra-ocular pressure by applanation tonometer was checked to exclude glaucoma. Fundus examination was carried out to examine the state of the optic disc and macula. Patients were also examined for any fluorescein staining of the cornea, tear film abnormality, corneal scarring and inflammation. After selecting eighty cases for surgery, they were randomly divided into two groups i.e. Group 1 (40 cases) to undergo surgical excision followed by conjunctival auto-graft transplantation and Group 2 (40 cases) to undergo simple surgical excision using bare sclera technique with post-operative topical mitomycin C 0.02% eye drops.

Surgical technique and anestheisa: All the surgeries were performed under the microscope using topical and local sub-conjunctival anesthesia. In Group 1, the head of the pterygium was grasped with St. Martin’s tooth forcep and excision begun with no. 15 Baired Parker
opposed to atrophic pterygia, 25 (31.25%) cases. Pterygia commonly seen in the study 55 (68.75%) cases as Morphologically advanced pterygia were more cosmetic disfigurement in 18 patients (22.5%).

(50%), visual disturbance in 22 patients (27.5%) and symptoms such as repeated soreness in 25 patients affected by pterygium. Patients presented with certain Outdoor workers were 59 (73.75%) and seen to be more study over females. There were 58 (72.4%) males and 22 (27.5%) females. Male to female ratio was, therefore, 3:1.

RESULTS:

A total of eighty eyes of eighty patients were included in this study. Age of the patients ranged from 20 to 50 years. Most of the patients in this study were between 20-35 years (67.5%) and 36-50 years (32.5%). Mean age was 32.57 years. Males predominated in the study over females. There were 58 (72.4%) males and 22 (27.5%) females. Male to female ratio was, therefore, 3:1. Outdoor workers were 59 (73.75%) and seen to be more affected by pterygium. Patients presented with certain symptoms such as repeated soreness in 25 patients (50%), visual disturbance in 22 patients (27.5%) and cosmetic disfigurement in 18 patients (22.5%). Morphologically advanced pterygia were more commonly seen in the study 55 (68.75%) cases as opposed to atrophic pterygia, 25 (31.25%) cases. Pterygia which encroached the cornea by 3mm or more were included in this study. A greater number of patients, 68 (85%) had pterygium ranging between 3 to 5 mm in size. A small number of patients presented with pterygia which were either more than 5 mm in size or they crossed the pupillary plane to occlude the visual axis. Retinoscopy and refraction were done in all the cases. All of them were found to have with-the-rule astigmatism. In Group 1, signs of appearance of recurrence of pterygium were observed in 3 (7.5%) cases, between 4th and 8th week after surgery. In Group 2, pterygium recurrence was seen in 5 (12.5%) cases within 8 weeks (P=0.456), chi square analysis. In Group 1 minor post-operative complications were encountered in 6 (15%) cases (graft edema in 4 cases and conjunctival cyst in 2 cases) Table 2. Graft edema settled within 1 week by increasing the frequency of topical steroid. The conjunctival cysts were punctured by a sterile needle. In Group 2, minor complications like ocular irritability and lacrimation were observed in 5 (12.5%) of cases, which were more severe in the first three days of the procedure, Table 3. Later on with the instillation of steroid eye drops, these patients became comfortable within the next 6 weeks. Avascularized areas of sclera were found in 2 (5%) patients during the follow up period. The avascularization was more marked in the 1st month but later on those areas spontaneously re-vascularized. None of the eyes showed fluorescein staining throughout. Conjunctival granuloma occurred in 1 (2.5%) patient which was excised after 2 months. Recurrence rates observed in the two groups are summarized in Table 4.

DISCUSSION:

Pterygium is an excessive proliferation of fibrovascular

| **Include** Criterial**|  
|---|---|
| Age between 20 to 50 years |  
| Pterygium size 3mm or more |  
| Pterygium interfering with vision either by occluding visual axis or by inducing astigmatism |  
| Cosmetic disfigurement |  

**Exclusion Criteria**

| **Exclude** Criterial**|  
|---|---|
| One eyed patient |  
| Glaucoma |  
| Ocular surface abnormalities |  
| Chronic ocular infection and chronic dacryocystitis |  
| Recurrent pterygium |  

Indicates the inclusion and exclusion criteria for the selection of the patients for the study.

**Table 2: N=40**

<table>
<thead>
<tr>
<th>Complications</th>
<th>No. of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graft edema</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td>Conjunctival cyst</td>
<td>2</td>
<td>5%</td>
</tr>
</tbody>
</table>

Indicates the post operative complications encountered in Group 1 as well as the number of patient suffering from each complication respectively.
tissue over the exposed ocular surface and frequently leads to almost irreversible visual loss. It is a worldwide disease which is particularly common in tropical and sub-tropical regions such as Pakistan. One study proved that prevalence of pterygium/pinguecula is 2.6% in Chakwal District, Punjab, Pakistan\(^1\). It is presumed to be caused by prolonged ultraviolet light exposure and climatic factors and aggravated by micro-trauma and chronic inflammation from environmental factors. The role of UV rays has been documented in literature by Lee in 2007\(^1\). Treatment of pterygium remains surgical despite the multi-factorial etiology. The primary concern of pterygium surgery is recurrence, which is defined as 2mm or more re-growth of the fibrovascular tissue over the cornea\(^1\). Conjunctival auto-graft was first described as a treatment for pterygium by Kenyon et al in 1985\(^1\).

In this study most of the patients (73.75%) were outdoor workers, so they were more exposed to environmental factors such as sunlight and dust. Saleem M documented in his study that there were 77.5% patients who were outdoor workers with a positive history of UV exposure\(^1\). The mean age in this study is 32.57 years. Maher PS et al in their study have reported the mean age of 40 years which is slightly more than this study. Male patients predominated in the study by 72.4%; Saleem M also observed the high incidence of pterygium among the males\(^1\). During the follow up of Group 1 patients, we encountered recurrence in 5 (12.5%) cases within 8 weeks after surgery. Complications observed were irritability and lacrimation in 5 (12.5%) patients, a vascular sclera in 2 (5%) patients, conjunctival granuloma in 1 (2.5%) patient. Rubinfeld and his colleagues in 1992 highlighted 10 patients with secondary glaucoma, scleral melting, iritis, corneal perforation and sudden onset of mature cataract. In eight out of their ten patients, the concentration of mitomycin C eye drops was higher than 0.04% and was applied for a longer period of time than this study, averaging 2 weeks. In the other 2 patients, a concentration of 0.02% was used 4 times daily for 3 days in 1 patient and beyond 2 weeks in the other one\(^1\). Therefore, a large cumulative dose of mitomycin C was probably the reason for severe complications, as compared to this study. Another study shows post-operative administration of topical mitomycin C 0.02% (0.2 mg/ml) eye drops decreased the recurrence rate of pterygium to a range of 2-11\(^1\). Singh et al have reported 2.3% recurrence rate with higher concentration of mitomycin C (0.04% and 1%)\(^1\). Rachmiel R & Leiba H used the concentration of 0.02% mitomycin C eye drops twice daily for 5 days and reported a recurrence rate of 2.6% with minimal complications\(^1\). In another study it was 6.5%\(^1\). In 1995 Chen reported results of randomized trial comparing mitomycin C and conjunctival auto-graft after excision of primary pterygium. They concluded that both conjunctival auto-graft and low-dose topical mitomycin C were equally effective as adjunctive treatment after excision of primary pterygia\(^1\).

**CONCLUSION:**

In this study both of the procedures showed a lower recurrence rate i.e. 7.5% with conjunctival auto-graft and 12.5% with bare sclera with post-operative topical mitomycin C 0.02% as compared to 70% recurrence rate observed in pterygium treatment with simple bare sclera technique in other trials. Complications encountered in this study were minor and easily managed. Hence this study results showed that recurrence rate of pterygium were more or less the same with these two techniques and, therefore, the choice of procedure to be undertaken lies with the surgeon preference. Larger controlled studies are required.

**REFERENCES**
To Compare the Efficacy & Complications of Different Doses of Mitomycin-C in Augmented Trabeculectomy

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ABSTRACT:
Objective: To establish the efficacy of the most appropriate concentration of mitomycin C which can achieve the objective of functioning filtration surgery with minimal complications
Study Design: Quasi experimental clinical study
Materials and Methods: This study was carried out at the out-patient department of L.R.B.T Free Base Eye Hospital, Karachi from 1st Jan 2008 to 30th June 2010. This study included 86 patients with age ranging between 30-70 years, out of which 46 (53.48%) were males and 40 (46.51%) were females. Patients with all types of glaucoma were included in this study. These patients were planned for augmented filtration surgery with three different concentrations of mitomycin C: 0.10 mg/ml, 0.25 mg/ml and 0.50 mg/ml with exposure time of 3 minutes per-operatively. These patients were randomly divided into three groups: Group A consisted of 30 patients who underwent augmented filtration surgery with 0.10 mg/ml of mitomycin C, Group B consisted of 28 patients who underwent augmented filtration surgery with 0.25 mg/ml of mitomycin C and Group C who underwent augmented filtration surgery with 0.50 mg/ml of mitomycin C.

These patients were followed for a period of 2.5 years.

Results: In Group A, the mean reduction of intraocular pressure after treatment was 55.37% with following post-operative complications: flat anterior chamber 3.33%, flat bleb 10%, cataract formation 6.66% and return of intraocular pressure to pre-operative level 3.5%. In Group B, the mean decline of intraocular pressure, post augmented trabeculectomy was 50% with minimum complications such as wound leak 3.5%, and epithelial defect 3.5%. In Group C, the mean reduction of intraocular pressure, after the procedure was 58.4% with the following complications: wound leak 10.7%, epithelial defect 10.7%, endophthalmitis 3.5%, hypotony 7.1% and flat bleb 3.5%.

Conclusion: Based on the above observations, using the three different concentrations of mitomycin C, we conclude that mitomycin C dose of 0.25 mg/ml applied for three minutes carries the least number of complications while achieving a good post-operative reduction of intraocular pressure from baseline level.

Key Words: Augmented Trabeculectomy, Mitomycin C 0.10 mg/ml, Mitomycin C 0.25 mg/ml,Mitomycin C 0.50 mg/ml

INTRODUCTION:
Glaucoma is potentially a blinding condition¹. It is the third commonest cause of blindness in Pakistan². The pathophysiology, presentation and treatment of the different types of glaucoma are so varied, that there is no single definition that adequately encompasses all the forms. Understanding this concept helps to explain why one patient with glaucoma may have no symptoms whilst another experiences sudden pain and redness. In short, glaucoma is a disease which exhibits a characteristic optic neuropathy which may result in progressive visual field loss. The most important risk factor is raised intraocular pressure secondary to reduced aqueous outflow through the filtration angle. Glaucoma may be congenital, developmental and acquired. It is further classified into open angle and closed angle, based on the presence or absence of associated factors which lead to pressure rise¹. Due to lack of awareness and poor economic conditions, patients usually present late with advanced glaucomatous damage, requiring very low target pressure and hence benefit from early surgical intervention.

The introduction of mitomycin C as an adjunct to trabeculectomy was a major advance in our ability to improve intraocular pressure lowering efficacy of the procedure³. Mitomycin C an antibiotic-antineoplastic agent is isolated from the fermentation filtrate of Streptomyces caespiatus, and has been shown to suppress fibroblastic activity and thereby inhibiting wound healing². The success of trabeculectomy in patients who are poor candidates for glaucoma filtration...
surgery can be improved with the use of mitomycin C. The advantages of its use intra-operatively as an adjunct to glaucoma filtering surgery are: a reduction of corneal complications, a more profound reduction of intraocular pressure and the elimination of the need for post-operative administration of drugs. Many investigators have attempted to find protocols for the adjunctive therapy that will provide an acceptable balance between the benefits and risks. The two mitomycin C variables that have been evaluated most extensively are drug concentration and duration of application. The purpose of this study was to establish the most effective and optimal dose of mitomycin C which would be beneficial in maintaining intraocular pressure within an acceptable limit and with minimal complications.

**MATERIALS & METHODS:**

This study was carried out in the out-patient department of L.R.B.T Free Base Eye Hospital, Karachi from 1st January 2008 to 30th June 2010. Eighty six patients with age ranging between 30-70 years were recruited for the study, out of which 46 (53.48%) were males and 40 (46.51%) were females. Patients were divided into three groups based on the dose of mitomycin C which was used during filtration surgery. Group A consisted of 30 patients who received 0.10 mg/ml mitomycin C, Group B consisted of 28 patients who received 0.25 mg/ml mitomycin C and Group C which consisted of 28 patients who received 0.50 mg/ml mitomycin C.

Patients with all types of glaucoma were included in this study. After taking informed consent, a complete socio-demographic data (including history of ocular surgery and type and number of anti-glaucoma drugs used previously) was recorded. Detailed pre-operative examination included best-corrected visual acuity, anterior and posterior segment examination, optic nerve evaluation and intraocular pressure monitoring with applanation tonometer. Angle evaluation was done by gonioscopy. A pre-procedure visual field assessment using Humphrey perimeter, central 30-2 was carried out. An ideal concentration and exposure time of mitomycin C is yet to be ascertained in our population; therefore, filtration surgery was performed using three different concentrations of mitomycin C, in order to find a suitable dose.

**Surgical Technique:**

A fornix-based conjunctival flap was dissected and a partial thickness 2x3 mm rectangular scleral flap created. For the application of mitomycin C a 2x2 mm cellulose sponge saturated with 0.1 mg/ml, 0.25 mg/ml and 0.50 mg/ml solution of mitomycin C (Kyowa, Japan) for Groups A, B and C respectively were applied under the scleral flap for 3 minutes.

The conjunctiva was held back with a forceps during application of the mitomycin C, and was not draped over the sponge at any stage, in order to protect it from contact with the anti-metabolite. The surgical site was then irrigated with 10 ml of basic salt solution. Only then the anterior chamber entered, a clear corneal paracentesis performed, and a fistula beneath the scleral flap created. A peripheral iridectomy was performed in all cases. The scleral flap was sutured with two interrupted 10-0 nylon sutures (Ethicon, Somerville, NJ, USA) with slightly greater tension than a standard trabeculectomy, taking care to maintain anterior chamber depth and to prevent over-filteration. Tenon’s capsule and the conjunctiva were closed in a single layer with 8-0 vicryl (Ethicon, Somerville, NJ, USA). Following surgery, all eyes received a standard regimen of topical atropine (1% twice daily) and corticosteroid-antibiotic preparation four times daily.

**RESULTS:**

**Group 1:** Mitomycin C was used as an intra-operative adjunct during trabeculectomy in 30 cases with concentration of 0.10 mg/ml, out of which 17 (56.6%) were males and 13 (43.4%) were females. The mean pre-operative intraocular pressure was 30.7 mm Hg, whereas; mean post-operative intraocular pressure was 13.7 mm Hg. Complications included flat anterior chamber with hypotony in 1 (3.33%) patient, which improved spontaneously within 10 days. A flat bleb was observed in 3 (10%) patients with gradual return of pre-operative intraocular pressure, cataract formation in 2 (6.66%) patients and return of intraocular pressure to pre-operative level 3.33%.

**Group 2:** Mitomycin C was used as an intra-operative adjunct during trabeculectomy in 28 cases with concentration of 0.25 mg/ml, out of which 15 (53.57%) were males and 13 (46.42%) were females. The mean pre-operative intraocular pressure was 28 mm Hg, whereas; mean post-operative intraocular pressure was 14 mm Hg. In this group persistent wound leak in 1 (3.5%) and epithelial defect in 1 (3.5%) were encountered.

**Group 3:** Mitomycin C was used as an intra-operative adjunct during trabeculectomy in 28 cases with concentration of 0.50 mg/ml, out of which 14 (50%) were males and 14 (50%) were females. The mean pre-operative intraocular pressure was 29 mm Hg, whereas; mean post-operative intraocular pressure was 12 mm Hg. Complications included persistant wound leak in 3 (10.7%) patients, epithelial defect in 3 (10.7%) patients, hypotony with intraocular pressure < 5 mm Hg in 2 (7.1%) patients, endophthalmitis in 1 (3.5%) patient and flat bleb in 1 (3.5%) patient. Keeping the above results in mind we observed that although the mean reduction in intraocular pressure was more or less similar in all the three groups, group 2 patients showed least number of complications which were minor and which gradually settled over a short period of time.
DISCUSSION:

The success of trabeculectomy in the absence of high risk characteristics, from the surgical point of view has been reported in the range of 85% to 90% in literature. Trabeculectomy, first introduced by Cairnes in 1967 and later modified by Watson has become the accepted method of surgical treatment for various types of glaucoma. Glaucoma surgery with the use of mitomycin C was first done by Chen in 1983. High risk characteristics include history of long-term use of local anti-glaucoma medications, young age, history of intraocular surgeries, aphakia and recess angle. In this study we used different concentrations of mitomycin C and observed dose-related response in control of intraocular pressure and associated complications.

In Group A we used 0.10 mg/ml mitomycin C which reduced intraocular pressure by 55.37%. The complications encountered were flat anterior chamber in 1 (3.33%) patient, flat bleb in 3 (10%) patients, cataract formation in 2 (6.66%) patients and return of intraocular pressure to pre-operative level in 1 (3.3%). Lee et al in 1996 also used three different concentrations of mitomycin C- 0.10 mg/ml, 0.2 mg/ml and 0.4 mg/ml. In their study they obtained a success rate of 40% in patients who received 0.10 mg/ml mitomycin C and the complications they encountered in this group were corneal epithelial defect and anterior chamber haemorrhage.

In Group B of the current study in which 0.25 mg/ml mitomycin C was used, good results were achieved in terms of intraocular pressure (50%) and post-operative complications. Lee noted a success rate of 80% with mitomycin C concentration of 0.20 mg/ml. In 2009 Mahmood et al used 0.2 mg/ml of mitomycin C and he found a reduction of intraocular pressure from 39.37 mmHg preoperatively to 13.86 mmHg post operatively. Hong et al in his study using 0.2 mg/ml of mitomycin C with exposure time of 5 minutes, showed 74.7% of success rate in terms of lowering of intraocular pressure by 20 mmHg. They followed their patients for up to 7.8 months, 13% eyes showed persistent wound leak, while in our study using 0.25 mg/ml mitomycin C 3.5% patients showed wound leak which resolved spontaneously. Mahmood et al encountered one case of endophthalmitis and one case of hypotony related maculopathy. In the current study we did not encounter these serious complications.

Filteration surgery using 0.50 mg/ml mitomycin C is used widely. But such high concentrations are usually associated with serious complications as compared to 0.25 mg/ml of mitomycin C. In the present study the reduction of intraocular pressure was 58.4% and the complications noted were persistent wound leak in 3 (10.7%) cases, epithelial defect in 3 (10.7%) cases,
endophthalmitis in 1 (3.5%) case, hypotony in 2 cases (7.1%) cases, flat bleb in 1 (3.5%) case and return of intraocular pressure to preoperative level in 1 (3.5%) case. Fereshtekhou MA et al showed an average intraocular pressure decline of 66%. He noted 25% cases of post operative leakage, 20% shallow anterior chamber, 20% choroidal effusion and 10%, cataract formation.

CONCLUSION:

In patients with medically uncontrolled glaucoma, mitomycin C augmented trabeculectomy appears to be an effective means of lowering intraocular pressure. Various doses and durations can be used but mitomycin C 0.25% applied for three minutes intra-operatively seems to be most appropriate with good success rate over the intermediate term and low rates of sight threatening complications. Larger controlled trials are required to establish the optimal dose and duration.

REFERENCES:

INTRODUCTION

The term glaucoma refers to a syndrome of retinal ganglion cells loss manifested as retinal nerve fiber bundle loss and excavation of the optic nerve head with surrounding visual field defects in which raised IOP is a risk factor\(^1\). Glaucoma is a highly prevalent and vision threatening condition affecting approximately 66 million people worldwide\(^2\). In a recent study conducted in Pakistan, it was showed that glaucoma accounted for 8.1% of all eye admissions. Open-angle glaucoma was responsible for 37.6% or 731 glaucoma admissions followed by secondary glaucoma (35.0%) and angle-closure glaucoma. Glaucoma is the second most leading cause of blindness after cataract\(^3\). Quigley’s\(^4\) extensive review in 1996 revealed that the number of people with primary glaucoma to be 66.8 million while the WHO put the total number of suspect cases of glaucoma at around 105 million. The number of people bilaterally blind from the two; open-angle glaucoma (OAG) and angle-closure glaucoma (ACG) has increased to 7.6 million\(^5\). According to WHO, more than 80% of blind and suspect cases of glaucoma live in the developing world.

There is no cure for glaucoma. The primary goal of the treatment is to prevent further damage to the eye by lowering IOP and to ultimately prevent blindness. Currently we have four treatment options: medications, lasers, surgery, and combinations of any of them. In our set-up, people present with advance disease due to poverty, illiteracy and lack of district-based eye care. Treatment of choice in our setting is surgical intervention due to poverty, poor drug compliance, late presentation and high failure rate of laser trabeculoplasty\(^6\).

Trabeculectomy alone introduced by Cainr in 1968 and modified by Watson in 1970\(^7,8\), or with antimetabolite (Mitomycin-C, 5-Fluoro-uracil) has been the surgical method of choice\(^2,9,10\). The surgical management of glaucoma has progressed and evolved throughout the years. With advances in surgical technique, such as the use of adjunctive antifibrotic or antimetabolic agents and the placement of releasable sutures, glaucoma surgery has become a more reliable and predictable undertaking\(^11\). Trabeculectomy with MMC augmentation is a safe and effective procedure. For reduction of IOP and visual rehabilitation whether a fornix- or a limbal based conjunctival flap is utilized\(^11\). The hypothesis of our study was that fornix

**Comparison of Fornix vs Limbal Based Conjunctival Flap in Trabeculectomy with Mitomycin-C.**

Rahil Malik FCPS\(^1\), Muddaser Turi\(^2\), Nuzhat Rahil\(^3\)

**ABSTRACT**

**Objectives:** To compare the efficacy of Fornix based versus Limbus based conjunctival flap in patients undergoing trabeculectomy with intraoperative Mitomycin C.

**Material and Methods:** It was randomized control trial done on eighty eyes of 80 patients diagnosed as glaucoma at Department of Ophthalmology, Khyber Institute of Ophthalmic Medical Sciences (KIOMS), Peshawar in year 2010. Patients were divided into two equal groups of 40 each. Group I underwent fornix based trabeculectomy with intraoperative Mitomycin C (MMC) while group II eyes underwent limbal based trabeculectomy with MMC.

The main outcome measure of this study was intraocular pressure, i.e., Efficacious rate of fornix based conjunctival flap trabeculectomy with mitomycin C and limbal based conjunctival flap trabeculectomy with mitomycin C in lowering intraocular pressure. The other was bleb formation.

**Results:** In this study 56.3% of patients were male and 43.8% were female. The mean age was 54.1 years. Preoperative visual acuity ranged from 6/6 to counting fingers (CF). The mean intraocular pressure at the end of follow-up was 11.95 mmHg with standard deviation of ± 0.71 in Group 1 and 12.12 mmHg with standard deviation ± 0.88 in Group 2. IOP >21 mmHg was not found in any group. The efficacious rate of fornix based trabeculectomy with MMC and limbal based trabeculectomy with MMC was 100% and 85% respectively in formation of bleb on 1st postoperative day which was significantly different. (P = 0.03)

**Conclusion:** Fornix based trabeculectomy with intraoperative MMC is more efficacious than the limbal based trabeculectomy with MMC in glaucoma.

**Key Words:** Glaucoma, Trabeculectomy, intraocular pressure, Mitomycin C.
Comparison of Fornix vs Limbal Based Conjunctival Flap in Trabeculectomy with Mitomycin-C.

MATERIAL AND METHODS

The study was conducted at Eye Unit of Lady Reading Hospital, Peshawar. Before starting the study, permission from the hospital ethical committee was obtained. An informed written consent was obtained from the patients. The patients were evaluated for inclusion and exclusion criteria.

**a. Inclusion criteria:** patients of 30 to 60 years, both male and female. Patients of primary open angle glaucoma angle closure glaucoma, pseudoexfoliative glaucoma and induced glaucoma with raised intraocular pressure not controlled by maximum treatment or poor compliance.

**B. Exclusion criteria:** Patients with previously failed trabeculectomy. Patients with history of previous intraocular surgery or trauma. Patients with congenital or normal tension glaucoma. Patients with secondary glaucoma like uveitic, neovascular or pseudophakic.

A special data collection proforma was filled for each patient having a detailed record of the patient. Patients for trabeculectomy were admitted to eye unit Lady Reading Hospital, Peshawar through eye OPD waiting list. A detailed history regarding dimness of vision (DV) (whether sudden or gradual, painless or painful), previous ocular trauma and intraocular surgery were taken. Pre-op ocular examination included best corrected visual acuity, relative afferent papillary defect (RAPD) and slit lamp examination of optic disc with 90 D lens noting optic disc cupping & cup-disc ratio (CD ratio), gonioscopic examination of angle structure by Goldmann single mirror goniolens, intraocular pressure measurement (IOP) by Goldmann applanation tonometer and visual field testing using Humphery perimeter was carried out.

The patients were divided into random allocation into two groups. One group (1) undergone trabeculectomy with fornix based conjunctival flap and other group (2) had trabeculectomy with Limbus based conjunctival flap. The surgery was done both under local and general anesthesia. All the surgeries were performed by consultants.

The patients were examined on first post-operative day and followed up on 10th and 30th postoperative day and were assessed for visual acuity, conjunctival bleb, and intraocular pressure. Nominal data of the outcome of surgery for all the patients were recorded on a data collection proforma on each follow up visit. After completion of data collection, the data was analyzed using SPSS version 13.0. All categorical variables including gender and operative outcome were given in frequencies and percentages; mean and standard deviation was calculated for numerical variables for example age and intraocular pressure on day 1, 10, and 30. And operative outcome in the form of intraocular pressure and bleb formation between groups, independent student-t test was used to compare intraocular pressure between the two groups. P value >0.05 was considered significant.

RESULTS

Patients were diagnosed as “Glaucoma” and admitted at Ophthalmology Unit, KIOMS, Lady Reading Hospital, Peshawar. Eighty eyes of eighty patients were included in the study. Among these 45 (56.3%) were male and 35 (43.8%) were female patients. The mean age was 54.1 years with ± standard deviation of 5.6. The youngest was 32 years and the oldest was 60 years. In 40 (50%) eyes trabeculectomy with fornix based conjunctival flap and intra-operative Mitomycin C (MMC) was performed as primary procedure (group 1). While in 40 (50%) eyes trabeculectomy with limbal based conjunctival flap and intra-operative MMC was performed as primary procedure (group 2).

In group 1, 17 eyes had preoperative intraocular pressure of 24-26, 14 eyes had pressure of 27-29mm Hg and 9 eyes had pressure of 30-32mm Hg. In group 2 preoperative pressure of 24-26mm Hg were noted in 19 eyes. 13 eyes had an intraocular pressure of 27-29mmHg and 8 eyes had pressure of 30-32mmHg. On the 1st postoperative day 40 eyes (100%) in the Fornix based group had an IOP of 11.72mmHg +/- 0.71, while in the limbal based group had an IOP of 11.82mmHg +/- 0.71. On the 10th postoperative day 40 eyes (100%) in the fornix based group had an IOP of 11.95mmHg +/- 0.71, while in the limbal based group 40 eyes (100%) had an IOP of 12.12mmHg +/- 0.68.

On the 30th postoperative day final IOP in Fornix based group was 11.95mmHg +/- 0.71 in 40 eyes (100%), while in the Limbal based group the final IOP was 12.12mmHg +/- 0.68 in 40 eyes (100%).

Bleb formation was assessed postoperatively on day 1, day 10 and day 30. On the 1st postoperative day, it was seen in 40 eyes (100%) in the fornix based group. While in the limbal based group bleb was formed in 34 eyes (85%) and in 6 eyes (15%) bleb was flat. Bleb formation on the 10th postoperative day was seen in 40 eyes (100%) in the fornix based group while in limbal based group bleb was also formed in 40 eyes (100%). Bleb formation on the 30th postoperative day was seen in 40 eyes (100%) in the fornix based group, while in limbal based group bleb was also formed in 40 eyes (100%). The IOP reduction in both the groups was not significantly different from each other with (P value = 0.16), i.e. not significant statistically, using student t test.

DISCUSSION

This study was conducted in Ophthalmology Department, Khyber Institute of ophthalmic Sciences/
Comparison of Fornix vs Limbal Based Conjuctival Flap in Trabeculectomy with Mitomycin-C.

Table 1: Pre-operative Intraocular pressure with respect to procedures (n=80)

<table>
<thead>
<tr>
<th>IOP</th>
<th>Fornix based</th>
<th>Limbal based</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-26 mmHg</td>
<td>17</td>
<td>19</td>
</tr>
<tr>
<td>27-29 mmHg</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>30-32 mmHg</td>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>

Table-2 Bleb formation on 1st postoperative day with respect to procedures (n=80)

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Bleb formed</th>
<th>Bleb Not formed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fornix based</td>
<td>40</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>Limbal based</td>
<td>34</td>
<td>06</td>
<td>40</td>
</tr>
</tbody>
</table>

In our study mean IOP was 54 years (32-60) +/- 5.63. This is different from other studies as study done by A Alwitry, mean age was 69.74 years (23-85 years) while a study by Tham CC, mean age was 48.1 years +/- 21.9. In a study by Susan L Jee, the mean patient age was 65.4 years (range, 18-89 years).

Preoperative intraocular pressure (IOP) was measured with mean IOP ± SD of 27.42 mmHg ± 2.03 in group 1 and 27.15 ± 2.60 mmHg in group 2. 77.5% patients had with mean IOP ± SD of 27.42 mmHg ± 2.03 in group 1. Preoperative intraocular pressure (IOP) was measured with mean IOP ± SD of 27.42 mmHg ± 2.03 in group 1 and 27.15 ± 2.60 mmHg in group 2. 77.5% patients had IOP 24-29mmHg and 22.5% had IOP <30mmHg in group 1. In a study by A Alwitry, mean IOP in limbal based group was 26.09mmHg ± 7.71 and in fornix based group it was 23.60mmHg ± 6.33. In a study by Zdravko Mandic, the mean IOP was 16.24 +/- 3.4mmHg in fornix based group and 15.9 +/- 3.2 mmHg in the limbal based group.

In a study by Henderson, 159 of 245 fornix based flaps (65%) leaked compared with 10 of 41 limbus based flaps (24%) on the 1st postoperative day. In a study by Wu, bleb was functional in 90.4%. In a study by F Grehn, 13 out of 32 evaluated filtering blebs (41%) of the fornix-based group were judged as avascular as compared to 6 out of 30 filtering blebs (20%) of the limbus-based group.

Postoperative IOP was measured with mean IOP of 11.7 +/- 0.75 on 1st postoperative day, in a study by A Alwitry, IOP in fornix based group was 9.65 +/- 5.06. In our study mean IOP was 11.9 ± 0.71 mmHg, in a study by A Alwitry, mean IOP was 11.21 mmHg +/- 4.42. In our study Postoperative IOP in limbal based group was 11.17 ± 2.2 on 1st postoperative day, whereas in a study by A Alwitry, mean IOP was 10.86 +/- 5.98. In our study mean IOP on 10th postoperative day was 12.1 ± 0.68. In a study by Alwitry, mean IOP was 8.85 +/- 4.35. In our study final mean IOP was 12.12 ± 0.68, whereas in a study by A Alwitry, mean IOP was 13.30 +/- 8.23. In a study by Zdravko Mandic, mean IOP was 16.24 +/- 3.4 mmHg in fornix based group and 15.9 +/- 3.2 mmHg in the limbal based group.

In our setup patients usually presents with advanced disease, so the treatment of choice is surgical intervention due to late presentation, poor drugs compliance and poverty. Trabeculectomy with fornix based conjunctival flap and MMC is more effective than trabeculectomy with limbal based conjunctival flap and MMC, as the chances of bleb non-formation due to leakage is more common on 1st postoperative day in the latter procedure.

REFERENCES

Lady Reading Hospital, Peshawar. In this study eighty eyes of glaucoma patients were included. This study presents outcome data comparing the two flap designs in trabeculectomy procedures. In this study 45 (56.3%) patients were male and 55 (43.8%) were female. In a study by A Alwitry, 28 were male and 31 were female. In a study by Susan L Jee, the mean patient age was 69.74 years (23-85 years) while a study by Tham CC, mean age was 48.1 years +/- 21.9. In a study by Susan J Lee, 70 (45.2%) were male and 85 (54.8%) were female. In a study by WL Membrey, 21 (54.8%) were female. In a study by A Alwitry, 28 were male and 31 were female. In a study by Susan J Lee, 85 (43.8%) were female. In a study by WL Membrey, 21 (54.8%) were female. In a study by A Alwitry, 28 were male and 31 were female.

In our study mean IOP was 11.9 ± 0.71 mmHg on 10th postoperative day, whereas in a study by A Alwitry, mean IOP was 8.85 +/- 4.35. In our study final mean IOP was 12.12 ± 0.68, whereas in a study by A Alwitry, mean IOP was 13.30 +/- 8.23.

In a study by Zdravko Mandic, mean IOP was 16.24 +/- 3.4 mmHg in fornix based group and 15.9 +/- 3.2 mmHg in the limbal based group. In a study by Tezel C, the limbus-based conjunctival flap group, 146 eyes (97%) achieved an IOP of less than 20 mm Hg, 62 eyes (97%) of the fornix-based conjunctival flap group (P > .05) achieved this result.

The IOP reduction in both the groups was not significantly different from each other with (P value= 0.16), i.e. not significant statistically, using student-t test. In a study by A Alwitry, P value was 0.229. In a study by Zdravko Mandic, there was no statistically significant difference in intraocular pressure decrease between the fornix based and limbus-based group (P=0.810). In a study in china there was no statistically significant difference between the 2 groups (p = 0.078).

CONCLUSION

In our setup patients usually presents with advanced disease, so the treatment of choice is surgical intervention due to late presentation, poor drugs compliance and poverty. Trabeculectomy with fornix based conjunctival flap and MMC is more effective than trabeculectomy with limbal based conjunctival flap and MMC, as the chances of bleb non-formation due to leakage is more common on 1st postoperative day in the latter procedure.
ABSTRACT

Objective: To study the change in corneal astigmatism before and after small incision cataract surgery (SICS)

Study Design: Prospective interventional period.

Materials and Methods: The study was conducted at Redo Hospital, Rawalpindi. 29 patients having cataract who did not have any other ocular disease were included in this study. Patients were operated as day cases and were discharged on same day. Preoperative Keratometry readings were taken and were compared with the first day of post-operative readings. All the surgeries were done by the same surgeon. Results were noted in tables.

Results: The pre-operative data shows, that there were 13 patients with up to 3 diopters of corneal astigmatism, and 10 patients with up to 2 diopters of astigmatism making 80 percent of the sample size, while only 6 patients had up to 1 diopter astigmatism. Post-operative results show that patients having 1 diopter astigmatism were 13 (44.8%), 8 patients show up to 2 (27.6%) diopters astigmatism, while 8 (27.6%) patients were now showing up to 3 diopters astigmatism.

Conclusion: There was a significant low percentage of post-operative astigmatism after SICS

Key words: Cataract, astigmatism, suture less

INTRODUCTION:

Cataract is the most important cause of reversible blindness all over the world. The most important cause of cataract is senility mostly prevalent after 60 years of age in the absence of other eye disease. For the last many years, cataract has been operated by a conventional method of extra capsular cataract extraction with posterior chamber IOL implantation. Usually five sutures are applied at the posterior limbus. After this type of surgery, even in expert hands, the rate of post-operative astigmatism is very high. Therefore, sutures have to be removed after a few months when the wound is healed to correct the induced corneal astigmatism by tight or loose sutures. The convalescence period is very long despite a good surgery.

Because of the above problems, the extra capsular cataract surgery has been refined and phaco-emulsification was introduced in 1967 by Kelman. It addressed all the suture related problems and gave excellent post-operative results with early recovery. Because of expensive phaco machine and an especially trained OT assistant, sometimes it becomes difficult to perform this procedure on every patient. Therefore another technique called small incision cataract surgery (SICS), was introduced. It does not require any special machine or instrumentation. Usually no suture is applied, but sometimes like phaco, one suture is applied to seal the wound. It also addresses all the suture related problems and visual rehabilitation is rapid.

MATERIAL AND METHODS:

This prospective interventional study was performed at Redo Eye Hospital, Rawalpindi. A philanthropic Hospital, established in 1980 and is giving services to poor and needy people at free or very low rates.

In this study, small incision cataract surgery (SICS) was adopted as a standard procedure for cataract patients. 29 patients with cataract were included in this study who did not have any other eye problem. Patients with other eye diseases were excluded from study. Fornix based conjunctival flap was made and bleeding points were cauterized. A 6 to 7 mm partial thickness scleral incision was given 1.5 mm behind the limbus with a 15 number blade. With the help of 3.2 mm keratome a corneoscleral tunnel was made. Two partial thickness corneal...
side ports were made with the help of number 11 feather blade. With insulin needle a ‘V’ shaped anterior capsulotomy was performed. Hydro dissection was performed and nucleus was mobilized. Scleral tunnel was transformed in full thickness by keratome after injecting viscoelastic substance. With the help of dialer nucleus was brought into anterior chamber. Nucleus was delivered out of the anterior chamber by visco expression. Cortical matter was removed using a simco cannula from the side ports Viscoelastic was injected and intraocular lens was implanted and dialed. From one of the side ports the anterior capsular tag above the lens was cut and removed. Miochol was injected and one suture was applied at the center of the corneoscleral tunnel to approximate the wound properly. Miochol was removed and eye was padded.

RESULTS:

Table: 1 shows the frequency of the corneal astigmatism in the patients before surgery. There were 13 patients with up to 3 diopters of astigmatism, and 10 patients with up to 2 diopters astigmatism making 80 percent of the sample size, while only 6 patients had up to 1 diopter astigmatism.

![Fig: 1. Pre-operative Corneal Astigmatism](image1)

![Fig: 2. Post-operative Corneal Astigmatism](image2)

Table: 1

<table>
<thead>
<tr>
<th>Pre-operative Corneal Astigmatism</th>
<th>Frequency</th>
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Table: 2 shows post operative patients having up to 1 diopter astigmatism were 13(44.8%), 8 patients showed up to 2(27.6%) diopters astigmatism, while 8(27.6%) patients were now showing up to 3 diopters astigmatism.

Table: 2

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<th>Post-operative Corneal Astigmatism</th>
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Descriptive statistics showed maximum and minimum ranges were the same but there was a significant difference in means (Pre op=2.24 diopters, post op=1.82 diopters) of both samples along with standard deviations (pre op SD=.7863 and post op SD=.848) One sample test was applied, while comparing the test of significance it is evident that the test value is significant considering the confidence interval limit of 95% While determining the correlation it is evident that the Pearson correlation is positive (Pre op 1.000 and post op 0.279) and the test results are highly significant.

Discussion:

Cataract is the most common eye disease which causes reversible deterioration in the visual acuity. The most common cause of cataract is senility which accounts for 90% of the total cases of cataract. Other causes include cataract secondary to diabetes, uveitis, congenital, developmental and traumatic.

The basic pathology in cataract is denaturation of lens proteins, which causes opacification of different layers of lens causing the formation of cataract which in turn causes gradual loss of visual acuity.

Cataract is treated by surgical intervention. Conventionally, it has been treated by extra capsular cataract extraction with posterior chamber intraocular lens implantation and closing the wound by at least five sutures. This has been the procedure of choice for many
years. Later on with further improvement of biotechnology the problems related to this type of procedure were addressed including induced astigmatism because of sutures. A refined form of extra capsular cataract extraction was introduced in 1967 by Kelman. In this procedure, the wound size is 3 mm as compared to 7-8 mm size in conventional procedure. Moreover, surgery is done in a closed chamber and nucleus of cataract was emulsified and aspirated through small incision. A small optic or foldable intraocular lens is placed in the eye and one suture is applied and most of the times no suture is required because of small size of the wound.

There are a few problems which are encountered in phacoemulsification like an expensive machine, a trained operation theatre assistant present all the time during surgery in order to operate the Phaco machine. Moreover, the machine and its after sales services are very expensive, and this is a special matter of concern in Pakistan where the earning capacity of the people is very low. The learning curve of phacoemulsification for an eye surgeon is also very long as compared to other techniques. Because of all the above mentioned problems and difficulties, an intermediate way of cataract surgery was introduced by some eye surgeons in 1990s which redressed most of these problems. Our study is aimed at noting the difference in corneal astigmatism before and after surgery (SICS), and the induced astigmatism because of sutures are eliminated. Our study is a comparison between our own pre-operative and first day post-operative change in the corneal astigmatism, and even correction of pre-operative corneal astigmatism, if that is carefully taken into account, as we did in this study. And we found, that in most of patients corneal astigmatism was less than one diopter.

Other problems with other techniques like phacoemulsification like an expensive machinery and a trained person for operating the machine is not required at all. As the corneoscleral tunnel is auto sealed, there is no need of any suture or only one suture may be applied according to the pre-operative astigmatism to correct it. Since it’s a closed chamber surgery, because of auto sealed wound, anterior chamber remains deep during surgery and reduces the risk of posterior capsular rupture to almost negligible level in expert hands, while its incidence is very high in conventional extracapsular cataract extraction even in expert hands. Similarly the complications, especially related to phacoemulsification like dropped nucleus are never encountered.

It is deeply stressed that in circumstances where, facilities of phacoemulsification are not available because of different reasons, this technique should be encouraged and preferred over conventional surgery with sutures.

**Conclusion:**

There is a very low level of post-operative astigmatism after small incision cataract surgery. Therefore in circumstances where phacoemulsification is not available, it should be preferred overconventional extracapsular cataract extraction.

**REFERENCES:**

Peculiar Type of Combat Ocular Injuries in Security Forces engaged in anti-terror campaign in Malakand Region (Swat) & the western front of Khyber Pakhtunkhwa (KP) in Pakistan (April 2009 to Mar 2010)

Muhammad Azam Khan*, Rizwan Hashim**, Ubaid Ullah Yasin*** Lateef Ur Rehman****, Khalid Mehmood Tariq*****

ABSTRACT
Background: Ocular trauma is a major health care concern but no national data is available regarding the type of ocular injuries and the management provided for such injuries in anti terror conflict in Pakistan security forces in the region of Khyber Pakhtunkhwa of Pakistan in general.

Objective/Aim of Study: To document the pattern and causes of ocular and ocular adnexal injuries in troops engaged in anti terror campaign from April 2009 to Jun 2010.

Study Design: Descriptive Study.

Place and Duration of Study: Department of Ophthalmology and Ocular Surgery Combined Military Hospital Peshawar.

Patients and Methods: Security personnel engaged in Malakand region that received ocular trauma and were evacuated to CMH Peshawar.

Results: 105 patients suffered severe ocular and ocular adnexal injuries. Ocular injuries due to splinters were 85% and rest of the 15% were caused by blunt ocular trauma as well as fire arms injuries. There were 62% open globe injuries and the most common source of injury was the Improvised Explosive Device (IED).

Conclusion: The use of terror assault strategies coupled with advanced and indigenous weapon technology used by the terrorists leading to ocular damage can be proportionally countered by use of polycarbonate eye glasses made compulsory as part of the field /combat dress code for security forces engaged in anti terror in the field.

Key words: Ocular war injuries, Ocular trauma, improvised explosive device.

INTRODUCTION
Malakand region lies in the North West of Peshawar, the provincial capital of KP*. The security forces were engaged against the militants and terrorists (national and international) since Oct 2007*. Majority of the area and population came under Taliban influence by 2003*. The Operation Black Thunderstorm was launched by security forces on 26 April 2009*. This was an anti-terror campaign and very different from the conventional warfare between two enemies*. This long drawn and unique campaign in the mountainous terrain resulted in peculiar pattern of ocular injuries that were seen nowhere and have not been ever reported till this day in medical literature.

Ocular trauma can occur in a variety of situations; these include industrial accidents, assaults of blunt, penetrating or firearm nature, house hold accidents with blunt or sharp objects, sports injuries and indulgence in fireworks*. The features of eye injuries are variable in clinical pattern depending upon the nature of injury, circumstances which cause them. These may present variable degree of tissue damage ranging from a minute superficial abrasion to complete disruption of the eye ball*. Celsius et al worked on the management of battlefield casualties in the first century, at that time, it was estimated that three out of four injured did not survive their injury a trend that persisted well into the 19th century*. In trauma care many of the technical advances since World War I are attributed to the knowledge and experience gained in armed conflicts that have occurred during the intervening years*. Ocular trauma accounts for a significant percentage of the morbidity that is associated with the management of trauma patients, in spite that there have been consistently improved therapeutic techniques for the management of these patients with ocular injuries in this past century*. A variety of explosive materials like
thermobaric ‘enhanced-blast explosives’, explosive-formed projectiles, rocket-propelled grenades, land mines along with different devices such as improvised explosive devices (IED’s) have been used to spread destruction by suicide bombers/terrorists in recent years especially in Kashmir, Iraq, Israel and now in Pakistan.

After review of the national and regional medical literature no study has been found which could explain the causes and types of ocular trauma among the security personals engaged in anti terror combat. The long drawn anti terror campaign in Malakand region was a rare incident and a novel experience where the security forces were encountering terrorists within the settled area of their own country.

As the hospital preparations were made to manage the casualties of the Malakand conflict that would arrive along with and parallel to the local area casualties due to terrorist activities in Peshawar (and in its suburbs) a study was planned in the Department of Ophthalmology and Ocular Surgery, Combined Military Hospital Peshawar, KP Province of Pakistan to document the type of the injuries and record the management/procedures that would be carried out.

PATIENTS AND METHODS:

This study was conducted in Department of Ophthalmology and Ocular Surgery Combined Military Hospital Peshawar a tertiary care Military Hospital in the Province of KP of Pakistan. The study commenced in April 2009 and ended in March 2010. 100 males of different age groups having ocular injuries caused by blunt or penetrating trauma either isolated or associated with other injuries were included in the study. All the patients were males (because all were security personnel who fought in the Malakand region of KP). All those patients, who were treated only in the out patient department, were excluded from the study.

These patients were received in either Trauma Centre or Medical Reception Centre (MRC) of the hospital; they were rapidly evaluated for vital signs, examined for ocular and other associated injuries. After initial resuscitative/supportive measures, relevant investigations and appropriate medical treatment was given according to the nature of ocular injuries. Ocular injuries were recorded in each patient case sheet and categorized according to the type of lesion, nature of ocular of injury and the ophthalmic procedure performed. Descriptive statistics were used to analyze the documented data.

RESULTS:

105 male patients were admitted with ocular injuries. Their ages ranged from 19 to 42 years (mean: 30 years). The patients who sustained ocular injuries were 8% (105) total (1312) either isolated 46% (48) or associated with other injuries 54% (57). Those who had damage to both eyes were 11% (12) and with single eye involvement were 87% (103). The most frequent type of eye injury was conjunctival tear 36% (38) followed by conjunctival foreign bodies 34% (36).

Visual acuities of these eyes with injuries are shown in Table 1: 40% (42) eyes were blinded by WHO definition (ICD-10 year 2000) i.e., VA<3/60 - NPL (No Perception of Light) and a further 37% (39) eyes were visually impaired <6/18-3/60; 22% (23) of the patients had adnexal injuries and a significant number of patients, had lid lacerations 26% (27). Corneoscleral lacerations were found in 18% (19) of the cases that were repaired. In some eyes, other procedures were also performed along with corneoscleral repair (e.g. lid repair, iris abscission). Hyphaema was noted in 30% (32) of eyes, traumatic cataract developed in 16% (17) of cases and intra ocular lenses (IOLs) were implanted in 12% (12) of these cases and simple cataract surgery (ECCE-Extra Capsular Cataract surgery) was performed in rest of the cases. Retinal detachment was seen in 17% (18) of the cases and were referred to the Eye Department of Military Hospital, Rawalpindi, which is well equipped for Vitreo-retinal surgery. Foreign bodies were seen in the posterior segment in 14% (15) of the cases. In 13% (14) cases eyes were severely damaged and anatomically totally disorganized, evisceration/enucleation was followed by artificial eye implantation. There were no cases of sympathetic ophthalmitis or endophthalmitis.

Final visual outcome is given in Table 2.

Splinters were the most common (85%) cause of ocular injuries in this anti terror campaign while 15% were caused by blunt ocular trauma and firearm injuries, improvised explosive device (IED) was the most common (44%) single cause of ocular injuries (Figure 1), 14 eyes were severely traumatized with anatomically disorganized globe that had to be eviscerated.

DISCUSSION:

Even though the eye comprises only a small part of the surface area of the human body, despite being well protected from all sides except one, it is injured quite frequently. Such injuries have a significant impact on fighting troops. Security forces become more vulnerable to eye injuries during anti terror operations. Wong et al noted an increase in ocular combat injuries compared with other body part, this increase could be due to technologically advanced weaponry. Though it was observed in previous studies that in Operation Desert Shield and Desert Storm 13% of all ground war casualties were ocular injuries. The victims, in these settings, were rarely able to detect the explosive device until it impacted nearby. This percentage of overall injuries was higher than in any previous war. It has been mentioned in previous studies.
that most ocular injuries were caused by accelerating sharpnel. The single most common cause of injury was IED this was similar to the observations of other authors who had worked on ocular trauma. These ocular injuries could have been prevented with polycarbonate ballistic protective eyewear.

In present study the patients who sustained ocular injuries were 8% (105), almost similar (10%) that was observed by Sobaci et al in Terror-related open globe injuries: a 10-year review, Mader et al in a study conducted in Iraq, Mines et al (8%) in Oklahoma City bombing and more than that found by Barak et al (4.8%).

The patients who had damage to both eyes were 11%. In contrast to eye trauma (occurring in non combat situation) it is usually unilateral the eye trauma victim is prone to injuries that affect both eyes and cause bilateral blindness. The almost exclusively male preponderance is similar to that reported elsewhere, and points towards the largely military operational nature of these injuries. In this study the mean age of the patients was 30 years, was similar to those noted in other studies as well.

Present study provides a unique spectrum of the pattern of injuries inflicted during the anti terror campaign. Among other findings the most important finding of the present study was very poor prognosis of patients who got involvement of the posterior segment (vitreous and retina) mainly due to retained intraocular FBs.

**CONCLUSION**

Ocular trauma resulting in temporary or permanent loss of vision accounts for a major part of modern war injuries and this study elucidates that splinters are the most common cause of wide range of ocular injuries.

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**REFERENCES**

AT PRESENTATION

Case 1

Case 2

ONE WEEK AFTER REPAIR/TREATMENT

ONE WEEK AFTER


INTRODUCTION:

Chalazion is derived from a Greek word meaning hailstone. Chalazion is a chronic inflammatory granulomatous infiltration of meibomian glands caused by the blockage of meibomian gland orifices and stagnation of sebaceous secretion. The granuloma contains various inflammatory cells including, epitheloid and giant cells, neutrophils, eosinophils and lymphocytes. The condition affects people of all ages. A chalazion presents as a mass on the eyelid, causing cosmetic disfigurement and discomfort. Larger-sized chalazia may cause ptosis and refractive error. Cosmetically they can be unsightly and rarely they can lead to conjunctivitis or cellulitis. Patients are usually initially advised to apply hot compresses to the cyst with a wet flannel to encourage it to spontaneously drain. Previous studies have found a 25-50% resolution rate with this conservative treatment. Persistant lesions may be treated through different treatment options. These include incision and curettage, intralesional triamcinolone acetonide injection, and localized steroid injections were first described. Since then, there have been a few prospective interventional studies investigating the efficacy, simplicity and safety of intralesional triamcinolone acetonide (TA) in the treatment of chalazion and although there are local studies available comparing intralesional corticosteroid injection and surgical treatment of chalazia, there are no local studies available to compare the treatment outcomes of intralesional triamcinolone acetonide.
injection in primary and recurrent chalazia. Localized skin depigmentation has been reported following transcutaneous injections but adverse effects are minimized through transconjunctival injection. In addition accidental globe penetration has been reported as a result of transcutaneous injection of triamcinolone acetonide into the chalazion. 

**METHODOLOGY:**

This was a single centre experimental comparative study. Eighty patients were included in this study over a period of 6 months from 1st November 2010 to 30th April 2011. The inclusion and exclusion criteria for the selection of the patients are set out in Table 1. Informed consent was taken from the patients and a performance was used to record data regarding lesion size, duration of the lesion, history of onset, whether the lesion was primary or recurrent, digital color photography and complete ophthalmic examination, at the time of recruitment of the patients. Patients were divided into two groups on the basis whether the lesion was primary (having the lesion for the first time) or recurrent (having previously undergone surgical treatment). Group 1 (primary) consists of 50 patients, and Group 2 (recurrent) consists of 30 patients.

Success was defined as minimal 90% decrease in size. If a lesion recurred or regressed minimally (<50%), further injections were administered as needed. Patients who did not respond to two injections at the end of four weeks were referred for surgical excision.

**TECHNIQUE OF TRIAMCINOLONE ACETONIDE INJECTION:**

The conjunctiva was anesthetized with a drop of 0.5% proxymethocaine. The eyelid was everted and a 27 gauge needle on a 1 ml insulin syringe was used to inject 0.2 ml of 40 mg/ml triamcinolone acetonide transconjunctively into the chalazion as illustrated in fig 1. Eye ointment, tobramycin was prescribed to apply to the treated eye three times daily for 5 days and the patient was instructed to apply gentle digital massage over the chalazion for 5 minutes after each ointment application.

**RESULTS:**

The results showed a significant difference in chalazion resolution between the primary and recurrent groups. Eighty patients participated in this study. Group 1 consisted of 50 patients all of whom had the lesion for the first time. Group 2 consisted of 30 patients who were labeled as recurrent, on the basis of having previous surgical treatment of the lesion. Complete resolution was achieved in 45 (90%) out of 50 patients in Group 1, and 18 (60%) out of 30 patients in Group 2, (P=0.001) Chi square analysis. In Group 1, most patients, 32 (64%) out of 50 received a single injection whereas 18 (36%) out of 50 received two injections. In Group 2, 8 (26.6%) out of 30 received one injection and 22 (73.3%) out of 30 received 2 injections, Table 2. There were no complications such as eyelid depigmentation, increased intraocular pressure or any loss of vision in either group.

**DISCUSSION:**

In this study both groups of chalazia showed improvement after 0.2 ml of 40 mg/ml subconjunctival intra-lesional triamcinolone acetonide injection. The most striking finding was the high cure rate in patients having no previous surgical treatment. In this study 63 (78.75%) out of 80 patients had complete resolution at the end of 4 weeks. Our findings are in line with earlier studies in which steroid injections resulted in a 50% to 95% success rate and in clinical remission of the chalazion. Simon et al in 2005 showed 80%
resolution of chalazion in their study. Similar results were also reported by Ahmed et al in 2006 with 80% chalazion resolution. In 2011, Simon et al showed 81% of chalazion resolution in another study.

In this study, patients were followed for a period of 4 weeks. They were examined on the first post-op day and then subsequently after 1st week, 2nd week and finally on the 4th week. On first post-op day, patients were checked for any signs of complications. On the 2nd follow up (after 1 week), 32 (64%) out of 50 patients of Group 1, and 8 (26.6%) out of 30 patients in Group 2 showed resolution of lesion >50%.

On the other hand, 18 (36%) out of 50 patients in Group 1 and 22 (73.3%) out of 30 patients in Group 2, showed <50% resolution of the lesion at the end of 2nd week (3rd follow up), and were thus booked for second intralesional triamcinolone acetonide injection.

Finally, by the end of the 4 week period, 63 (78.75%) out of 80 of the total number of patients had complete resolution, in which 45 (90%) out of 50 patients belonged to Group 1 and 18 (60%) out of 30 patients belonged to Group 2. Thus far we concluded that triamcinolone acetonide injection is more effective in resolving primary chalazia.

There are several advantages of steroid injections over other forms of treatment. Steroid injections do not rely on patient compliance, require no special instrumentation, involve a quick and simple procedure with minimal bleeding, eliminate the risk of damaging eyelid structures and do not require eye patching after injection, allowing bilateral cases to be treated at the same patient visit. As there is no external wound, antibiotic treatment is not required.

The trans-conjunctival route of triamcinolone acetonide injection was also found to be safe, as this route appears to avoid localized skin depigmentation or inadvertent penetration of the globe. In this study we use trans-conjunctival route to avoid these complications. Ho SY documented that two out of 48 patients who underwent subcutaneous intralesional triamcinolone acetonide injection were affected by localized skin depigmentation.

Chalazia mimicking malignant lesions such as sebaceous gland carcinoma have been well described but fortunately are extremely rare. Although largely unknown, the effects of injecting steroid erroneously into a sebaceous gland carcinoma could, at worse, mask its presence leading to a delayed or even missed diagnosis and, in turn, a disastrous clinical outcome. Therefore, it is important to ensure that all chalazia being considered for triamcinolone acetonide injection have no atypical features.

Intralesional triamcinolone acetonide injections for chalazia have obvious economic and practical advantages. So, therefore, it is a good first line treatment option for uncomplicated and previously not surgically intervened chalazia.

CONCLUSION:

The results of this study indicate that intralesional triamcinolone acetonide is more effective in treating chalazia which are primary in origin. Although it is also an effective treatment option in recurrent chalazia, our results show that it is not as effective as in primary chalazia. Further comparative clinical trials are indicated.

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INTRODUCTION

Ptosis is derived from a Greek word meaning ‘to fall’. Ptosis is an abnormally low position of the upper lid which may be congenital or acquired. Normally the upper lid margin rests about 2 mm below the upper limbus. Abnormal head posturing develops in bilateral cases and it can cause deprivation amblyopia, especially in unilateral cases. Congenital ptosis may, therefore, have a negative effect on the psychological development of the child. Thus congenital ptosis should be corrected in the early years of childhood, and amblyopia treatment commenced as soon as the diagnosis is established. Although the etiology is unknown, myogenic ptosis is the most common form of congenital ptosis. It may be associated with third nerve misdirection, Marcus-Gunn jaw-winking phenomenon or blepharophimosis syndrome. Ptosis is usually graded as mild (up to 2 mm), moderate (3 mm) and severe (4 mm or more).

In myogenic ptosis, there is either absence of levator function or the levator function is poor i.e. less than 4 mm. In these patients, the diagnosis is established if there is failure of the upper lid to descend to the level of lower limbus in down gaze. In cases where the levator function is absent or is less than 4 mm, the most effective surgical approach is suspension of the upper lid to the frontalis muscle. In this way, the upper lid is elevated on raising the brows. Several materials can be used to achieve this purpose such as fascia lata (whether autogenous, homogenous or heterogenous, whether fresh or banked), Palmaris longus tendon, maximum levator resection, sling with artificial material e.g. silicone bands, mersilene mesh, artificial sutures (chromic gut, collagen, polypropylene, silicone, stainless steel, silk, nylon.
monofilament, polyester and polytetrafluoroethylene-PTFE]

Cosmetic issues that are raised with standard frontalis suspension surgery include scarring in young children, unsatisfactory geometric tenting of the pre-tarsal and pre-septal skin, obliteration of the eyelid crease and a poor tarso-corneal interface noted with brow elevation and depression. These may be related to the choice of sling material and to the superficial location of the sling in the eyelid. Despite these drawbacks, all surgeons agree that the most successful material is autogenous fascia lata, and this technique has the lowest complication rate. Fascia lata mostly completes its development in the first year of life. When the length of the upper leg is approximately 20 cm, the length of the fascia lata is sufficient for frontalis suspension.

MATERIAL AND METHODS:

This study was conducted at L.R.B.T Free Base Eye Hospital, Karachi from 1st March 2008 to 28th February 2011. Forty patients, 24 females and 16 males of age ranging from 5 to 30 years, having bilateral congenital ptosis were included in the study. Inclusion and exclusion criteria are shown in table 1. Performa was used to record history and examination. History included the age of onset of ptosis, its duration, reviewing old photographs (if the history is ambiguous), diplopia symptoms, variability of ptosis during the day and excessive fatigue. Examination included inspection for abnormal head posture (e.g. chin elevation), and frontalis contraction, assessment of visual acuity, pupillary light reflex, marginal reflex distance (normal is 4-4.5 mm), vertical fissure height (distance between pupillary light reflex, marginal reflex distance (normal is 4-4.5 mm), vertical fissure height (distance between upper and lower lid margin, measured in the pupillary plane. Normal is 9-12 mm), levator muscle function (which was estimated by measuring the excursion of the upper lid margin as the patient looks from downgaze to upgaze, while the examiner negates the function of the frontalis muscle by placing his thumb on the brow), presence or absence of upper lid crease (absence of which is an important sign of congenital ptosis), extraocular motility testing, and assessment of associated signs like fatigability, jaw-winking phenomenon, Bell’s phenomenon, corneal sensitivity and tear film stability. Informed consent was taken and patients were randomly divided into 2 groups A and B. Group A patients underwent frontalis sling suspension with autologous fascia lata while Group B patients underwent frontalis sling suspension with silicone tube (which is the same silicone tube used in Dacryocystorrhinostomy).

**Harvesting Fascia Lata:** All surgical procedures were performed under general anesthesia. Harvesting of the fascia lata as well as frontalis suspension was performed by the same surgeon. After administering general anesthesia, donor site was prepared on the outer side of the thigh. Ten centimeter incision was made approximately 3-5 cm above the knee joint along an imaginary line extending from the head of fibula to the anterior superior iliac spine. Under direct visualization, the glistening fascia lata was identified and exposed and 10 cm x 1.2 cm long strip was dissected out. The fascia lata thus obtained was further sub-divided into 4 smaller strips, each measuring 2.5 mm in width and placed in saline. After achieving hemostasis, the wound was closed in two layers. The deeper layer was sutured with vicryl, 2/0 and the skin incision was closed with black silk, 4/0.

**Surgical Technique:** In Group A, frontalis brow suspension was done using autologous fascia lata acquired in the manner mentioned above, whereas in group B frontalis brow suspension was done using ordinary DCR (dacryocystorhinostomy) tube made of silicone. In both the groups, frontalis brow suspension was performed by employing the double Crawford technique.

Stab incisions were made in the lid approximately 2 mm from the lid margin to avoid the lash roots and are made just lateral to the upper punctum and approximately 3 mm from the lateral canthus. Brow incisions were made at a position in line with the medial and lateral canthi. The superior incision was made directly above the mid position of the lid at a distance from the brow incisions to form an equilateral triangle. A Wright fascial needle was used to thread the sling material through the incisions in such a way so as to have each end exit through the superior incision. Care was taken not to enlarge the stab incisions as the sling material was pulled through. The superior incision was undermined to accommodate the knot. Final lid height was determined by tightening the sling till the lid margin just lifts off the cornea. Vicryl 6/0 was used to reinforce the knot. Incisions were closed with vicryl 6/0. A frost

| Table 1 |
| **Inclusion Criteria** |
| 1. Age between 5 to 30 years with no sex predilection |
| 2. Patients with bilateral congenital ptosis |
| 3. Severe ptosis |
| 4. Poor levator function (< 4 mm by Berkeis Method) |
| 5. Marginal reflex distance (MRD) ≤ 0 |
| 6. Neurogenic Ptosis (e.g. Third nerve misdirection) |
| 7. Blepharophimosis syndrome |

| **Exclusion Criteria** |
| 1. Patients with vertical squint |
| 2. Patients with negative Bellis phenomenon |
| 3. Mild or moderate ptosis |
| 4. Good or fair levator function (>4 mm by Berkeis method) |
| 5. Previous ptosis surgery |
| 6. Dry eye syndromes |
| 7. Corneal anesthesia |
| 8. Nystagmus where adequate measurements could not be done |

 indicates the inclusion and exclusion criteria for the selection of the patients for the study.
suture was placed for 24 hours. Post-operatively chloramphenicol ointment was used twice daily till the time patient was reviewed after 1 week. Assessment of lid closure was done when the patient was asleep. If the cornea was exposed, lubricants at night were added.

**RESULTS:**

In both the groups, cosmesis and function were evaluated post-operatively. Functional improvement was judged on the basis of post-operative improvement in marginal reflex distance (MRD). MRD of >3 mm was graded as satisfactory, whereas MRD of ≤1.5 mm was considered poor. Satisfactory improvement in MRD was further graded as good (MRD ≥ 3 mm) or moderate (≤2 mm < 3 mm). In Group A, 18 (90%) out of 20 showed satisfactory cosmetic and functional results. Among these, 16 (80%) patients had good MRD and 2 (10%) patients had moderate MRD. The remaining 2 (10%) of 20 patients had poor MRD. Under-correction was seen in 2 (10%) of the patients and granuloma formation occurred in 1 (5%) patient, 8 weeks after surgery which was later excised.

In Group B 14 (70%) out of 20 patients showed satisfactory cosmetic and functional results. These included 12 (60%) patients with good MRD, and 2 (10%) patients who had moderate MRD. The remaining 6 (30%) of 20 patients exhibited poor MRD. Under-correction was seen in 4 (20%) of 20 patients, pre-septal cellulitis developed in 1 (5%) patient, granuloma formation was seen in 1 (5%) of 20 patient, exposure of silicon tube was seen in 1 (5%) of patient in sixth postoperative week (figure 2), In 2 (5%) of 20 patient, recurrence of ptosis was seen due to slippage of silicone tube. Table 2 and table 3 summarize the functional results and post-operative complications respectively.

**DISCUSSION:**

Palpebral ptosis is the descent of the free border of the upper lid below its normal position, or it is the involuntary drooping of the upper lid when the subject is actively focusing on a fixed point, resulting in the narrowing of the palpebral fissure, smoothening of the eyelid, and potential disappearance of the palpebral fold. It may be congenital or acquired, unilateral or bilateral, constant or intermittent, or associated with a localized condition or systemic disease. It can produce functional limitation, changes in the neck and body posture, as well as impact aesthetic and psychological well being of the patient.

Simple or congenital ptosis is present from birth,
and does not result from birth trauma. It may be dominant, recessive or multi-factorial autosomal condition involving a defect in the development of the levator muscle and is generally unilateral. If bilateral, the patient tends to compensate by elevating the chin and looking downward, which can lead to abnormal head and neck posture, regardless of the age of onset of ptosis. The levator palpebral superioris muscle is the primary elevator of the lids. Frontalis muscle acts as an accessory elevator and takes over the elevating function of the levator palpebral superioris, if the later is dystrophic, as in congenital ptosis. Frontalis muscle suspension is the gold standard for the treatment of congenital ptosis with poor levator function. Sling procedure connects the frontalis muscle with the tarsal plate of the upper eyelid. A number of sling materials, namely autologous fascia lata, preserved fascia lata, non-absorbable suture material, mersilene mesh etc have been tried.

Repair of ptosis by frontalis muscle and fascia lata were first developed by Crawford et al in 1977. Autologous fascia lata has proven to be the method of choice in sling surgery for ptosis. Crawford reported that inflammatory reactions were more severe with banked fascia lata as compared to autologous fascia lata. Wagner, on the other hand, reported neither infection nor granuloma formation with banked fascia lata, however, the observed recurrence rate was 8.3%. Silicone frontalis sling requires small skin incision, lesser surgical time and it can be performed in all eyes with ptosis with poor levator function.

In the current study, frontalis sling was performed using two different sling materials: autologous fascia lata in Group A; and silicone tube in Group B. In Group A, 18 (90%) out of 20 cases had good cosmetic and functional results, and the remaining 2 (10%) out of 20 cases showed unsatisfactory results. Under-correction was seen in 2 (10%) out of 20 cases and 1 (5%) out of 20 developed granuloma on the eighth week of follow up. Grover et al in 2005 highlighted the complications of harvesting fascia lata including an unsightly scar in the thigh region, hematoma formation, keloid formation and herniation of muscle belly. But in the present study no such complications were encountered. Moreover, a scar in the thigh area was not considered as an aesthetic blemish by the patients most probably because of cultural values. Waseem M noted exposure keratopathy in 3 of his patients, but no such complication was encountered in this study.

In Group B, 14 (70%) out of 20 patients had satisfactory results, 2 (10%) of 20 patients had under-correction, 1 (5%) of 20 patient developed pre-septal cellulitis, 1 (5%) of 20 patients developed granuloma formation and 2 (10%) of 20 patient had recurrence of ptosis due to slippage of tube. Literature review revealed that under-correction is more common in the treatment of congenital ptosis and the rate varies from 5-35% depending on the series. As pointed out, 1 patient in this group developed granuloma on 6th post-operative week which was later excised. Various studies reported that complication rate of granuloma formation varies from 3-7%. Usha et al reported one recurrence of ptosis due to slippage of silicone over the tarsus, while in the current study, we encountered 2 recurrences of ptosis due to same reason.

CONCLUSION:

The visual impact of ptosis can be significant for the patient. The negative psychosocial impact of an abnormal eyelid position should not be discounted especially in young children and teenagers. Recent studies have identified a 3-10% incidence of amblyopia with severe congenital ptosis. We obtained clinically significant functional and cosmetic improvement with lower complication rates in patients in whom frontalis sling procedure was performed using fascia lata (90%) as compared to patients in whom silicone tube was used (70%). Prospective studies are needed to evaluate the true outcome of different materials and sling designs in frontalis suspension surgery.

REFERENCES


Prevalence of Risk Factors in Hepatitis B & C Patients admitted in Eye Department of Khyber Teaching Hospital, Peshawar

Mumtaz Alam1, Farzana Behtani2

ABSTRACT:
Objectives: To find out the prevalence of Hepatitis B and C and their risk factors in patients admitted in Ophthalmology Department of Khyber Teaching Hospital, Peshawar.

Study design: It was a retrospective study.

Place and duration of study: The study was conducted at Eye "B" Unit, Khyber Teaching Hospital Peshawar. Patients admitted over a period of 12 months i.e. from 1st January to 31st December 2010 were included in the study.

Patients and Methods: Charts of all the patients who were admitted during the study period were reviewed. Those patients who had their hepatitis B and C profile done were included in the study. Extracted data included age, gender, reason for hospital admission, hepatitis B and C status and the mode of transmission.

Results: Our sample size was 1269 patients including 689 male (54.29%) and 580 female (45.70%). 57 patients (4.49%) were hepatitis B surface antigen (HBsAg) +ve, including 31 male and 26 female. 88 patients (6.93%) were anti-HCV antibodies +ve, including 51 male and 37 female. Common risk factors for hepatitis B and C were the use of intravenous drugs, blood transfusion and previous surgical or dental procedure.

Conclusion: Prevalence of Hepatitis B and C is very high in our population. Health care workers are at risk of acquiring infection from the patients. All patients admitted in hospital for surgery should be screened for hepatitis B and C.

Key Words: Hepatitis B virus, Hepatitis C virus, HBsAg

INTRODUCTION:
Hepatitis B and C are major public health problems all over the world, especially in developing countries.1 Worldwide more than 2 billion people are infected with the hepatitis B virus (HBV) and more than 350 million are chronic carriers of the virus.2 Regarding hepatitis C virus (HCV), it is estimated that 170 million people have chronic infection worldwide and that 3-4 million individuals are affected every year.3 Both hepatitis B and C are the leading causes of liver cirrhosis and hepatocellular carcinoma.4 Hepatitis B is estimated to result in 563 000 deaths and hepatitis C in 366 000 deaths every year.5

Although the exact figures are not known, but the prevalence of Hepatitis B and C is increasing in our country.6 Hepatitis B and C are transmitted parenterally mainly as a result of blood to blood contact including injury with contaminated instruments and sharing of needles or by sexual contact (both heterosexual and homosexual) and also through perinatal transmission from infected mother to child.7,8 Common risk factors for hepatitis B and C are intravenous drug abuse, blood transfusion, previous surgery, dental procedure, hemodialysis, thalassemia, use of unsterilized syringes, barber shaving, tattooing and sexual abuse.9,10

Patients with viral hepatitis may be asymptomatic till the development of complications but they can transmit the infection to other individuals. Doctors, especially surgeons, and the paramedical staff have a high occupational risk of acquiring HBV and HCV infection from the infected patients.11

The purpose of our study was to find out the prevalence of hepatitis B and C and their risk factors in patients admitted in Ophthalmology Department of Khyber Teaching Hospital, Peshawar.

MATERIALS & METHODS:
It was a retrospective study conducted at Eye “B” Unit of Khyber Teaching Hospital Peshawar. Charts of all patients admitted in the ward from 1st January to 31st December 2010 were reviewed. Only those patients who had their hepatitis B and C profile done were included in the study. Extracted data included age, gender, reason for hospital admission, hepatitis B and C status and the mode of transmission. Patient’s blood was screened for hepatitis B surface antigen (HBsAg) and anti-HCV antibodies by immunochromatographic test (ICT) and in case of positive result was confirmed by 3rd generation enzyme-linked immunosorbent assay (ELISA). In
positive cases further work up was done, including polymerase chain reaction (PCR), liver function tests (LFTs) and abdominal ultrasound. All the HBsAg and Anti-HCV positive patients were referred to physician for management.

RESULTS:
Total number of patients admitted in Eye “B” Unit from 1st January to 31st December 2010 was 1501. Table I shows the diagnosis of our patients. HBsAg and Anti-HCV were done in 1269 patients including 689 male (54.29%) and 580 female (45.70%). Age of patients was ranging from 10 days to 95 years with a mean of 49.69 years. 57 patients (4.49%) were HBsAg +ve, including 31 (54.38%) male and 26 (45.61%) female; and 88 patients (6.93%) were anti-HCV +ve, including 51 (57.95%) male and 37 (42.04%) female. The prevalence of hepatitis B in male patients was 4.49% and in female it was 4.48%; while the prevalence of hepatitis C in male was 7.40% and in female it was 6.37%.

Chaudhry et al conducted a study among patients attending surgical OPD of Fauji Foundation Hospital Rawalpindi during 2006. They found prevalence of Hepatitis B as 2.8%, while prevalence of Hepatitis C was 7.56%. In the study conducted by Zubia et al HBsAg was positive in 6.5% of patients while 11.3% were positive for HCV. Risk factors in their study included reuse of contaminated syringes, contaminated surgical instruments and blood products. In the study of Talpur AA et al HBsAg was +ve in 8.6% and Anti-HCV was +ve in 11.6% cases. Ali et al, found Hepatitis B in 3.6%, Hepatitis C in 5.1% and both hepatitis B and C in 1.1% patients. Askar Z et al found a hepatitis B prevalence of 3.08%, hepatitis C prevalence of 5.90%, while both Hepatitis B and C were present in 0.30% cases. Like all these studies, in our study too, HCV (6.93%) was more prevalent than HBV (4.49%).

In the study of Askar Z et al among the risk factors history of previous surgery was present in 20.92%, blood transfusion in 13.77%, history of dental procedure in 8.42% and no known risk factor was present in 37.76%. In our study the common risk factors for hepatitis B and C were the use of intravenous drugs (HBV = 17.54% and HCV = 19.31%), blood transfusion (HBV = 19.29% and HCV = 15.90%) and previous surgical or dental procedure (HBV = 19.29% and HCV = 17.04%).

The transmission of hepatitis B and C virus is through the blood and secretions. Unnecessary injections and infusions are given commonly in Pakistan out of the belief in the population that injected medicines are more effective than oral medications. Syringes are reused and sterility of injections is often not maintained due to financial limitations and lack of awareness among the people. These injections appear to be one of the most important factors in the spread of HBV and HCV in Pakistan. There are approximately 1.5 million units of blood or blood products transfused each year in Pakistan. Very limited data is available on the safety of this transfusion process.

Additional risk factors that may be important worldwide and has achieved endemic situation in many countries, especially in underdeveloped countries. In Pakistan, the exact figures regarding the prevalence of HBV and HCV infection are not known.

In our study we reviewed the record of 1269 patients including 689 male (54.29%) and 580 female (45.70%). Of these patients, 57 patients (4.49%) were HBsAg +ve, including 31 (54.38%) male and 26 (45.61%) female; and 88 patients (6.93%) were anti-HCV +ve, including 51 (57.95%) male and 37 (42.04%) female. The prevalence of hepatitis B in male patients was 4.49% and in female it was 4.48%; while the prevalence of hepatitis C in male was 7.40% and in female it was 6.37%.

Table I: Diagnosis of patients

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Diagnosis</th>
<th>No of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Cataract</td>
<td>486</td>
<td>32.37%</td>
</tr>
<tr>
<td>02</td>
<td>Ocular trauma</td>
<td>154</td>
<td>10.25%</td>
</tr>
<tr>
<td>03</td>
<td>Chronic dacryocystitis</td>
<td>124</td>
<td>08.26%</td>
</tr>
<tr>
<td>04</td>
<td>Glaucoma</td>
<td>106</td>
<td>07.06%</td>
</tr>
<tr>
<td>05</td>
<td>Corneal ulcer</td>
<td>83</td>
<td>05.52%</td>
</tr>
<tr>
<td>06</td>
<td>Uveitis</td>
<td>60</td>
<td>03.99%</td>
</tr>
<tr>
<td>07</td>
<td>Retinal vascular diseases</td>
<td>55</td>
<td>03.66%</td>
</tr>
<tr>
<td>08</td>
<td>Endophthalmitis/Panophthalmitis</td>
<td>53</td>
<td>03.53%</td>
</tr>
<tr>
<td>09</td>
<td>Optic nerve diseases</td>
<td>51</td>
<td>03.39%</td>
</tr>
<tr>
<td>10</td>
<td>Others</td>
<td>326</td>
<td>21.71%</td>
</tr>
</tbody>
</table>

Table II: Prevalence of hepatitis B and C in both genders

<table>
<thead>
<tr>
<th></th>
<th>HbsAg +ve</th>
<th>Anti-HCV +ve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>31/689 (4.49%)</td>
<td>51/689 (7.40%)</td>
</tr>
<tr>
<td>Female</td>
<td>26/580 (4.48%)</td>
<td>37/580 (6.37%)</td>
</tr>
</tbody>
</table>

Table III: Risk factors for hepatitis B and C

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>HbsAg +ve</th>
<th>Anti-HCV +ve</th>
</tr>
</thead>
<tbody>
<tr>
<td>I/V drugs</td>
<td>10 (17.54%)</td>
<td>17 (19.31%)</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>11 (19.29%)</td>
<td>14 (15.90%)</td>
</tr>
<tr>
<td>Surgery</td>
<td>07 (12.28%)</td>
<td>08 (9.09%)</td>
</tr>
<tr>
<td>Dental procedure</td>
<td>04 (7.01%)</td>
<td>07 (7.95%)</td>
</tr>
<tr>
<td>Barber shaving</td>
<td>06 (10.52%)</td>
<td>06 (6.81%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>19 (33.33%)</td>
<td>36 (40.90%)</td>
</tr>
</tbody>
</table>

DISCUSSION:
The prevalence of hepatitis B and C is increasing
modes of transmission include are excessive use of barbers for shaving,20 and non-sterile surgical and dental practices. Health care workers are at high risk of encountering needle stick injuries, blood and body fluid exposure and therefore acquiring blood borne infection. As HCV and HBV are assuming epidemic proportion in our country, we need to address this issue through the following measures

- Appropriate screening of all blood donors.
- Screening of all patients before surgical and dental procedures.
- Limiting the use of therapeutic injections, which may not be adequately sterilized.
- Educating patients and health care workers.
- General education of the public about the modes of transmission and the risk factors.

CONCLUSION:
Prevalence of Hepatitis B and C is very high in our population. Health care workers are at a greater risk of acquiring infection from the patients. All blood donors and patients admitted in hospital for surgery must be screened for hepatitis B and C. In addition, the general population should be educated about the modes of transmission and the risk factors for hepatitis B and C.

REFERENCES:
ABSTRACT

Objectives: To compare the efficacy of intracameral Cefuroxime vs Moxifloxacin as a prophylactic antibiotic in preventing the occurrence of acute post-operative endophthalmitis in cataract surgery.

Methods: This was a randomized control trial done on 426 patients operated for cataract surgery in operation theatre of Department of Ophthalmology, Khyber Institute of Ophthalmic Medical Sciences (KIOMS), Lady Reading Hospital, Peshawar in year 2009. The patients were divided into two groups of 213 each in a randomized way. Group A patients for intracameral cefuroxime (second generation cephalosporin) and Group B patients for intracameral moxifloxacin as prophylactic antibiotic for endophthalmitis. Extracapsular cataract and phacoemulsification surgery was performed under local anesthesia. Group A was injected with intracameral cefuroxime and in group B Moxifloxacin hydrochloride ophthalmic solution 0.5% was given intracameral at the end of surgery. On first and 7th post operative day the patients were assessed for presence or absence of postoperative endophthalmitis. After completion of data collection, the data was analyzed using SPSS version 10.0.

Results: Age distribution was analyzed among all the patients as their age ranged from 50-75 years. In intracameral Cefuroxime Group A the total number of male patients were 122(57%) and female patients were 91(43%) while in Intracameral Moxifloxacin Group B the total number of male patients were 123(58%) and female patients were 90(44%). In intracameral Cefuroxime Group A, ECCE was performed in 145(68%), while in Intracameral Moxifloxacin patients, ECCE was performed in 135(63%). In intracameral Cefuroxime Group A endophthalmitis was found only in 2(1%) cases while in Intracameral Moxifloxacin Group B, postoperative endophthalmitis was not found in any case.

Conclusion: Moxifloxacin offers many theoretical advantages that make it an attractive first-line choice for topical use and for intracameral administration but further studies of efficacy and safety are needed before recommendations can be made regarding the role of topical or intracameral moxifloxacin for prevention of endophthalmitis.

Key Words: Intracameral, cefuroxime, moxifloxacin.

INTRODUCTION

Cataract extraction with intraocular lens (IOL) implantation is the most commonly performed surgical procedure in elderly patients. The frequency varies with European Union countries involving 4% to 7% of the population older than 65 years. Cataract surgery is one of the most common operation in US with approximately 3 million procedures performed annually. In Pakistan approximately 400,000 cataract extraction with IOL are carried out each year. Although cataract surgery is associated with an extremely low incidence of endophthalmitis, the considerable annual surgical volume still produces approximately 4000 cases of endophthalmitis in US and 0.1% of patients in European Union Countries annually.

Bacterial endophthalmitis is one of the most serious complications after cataract surgery. Numerous strategies have been described to try to decrease the incidence of post operative endophthalmitis. The use of intracameral antibiotics at the time of cataract surgery has been a common practice for more than a decade. The first report of successful antibiotic prophylaxis by intracameral injection was published in 1970. Additionally a number of retrospective studies have suggested that intracameral antibiotics can significantly reduce the risk of infection i.e. overall rate of endophthalmitis was 0.06%. However various intracameral antibiotics have been used for prophylaxis but it is difficult to demonstrate the superiority of one prophylactic antibiotic over the other due to low occurrence rate of postoperative endophthalmitis.

Montan et al demonstrated in over 60,000 patients that intracameral Cefuroxime (second generation cephalosporin) reduce the risk of endophthalmitis by approximately 80%. The European society of Cataract and Refractive Surgeons (ESCRS)
study demonstrated that intracameral Cefuroxime used prophylactically reduced the incidence of endophthalmitis by about 80% from 0.34% to approximately 0.07% when compared with topical levofloxacin alone.1

Moxifloxacin is fourth generation fluoroquinolone that is active against broad spectrum of bacteria10-12. Several studies10-12 found Moxifloxacin to be better choice for prophylactic antibiotics. Steve Arshinoff gave prophylactic intracameral Moxifloxacin to 1000 case and noted that it has the broadest spectrum of anti bacterial efficacy and he found no post-operative infection in any case.1 Experiment on animals have shown that intracameral moxifloxacin commenced immediately after Staphylococcal aureus intravitral challenge has completely prevented the endophthalmitis.13

The purpose of this study is to compare the therapeutic effect of intracameral Cefuroxime with Moxifloxacin during cataract surgery in prophylaxis of acute post-operative endophthalmitis

**MATERIALS AND METHODS**

It was a randomized control trail on 426 patients, who were operated for age related cataract surgery in operation theatre at department of Ophthalmology, Khyber Institute of Ophthalmic Medical Sciences (KIOMS), Lady Reading Hospital, Peshawar. Purposive (Non probability Sampling) technique was used in this study.

**Inclusion criteria:** All male and female patients with age related cataract surgery.

**Exclusion criteria:** Patient with developmental and traumatic cataract. Patients with history of previous intraocular surgery like vitrectomy, trabeculectomy. Patients with infective ocular and comorbidity like glaucoma, retinal detachment, vitreous haemorrhage, optic neuritis etc.

After Permission of an ethical committee of PGMI Peshawar and written informed consent from the patients were taken all these patients for cataract surgery were admitted to eye unit of Lady Reading Hospital, Peshawar through eye OPD waiting list. These patients were evaluated for inclusion and exclusion criteria.

A detailed history regarding dimness of vision (DV) (whether sudden or gradual, painless or painful), previous ocular trauma and intraocular surgery were taken. Pre-operative ocular examination including visual acuity and slit lamp examination of anterior and posterior segment were done. The patients were divided into two groups in a randomized way. Group A= Patients received intracameral 1mg of Cefuroxime in 0.1 ml saline at the end of surgery. Group B= patients received intracameral 100 ug of Moxifloxacin in 0.1ml saline (Vigamox- Alcon), as prophylactic antibiotic for endophthalmitis. The cataract surgeries included extracapsular extraction, phacoemulsification and scleral tunnel. To remove any bias all surgeries were done by consultants.

On the first day after surgery and on follow up the patients were assessed for presence or absence of postoperative endophthalmitis. If everything was fine on first post operative day, the patients were discharged and followed up on 7th post-operative day. Nominal data of the outcome of surgery of all the patients was recorded on a data collection performa on each follow up visit. After completion of data collection, the data was analyzed using SPSS version 10.0. Frequency and percentage were calculated for all categorical variables including presence or absence of post operative endophthalmitis, type of cataract surgery and gender of the patients. Mean ± S.D (standard deviation) was calculated for the continuous variables like age, chi-square test was applied to compare significant of proportions in the categorical variables and to determine whether this difference is significant or not. Student-t test was applied to compare the means. P value <0.05 was considered as significant. All the variables were presented in tables and charts.

**RESULTS**

This study was conducted in Ophthalmology department, Lady Reading Hospital, Peshawar. A total number of patients included in the study were 426, which were divided into two groups. 213 patients for Group A (intracameral Cefuroxime) and 213 patients for Group B (intracameral Moxifloxacin (0.5%)).

Age distribution was analyzed as all the patients were in age ranging from 50-75 years. Mean age was 60 years with standard deviation ± 11.53. Gender distribution was analyzed among the two groups as in intracameral Cefuroxime Group A the total number of male patients were 122(57%) and female patients were 91(43%) while in intracameral Moxifloxacin Group B the total number of male patients were 123(58%) and female patients were 90(44%).

Type of surgery was analyzed among the two groups as in intracameral Cefuroxime Group A, Phacoemulsification was performed in 35(16%) patients, extracapsular in 145(68%) and scleral Tunnel in 33(15%) patients. While in Intracameral Moxifloxacin Group B Phacoemulsification was performed in 42(20%) patients, extracapsular in 135(63%) and scleral Tunnel in 36(17%) patients. (as shown in Table no 1.)

Acute Post operative endophthalmitis was analyzed among the two groups as in intracameral Cefuroxime Group A endophthalmitis was found only in 2(1%) cases while in Intracameral Moxifloxacin Group B, endophthalmitis was not found in any case. (as shown in Table no 2.)
Zealand White rabbits, Kowalski et al. investigated the provide encouraging data. In experiments using New intracameral moxifloxacin during cataract surgery vitreous as well as anecdotal clinical experience with moxifloxacin 0.5% directly into the aqueous humor or findings in several pre-clinical studies of the injection of intracameral moxifloxacin require further investigation, endophthalmitis. Although the efficacy and safety of Moxifloxacin in prevention of post cataract alternative for intracameral administration. The objective of our study was also to show the better efficacy of Moxifloxacin in prevention of post cataract endophthalmitis. Although the efficacy and safety of intracameral moxifloxacin require further investigation, findings in several pre-clinical studies of the injection of moxifloxacin 0.5% directly into the aqueous humor or vitreous as well as anecdotal clinical experience with intracameral moxifloxacin during cataract surgery provide encouraging data. In experiments using New Zealand White rabbits, Kowalski et al. investigated the efficacy and safety of intracameral moxifloxacin for the prevention of bacterial endophthalmitis. Toxicity evaluations were performed in animals that received intravitreal inoculation with S. aureus, 5\_10^3 CFU followed by a single anterior or posterior chamber injection of vancomycin 1 mg, saline, or moxifloxacin 50, 125, 250, or 500 mcg as well as in animals that received 2 intravitreal doses of saline, vancomycin 1 mg, or moxifloxacin 250 or 500 mcg without bacterial challenge. Clinical grading from comprehensive examinations of the exterior eye, cornea, anterior chamber, vitreous, and retina showed no significant differences between the moxifloxacin-treated animals and the vancomycin and saline groups. Other studies of rabbits, mice, and non-human primates evaluated the potential toxicity of intravitreal moxifloxacin in doses up to 300 mcg with assessments performed up to 10 weeks post-injection\textsuperscript{14}. The assessments in those trials included electro-retinography, histology, measurement of intraocular pressure, corneal thickness, endothelial cell area and density, and indirect ophthalmoscopic examination of the optic nerve, retina, choroid, and vitreous. There was no evidence of treatment-related adverse effects in any study. Recently, several studies of intracameral moxifloxacin in humans have been conducted. Arshinoff reported his clinical experience with intracameral administration of moxifloxacin during cataract surgery.\textsuperscript{15} His postoperative endophthalmitis prophylaxis protocol included administration of 4 doses of topical moxifloxacin at 10-minute intervals before surgery, povidone– iodine antisepsis, and moxifloxacin diluted in a balanced salt solution (50 or 100 mcg/0.1 cc) injected intracameraly under the capsulorhexis margin intracapsularly at the end of the case. All patients also receive topical moxifloxacin 1 drop 6 times a day for 3 days followed by 4 times a day for 5 days. To date, in 1500 cases performed with this regimen, Arshinoff encountered no cases of endophthalmitis and noted no adverse ocular effects that could be attributed to the intracameral antibiotic. In a study designed specifically to evaluate the safety of intracameral moxifloxacin, Espiritu et al.\textsuperscript{16} found no adverse effects on visual acuity, anterior chamber reaction, pachymetry, or corneal endothelial cell density in 65 eyes receiving moxifloxacin 0.5 mg/0.1 mL injected into the capsule at the end of cataract surgery. In a study of 200 patients, Arbisser compared patients who received intracameral moxifloxacin with those who did not.\textsuperscript{15} One day postoperatively, 4 treated eyes (2.0%) had aqueous cell counts of 3C or higher compared with 11 eyes (11.0%) in the control group (P = .0007, Pearson chi-square test). No postoperative epithelial defect or stromal edema was observed in the treated group; however, 1 patient in the control group had a defect.

<table>
<thead>
<tr>
<th>Type of Surgery</th>
<th>Cefuroxime</th>
<th>Intracameral</th>
<th>Moxifloxacin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phacoemulsification</td>
<td>35 (16%)</td>
<td>42 (20%)</td>
<td></td>
</tr>
<tr>
<td>Extracapsular</td>
<td>145 (68%)</td>
<td>135 (63%)</td>
<td></td>
</tr>
<tr>
<td>Scleral Tunnel</td>
<td>33 (15%)</td>
<td>36 (17%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>213</td>
<td>213</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1. Type of Surgery**

P Value = 0.00

<table>
<thead>
<tr>
<th>Acute Post-Operative Endophthalmitis</th>
<th>Intracameral Cefuroxime</th>
<th>Intracameral Moxifloxacin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>2 (1%)</td>
<td>0</td>
</tr>
<tr>
<td>No</td>
<td>211 (99%)</td>
<td>213 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>213</td>
<td>213</td>
</tr>
</tbody>
</table>

**Table 2. Acute Post-Operative Endophthalmitis**

P Value = 0.627

DISCUSSION

Based on its favorable potency, penetration, and safety profiles, moxifloxacin appears to be an excellent topical antibiotic choice for postoperative endophthalmitis prophylaxis. Although confirmation of its role would require a very large prospective randomized clinical trial to achieve proper statistical power, but different studies provide valuable proof topical moxifloxacin might be effective in preventing bacterial endophthalmitis after cataract surgery. Compared with cefuroxime, moxifloxacin offers broader spectrum and more potent activity against key postoperative endophthalmitis pathogens. In addition, because moxifloxacin is commercially available as a self-preserved ophthalmic formulation that surgeons can dilute themselves in the operating room or administer directly into the eye with no further preparation, it eliminates concerns regarding the stability and inconvenience of using an extemporaneously compounded preparation. The concentration-dependent killing profile of moxifloxacin may also make it more effective than cefuroxime in achieving rapid eradication of intraocular contaminants after a single bolus injection.\textsuperscript{13}

All these features make moxifloxacin an attractive alternative for intracameral administration. The objective of our study was also to show the better efficacy of Moxifloxacin in prevention of post cataract endophthalmitis. Although the efficacy and safety of intracameral moxifloxacin require further investigation, findings in several pre-clinical studies of the injection of moxifloxacin 0.5% directly into the aqueous humor or vitreous as well as anecdotal clinical experience with intracameral moxifloxacin during cataract surgery provide encouraging data. In experiments using New Zealand White rabbits, Kowalski et al.\textsuperscript{13} investigated the
In summary, Arbisser, Arshinoff, and Espiritu et al. have not observed deleterious effects of intracameral moxifloxacin injections after cataract surgery.

CONCLUSION

Topical antibiotic therapy remains the standard of care in postoperative endophthalmitis prophylaxis among cataract surgeons. Results of the randomized controlled ESCRS postoperative endophthalmitis prophylaxis study are consistent with that concept. However, that trial does not provide the final answer to what the optimal antibiotic regimen for preventing postoperative endophthalmitis is the ideal agent should offer potent activity against the common pathogens, favorable pharmacokinetics, and minimum potential to promote resistance, excellent safety, and ease of use. When judged against these criteria, intracameral cefuroxime and topical levofloxacin have several shortcomings. The fourth-generation fluoroquinolone moxifloxacin has many advantages over levofloxacin that would favor its use for topical prophylaxis. In addition, moxifloxacin appears to offer benefits relative to cefuroxime for intracameral use.

Further studies of efficacy and safety are needed before recommendations can be made regarding the role of topical or intracameral moxifloxacin for postoperative endophthalmitis prophylaxis. However, no study will provide the final answer regarding optimum antibiotic prophylaxis. The potential for changes in bacterial sensitivity patterns, emergence of new pathogens, and advances in antimicrobial therapy and modes of delivery make this a dynamic area and highlight the need for continued investigation and periodic guideline reviews to keep pace with new developments to optimize patient care.

REFERENCES

13. Kowalski RP, Romanowski EG, Mah FS. Intracameral Vigamox synergy (moxifloxacin 0.5%) is non-toxic and effective in preventing endophthalmitis in a rabbit model. Am J Ophthalmol 2005;140:497–504.
The Duke Elder Lecture:
The Challenge of Equitable Eye Care in Pakistan
(RCOphth Eponymous Lecture)1
Prof. Dr. Muhammad Daud Khan FRCS2

INTRODUCTION
Pakistan, a developing country situated in the Eastern Mediterranean region (EMR) of the World Health Organization (WHO). At the time of independence, the country had inherited a very poor infrastructure for health delivery. The country inherited two medical colleges, 78 registered doctors, and very few nurses.1
Since its inception, the country has been facing problems of refugee2 influx, floods, earthquakes, rapidly growing population, ageing, double burden of diseases including blindness, wars, insurgencies, and political instability. Most of the eye care services were provided by missionary hospitals run by Dr. Sir Henry Holland. In the northern part of the country, most of the eye care services were provided by another great missionary Dr. Novel Christy, who headed the eye care team at Taxila. After 1950, few new eye care units were opened in the public and military sector at Multan, Peshawar, Dacca and Hyderabad. However, 80% of the population had no access to organized eye care services.5

Birth of the Ophthalmological Society of Pakistan (OSP):
In the early 1950s, Dr. William John Holmes of Honolulu, Hawaii, started thinking of creating a regional ophthalmic organization covering the vast area of the Asia-Pacific region4 He wrote a letter to a young Pakistani ophthalmologist, Dr. Raja Mumtaz Quli Khan, on 10 July1957. In response to this letter, Dr. Mumtaz convened a meeting of 32 ophthalmologists of the country, inviting them to approve the formation and constitution of the Ophthalmological Society of Pakistan (OSP). Thus, on 19 December 1957, OSP was formed with Gen. W.A. Burki as its first elected president and Dr. Mumtaz as its first Secretary General5
On 11 November 1958 in Brussels, on the occasion of the 18th International Congress of Ophthalmology, the International Council of Ophthalmology (ICO) approved the formation of the Asia-Pacific Academy of Ophthalmology (APAO)6 In 1960, the inaugural meeting of the Academy took place in Manila. The then President of ICO, Sir Stewart Duke Elder, sent the following message: ‘I know of no greater stimulus for the progress of ophthalmology in the vast area, which the APA Orepresent than the institution of a body such as yours’6 The seventh congress of APAO took place in Karachi in 1979. The President of the country inaugurated it. He spent a lot of time with the international delegates and took keen interest in the aims and objectives of the Academy. He made the following announcements during his inaugural speech.
1. All sight-saving instruments and equipments imported to Pakistan will be exempted from import duty.
2. The Government will support Pakistani ophthalmologists who attend and present scientific papers in international conferences.
3. He announced an annual Presidential gold medal in the name of Professor Ramzan Ali Sayyed, who was awarded the Jose Rizal medal in the congress.
In the background of the profound interest of the President of Pakistan in eye health, a year later, WHO invited a temporary consultant, Dr. Hugh Taylor, to...
assess the current eye health status in Pakistan. His following report proved to be a wake-up call for the country’s ophthalmologists and health-care administrators.

MATERIALS AND METHODS

Situation Analysis: The Hugh Taylor report made the following observations:

1. The estimated prevalence of blindness in the country is about 2%.
2. Cataract is the most common cause of blindness.
3. There is gross mismatch of human resource in the country.
4. A total of 45 out of 64 districts are without an ophthalmologist.
5. Most of the ophthalmologists are urban based, whereas most of the blindness occurs in rural areas.

The WHO document was used for political and professional advocacy. The then President of Pakistan, who already had a soft corner for disabled people, was sensitized about the issue through strong advocacy. He created a national eye camp committee through a presidential order as a short-term measure for this purpose. This committee soon evolved into a national committee for prevention of blindness. Prof. Saleh Memon was appointed as the first national coordinator for this committee.


With assistance from WHO, the national committee took its first major undertaking in 1987 and conducted a nation-wide blindness survey under the chairmanship of Prof. Saleh Memon. To assist in this process, ‘Sight Savers International’ (SSI) was requested to support the training of a young ophthalmologist in community eye health at the International Centre for Eye Health (ICEH), London. The concept of district comprehensive eye care services (DCECS) was conceived and a national program based on DCECS was developed. The concept was carefully tested before piloting it at a district level.


The concept of DCECS was then piloted in a real district with a population of 0.7 million for 2 years. After an external evaluation, the team declared the pilot district project as highly successful, and recommended that the project may be extended to more districts. The committee then prepared a 10-priority-district project, including seven units of FATA, and submitted it to SSI UK and the European Union for support. This project was also externally evaluated and found to be very successful. This project clearly demonstrated a significant increase in uptake of services especially by females in rural Pakistan.

Conclusions of the 10-district Evaluation Report:

1. The project has been successful in providing primary eye care to most sections of populations in an accessible and affordable manner. Although the project has not yet achieved all its targets, it is now making major contributions towards meeting the incidence of bilateral blindness. If all districts/agencies in the province could match this performance, the incidence of bilateral blindness could be met.

2. The project has not yet been able to establish a proper ophthalmic health education system. This will require additional efforts on the part of the project staff and Pakistan Institute of Community Ophthalmology (PICO).

3. The resources available to the project have not been utilized to produce optimal performance, but the performance has improved substantially since its start and is significantly better than in most eye care units within the government structure.

4. The removal of obstacles, such as inadequate infrastructure, equipment, and manpower, has been a major contributory factor in the improved performance of the eye unit.

For financial and technical support, a consortium of important international non-government development organizations (INGDOs) was formed, which included the WHO, ICEH, London, SSI, CBMI, Fred Hollows Foundation of Australia (FHF), and a few others. The national committee developed the first 5-year national plan for prevention of blindness on the basis of the results of the first nation-wide blindness survey. After the successful implementation of the first plan, the national committee prepared the next 5-year plan (2002-3) on the basis of the emerging new demands of the country and the new guidelines provided by Vision 2020. In the background of V2020 guidelines, various task forces were created within the national committee to address V2020 priority diseases, such as cataract, trachoma, refractive errors, childhood blindness, diabetic retinopathy, and low vision.

RESULTS:

The prevalence of blindness was confirmed at 1.78%. Cataract turned out to be the major cause of blindness.

Conclusions of the 10-district Evaluation Report:

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Conclusions of the 10-district Evaluation Report:

1. The 10-district Comprehensive Eye Care (CEC)
Program has had great success in creating a practical platform for eye care service delivery at the district level. The 10 eye care teams are committed to a district-based approach using systematic outreach services; use of services by the population continues to grow.

This program also provides a replicable and sustainable model for the development of district eye care plans within a government structure. Effective advocacy, by PICO in particular, has led to wide acceptance of and commitment to CEC at district, provincial, and federal levels.

The evaluation has concluded to a very large extent and CEC has been institutionalized at the district level within the government structure. After clear and detailed planning, direct project management (currently by PICO) should be handled by district CEC committees.

There is tremendous opportunity for CEC to be sustained at the district level, if the strategies outlined at the provincial level are shared and embedded. Provincial stakeholders such as PICO and donors need to support the established district and provincial administrative, and political structures within a single provincial coordination structure.

**Achievements of the First 5-year Plan**
- Primary eye care was integrated into primary health care.
- PICO was established.
- Provincial PBL committees were constituted and provincial CEC cells established.
- National low-vision initiative was taken.
- DCECP was initiated.

**Achievements of the Second 5-year Plan**
- Expansion and consolidation of the CEC program took place.
- National task forces were created on V2020 priority diseases such as cataract, refractive errors, diabetic retinopathy, glaucoma, nutritional and childhood blindness.
- Strategies for control of nutritional blindness were evolved. Vitamin A distribution was made part of the national immunization program.
- The national trachoma program was initiated. The WHO SAFE strategy was used as the method for control of blinding trachoma.

**Results of the Second National Survey (2002-03):**

All-age prevalence of blindness was estimated at 0.91% and cataract was identified as the major cause of blindness.

**Results of the 10-District CEC Program**

The impact of the district CEC Program on the access of eye care services, surgical output, and gender.

**National Eye Care Program**
- Reduction in the prevalence of overall blindness by half, that is, from 1.78% in 1987 to 0.9% in 2003.
- Reduction in cataract as the cause of blindness from 80 to 51%.
- Increase in the cataract surgical rate to 4000 per million population per year.
- Increase in the number of IOL implantations since the year 2000.
- Improvement in outcomes of cataract surgery with IOL.
- Improvement in eye care services among females.

**Future Agenda, the Third 5-year Plan:**
- Enhancing primary eye care by introducing the following:
  - The concept of community vision centers for refraction and low-vision services.
  - Public health education.
- Improved referral system.
- Rolling out the concept of DCECP to the remaining few districts.
- Decentralization of eye care management to the district CEC committee.
- the DCECP package.
- Capacity building of tertiary care institutes and centers of excellence.
- Introduction of sub-specialty development at centers of excellence.
- Enhancing the number and equality of members of eye care teams at all levels.

**DISCUSSION:**

The beginning of an international collaboration:

In 1988, the initial findings of the national survey and the features of a future comprehensive national eye care program were discussed with the Executive Director of SSI, Mr. Alan John. He agreed to assist in the following manner.

1. Support the training of an ophthalmologist in community eye health at the ICEH, London.
2. Support testing the hypothesis of the proposed national CEC program in a controlled environment to create evidence that the model is workable and replicable. To test the hypothesis, we borrowed a mobile operating theatre from the Layton Rahmatullah Benevolent Trust (LRBT) and parked it in front of the eye department at Lady Reading Hospital, Peshawar. The unit was equipped with all necessary surgical instruments, and equipment. We posted a nurse, an ophthalmic
The project lasted for 5 years. However, a mid term review demonstrated significant success. The group reported that the uptake by female patients exceeded that of male patients after the first 2 years of initiation of the project.

The mid term review report proved to be a turning point in Pakistan’s national eye care program. It affected the program in two ways. (1) With such strong evidence at hand, the national committee moved confidently towards preparing a national program on the basis of DCECS. (2) After the report was published, we started getting offers from small donors from all over the world for developing eye care districts. We were thus set to plan for the first 5-year program.

The formation of a consortium:

A consortium consisting of federal government, provincial governments, and three major INGDOs, namely the SSI of UK, the CBM of Germany, and the FHF of Australia, provided the necessary financial and technical resources. WHO and ICEH, London, continued to guide and support the national committee. Few smaller donors such as Himalaya Eye Care, Light and Dark Foundation, Light for the World, and Rotary International also offered valuable support.

The first 5-year program (1994-99) program: salient features, targets and achievements

- To make PBL a national health priority.
- To integrate PEC into PHC.
- To determine and standardize the human resource and infrastructure needs.
- To estimate the cataract surgical output.
- To prepare a blueprint for national eye care services.

The second 5-year program lasted and followed till 2004: salient features, targets and achievements.

- To adopt a WHO global initiative V2020 at the national level.
- To extend DCECP to other districts on the basis of their infrastructure, human resource, and technology needs.
- To establish seven centers of excellence with facilities for the following:
  1. Human resource development (HRD).
  2. Subspecialty services.
  3. Production of low-cost eye drops.
  4. Eye banks.

Fig: 1 DCECP 10 district pilot.

Fig: 2 Average number of cataract surgeries by year.
To conduct trachoma rapid assessment to implement SAFE control strategies.

To evaluate the impact of the national eye care program by conducting a second nation-wide blindness survey.

**The establishment of the Layton–Rahmatullah Benevolent Trust:**

The trust was established in 1984 by Mr Graham Layton, a British Pakistani, and his friend Mr. Rahmatullah with a humble sum of Rs. 1.0 million. The trust now runs a large national network of very high-quality free eye hospitals consisting of 2 tertiary hospitals, 17 secondary hospitals, and 41 primary eye care outlets. The trust has so far treated more than 17.0 million out patients and performed more than 1.8 million sight-restoration operations. They are also involved in HRD and clinical research.

**Al-Shifa Trust Hospitals:**

In 1984, on the occasion of the Afro-Asian Congress of Ophthalmology at Lahore, the President of Pakistan ordered the establishment of an eye hospital in Pakistan with international standards, for which he donated military land in Rawalpindi. Al-Shifa now runs four autonomous centers of excellence, one in each province, all engaged in service, HRD, and research.

**The Pakistan Institute of Community Ophthalmology, Peshawar**

In 1988, during the annual conference of OSP, the matter was discussed with one of the invited guests, Mr. Alan John, the executive Director of SSI, UK. He readily agreed to our request and Dr. Aman went to ICEH and returned to Pakistan after graduation. A small one-room cell of community eye health was created within the Department of Ophthalmology, Lady Reading Hospital, Peshawar, from where Dr. Aman initiated his work. When the workload increased and ICEH trained a few more experts in community eye health, courtesy SSI, UK, the cell began to grow and was soon given the status of Department of Community Eye Health.

In 1997, WHO, IAPB, ICEH, and the INGDOs decided to create a community eye health institute in the WHO EMR. After considering one or two alternate sites, the group, in a meeting of the Program Advisory committee (PAG) in New Delhi, decided to build the institute at Peshawar, Pakistan, where some infrastructure already existed. An MOU was signed between the Governments. PICO was inaugurated in 1999 in a major function presided over by the President of Pakistan and attended by dignitaries from WHO, relevant ministries, and INGDOs. PICO providing financial assistance by SSI, CBM, FHF, and technical assistance from ICEH. It started running a Master course in Community Eye Health, and also designed for 1-year for ophthalmic technicians and a 4-year degree course in vision sciences. It also became the national headquarters for prevention of blindness activities in Pakistan and Afghanistan.

**College of Physicians and Surgeons, Pakistan**

Gen. W.A. Burki, an ophthalmologist with a vision, was serving as Minister of Health, Government of Pakistan. In 1963, he created four major health institutions through an act of law. They were:

1. **The College of Physicians and Surgeons, Pakistan (CPSP).**
2. **The Pakistan Medical and Dental Council (PMDC).**
3. **The Jinnah Postgraduate Medical Center (JPMC).**
4. **The Pakistan Medical Research Council (PMRC).**

**National impact:**

- The national prevalence of blindness declined from 1.78 to 0.9%. Number of MSc students in each year targeted; 1998–2001 are 6 and 2002–2010 are 10.
- Students from EMR and other developing countries like Yemen, Indonesia and Egypt apart from Pakistan.

**Vitamin A deficiency** was recognized as an important cause of corneal blindness in children. Therefore, the vitamin A national distribution program was dovetailed to the national immunization program.

**Trachoma:** In the late 1990s, Pakistan was recognized as one of the countries having endemic blinding trachoma. It was therefore included in the list of 47 priority countries needing intervention. It thus became a member of the global elimination of trachoma program (GET 2020). A lot of effort has gone into the control of this chronic and disabling eye ailment. The country has already fixed 2015 as the date for declaring the country free from blinding trachoma.

**Impact on Eastern Mediterranean Region:** The national Program of almost all the countries in the EMR region are based on the concept of DCECS. It is expected that in the not too distant future all these countries will have equitable eye care service for their people. To facilitate this process many young ophthalmologists from a number of countries in EMR have been trained in the Masters course of PICO.

**Global impact:**

(a) A number of ophthalmologists in Africa, China, Indonesia, and Sri Lanka have gone through the Masters course of PICO, and are now the advocates of district eye care services in their respective countries.

(b) The Pakistan Program has given V-2020 a strong evidence-based replicable model for implementation in other developing countries.

**REFERENCES:**


Vernal Keratoconjunctivitis: Preponderance of Gender, Type & Clinical Presentation — A Study of 280 Cases

Mohammad Alam¹, Mohammad Ishaq Khattak², AbdurRaheem³

ABSTRACT:
Objective: To find out clinical presentations and manifestations of vernal keratoconjunctivitis.
Design of Study: Descriptive.
Place of Study: DHQ Hospital Karak and Eye Care Centre Karak.
Duration of Study: 2 Years. August 2007 to August 2009.
Materials and Methods: This descriptive study was done in DHQ Hospital and Eye Care Centre Karak, spanning over 2 years duration from August 2007 to August 2009. Proper proforma was designed for record of patients. Informed consents from patients/ their parents were taken according to the age of the patients. Proper history was taken and ocular examination was done with slit lamp. Fluoresceine staining of cornea was done in those patients who had suspected corneal lesions.
Results: Total 280 patients were examined out of which 235 (83.92%) were male and 45 (16.07%) female. 173 (61.78%) patients were in 1st decade of life, 79 (28.21%) in 2nd decade of life and 28(10.0%) patients in 3rd decade of life.In 198(70.71%) patients positive family history of vernal keratoconjunctivitis was present, while 82(29.28%) patients had no positive family history. Most of the patients i.e 228 (81.42%) had perennial occurrence. Majority of the patients presented with itching, redness, photophobia, foreign body sensation and discharge. Conjunctival hyperemia and papillae were present in most of the patients. Palpebral Vernal keratoconjunctivitis was present in 53.92% patients followed by mixed 31.78 % and limbal 14.28%. There were some systemic allergic disorders noted in the patients. Eczema was present in 11.78%, seasonal allergic asthma in 16.42% patients, allergic rhinitis in 20.71% patients and atopic dermatitis in 7.50% patients.
Conclusion: Vernal keratoconjunctivitis is an allergic disorder. Most of the patients affected are in their 1st decade of life and symptoms and signs are present in the whole year exacerbated in spring and summer. Palpebral type is more common. Most of the patients had positive family history. It has association with some systemic allergic disorder.
Abbreviation: Vernal Kerato conjunctivitis (VKC). Foreign Body (FB)

INTRODUCTION:
Vernal Keratoconjunctivitis (VKC) is potentially severe bilateral allergic conjunctivitis ¹. It is IgE mediated allergic reaction which along with conjunctiva involves cornea ². The fact that VKC is more frequent and severe in hot climate suggests that in addition to allergen exposure to wind, heat, solar radiation may play an important role in this disease.

Vernal is a Greek word which means “Occurring in spring” this is the reason that originally it was called spring catarrh. But this term has been of no more importance because it is not only present in spring but present perennially ³. VKC is a specified type of allergic conjunctivitis causing disturbance of normal life activities at school or work due to watering, itching, photophobia, FB sensation and copious mucus discharge ⁴. These features usually persist for weeks, months or present perennially. There are three types of VKC palpebral, limbal and mixed ⁵. There are multiple risk factors like age, sex, environment, atopic conditions like asthma, eczema, urticaria which have strong association with VKC ³. Corneal involvement in VKC may take the form of punctuate epithelial erosion, epithelial keratitis, pannus and pseudogerontoxon ⁶,⁷. Associated corneal changes result in shield ulcer, plaque formation and subepithelial scarring ⁸,⁹. In addition to other corneal complications VKC has strong association with keratoconus as well. Study of M Daud Khan shows keratoconus in 7% of patients suffering from VKC ¹⁰. As VKC has strong association with atopic dermatitis, hay fever and eczema, these diseases have also associations with keratoconus ¹¹,¹². This study is focused on presentations and manifestations of VKC patients in DHQ Hospital Karak and Eye Care Centre Karak which is situated in southern zone of Khyber Pakhtoonkhwa where in summer there is a dry and hot climate.
MATERIAL AND METHODS:

This descriptive study of two years duration was conducted in DHQ Hospital and Eye Care Centre Karak from August 2007 to August 2009 to evaluate the clinical presentations and manifestations of patients suffering from VKC. Proper Performa was designed including age, sex complaints family history, ocular and systemic examination for documentation of patients. Informed consents were taken from patients and their parents according to the age of the patients. Proper history was taken from each patient. Ocular examination was done with slit lamp. In suspected corneal lesions fluoresceine staining was done. According to age all the patients were categorized according to presentations as 1st decade, 2nd decade and 3rd decade. In some patients who had systemic or any dermatological problem, opinions of physician and dermatologist were sought.

RESULTS:

Total 280 patients suffering from VKC were examined in which 235 (83.92%) were male and 45 (16.08%) were female. Table I. Regarding age presentation 173 (61.78%) presented in 1st decade, 79 (28.21%) in 2nd decade and 28 (10.0%) in 3rd decade of life. Table II.

Family history of VKC was present in 198 (70.71%) and no positive family history was present in 82 (29.28%) patients. Table III. According to seasonal occurrence, onset only in spring was present in 9 (3.21%), in summer 43 (15.37%) and perennially it was present in 228 (81.42%) patients. Table IV. Regarding clinically presentation itching was present in 280 (100%), redness in 263 (93.92%) photophobia 219 (78.21%), FB sensation 174 (62.14%) discharge in 102 (36.42%) patients. Table V.

According to signs and corneal complications conjunctival hyperemia was present in 252 (90%), papillae in 280 (100%) superficial punctate keratitis in 48 (17.14%), shield ulcer in 11 (3.92%) corneal plaque in 4 (1.42%) corneal opacification in 2 (0.71%) patients. Table VI.

According to type of VKC, palpebral type was present in 151 (53.92%), limbal in 40 (14.28%) and mixed in 89 (31.78%) patients. Table VII. Regarding association of VKC with other diseases eczema was present in 33 (11.78%) seasonal allergic asthma in 46 (16.42%) allergic rhinitis in 58 (20.71%) and atopic dermatitis in 21 (7.50%) patients. Table VIII.

DISCUSSION:

This descriptive study was conducted in DHQ Hospital and Eye Care Centre Karak, which is situated in the southern zone of Khyber Pakhtoonkwa. The climate is hot and dry, so the disease which have predisposition to such environment may be more prevalent.

Table I showing Gender distribution Total 280:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of patients</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>235</td>
<td>83.92%</td>
</tr>
<tr>
<td>Female</td>
<td>45</td>
<td>16.08%</td>
</tr>
</tbody>
</table>

Table II showing presenting age

<table>
<thead>
<tr>
<th>Decade</th>
<th>Number of patients</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>173</td>
<td>61.78%</td>
</tr>
<tr>
<td>2nd</td>
<td>79</td>
<td>28.81%</td>
</tr>
<tr>
<td>3rd</td>
<td>28</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

Table III showing Familial / Non familial occurrence

<table>
<thead>
<tr>
<th>Family History</th>
<th>Number of patients</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>198</td>
<td>70.17%</td>
</tr>
<tr>
<td>Negative</td>
<td>82</td>
<td>29.28%</td>
</tr>
</tbody>
</table>

Table IV  seasonal occurrence

<table>
<thead>
<tr>
<th>Season</th>
<th>Number of Patients</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>9</td>
<td>3.21%</td>
</tr>
<tr>
<td>Summer</td>
<td>43</td>
<td>15.37%</td>
</tr>
<tr>
<td>Perennial</td>
<td>228</td>
<td>81.42%</td>
</tr>
</tbody>
</table>

Table V showing clinical symptoms

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Number of Patients</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Itching</td>
<td>280</td>
<td>100%</td>
</tr>
<tr>
<td>Redness</td>
<td>263</td>
<td>93.92%</td>
</tr>
<tr>
<td>Photophobia</td>
<td>219</td>
<td>78.21%</td>
</tr>
<tr>
<td>FB sensation</td>
<td>174</td>
<td>62.14%</td>
</tr>
<tr>
<td>Discharge</td>
<td>102</td>
<td>36.42%</td>
</tr>
</tbody>
</table>

Table VI showing signs and corneal complications

<table>
<thead>
<tr>
<th>Signs /corneal complications</th>
<th>Number of Patients</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conjunctival Hyperemia</td>
<td>252</td>
<td>90%</td>
</tr>
<tr>
<td>Papillae</td>
<td>280</td>
<td>100%</td>
</tr>
<tr>
<td>Superficial punctate keratitis</td>
<td>48</td>
<td>17.14%</td>
</tr>
<tr>
<td>Shield ulcer</td>
<td>11</td>
<td>3.92%</td>
</tr>
<tr>
<td>Plaques</td>
<td>04</td>
<td>1.42%</td>
</tr>
<tr>
<td>Corneal opacification</td>
<td>07</td>
<td>2.50%</td>
</tr>
<tr>
<td>Trantas dots</td>
<td>41</td>
<td>14.64%</td>
</tr>
<tr>
<td>Keratoconus</td>
<td>09</td>
<td>3.21%</td>
</tr>
<tr>
<td>Acute hydrops</td>
<td>02</td>
<td>0.71%</td>
</tr>
</tbody>
</table>

Table VII showing types of VKC

<table>
<thead>
<tr>
<th>VKC</th>
<th>Number of patients</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palpebral</td>
<td>151</td>
<td>53.92%</td>
</tr>
<tr>
<td>Limbal</td>
<td>40</td>
<td>14.28%</td>
</tr>
<tr>
<td>Mixed</td>
<td>89</td>
<td>31.78%</td>
</tr>
</tbody>
</table>

Table VIII showing association

<table>
<thead>
<tr>
<th>Disease</th>
<th>Number of patients</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eczema</td>
<td>33</td>
<td>(11.78%)</td>
</tr>
<tr>
<td>Seasonal allergic Asthma</td>
<td>46</td>
<td>(16.42%)</td>
</tr>
<tr>
<td>Allergic rhinitis</td>
<td>58</td>
<td>(20.71%)</td>
</tr>
<tr>
<td>Atopic Dermatitis</td>
<td>21</td>
<td>(7.50%)</td>
</tr>
</tbody>
</table>
have positive family history of VKC. The study also reports more common perennial occurrence. Itching, redness, photophobia, FB sensation and mucus discharge are the most common symptoms. The more frequent signs are conjunctival hyperemia and papillae. Palpebral VKC has more than 50% prevalence and in some patients other associated disorders like seasonal allergic asthma, eczema, allergic rhinitis and atopic dermatitis were noted.

There are many national and international studies regarding clinical presentation of VKC. Results may be variable because VKC has multiple predisposes factors. Study of Iran Shafique and Ziauddin A Shaikh reveals the results which are comparable to our study. This study reports 92% male affected by VKC, 69.5% presentation in 1st decade of life, 54% patients had palpebral type of VKC and 86% presentation perennial occurrence. Another national study also demonstrates 90% male occurrence, 59% presentation in 1st decade of life 58% has palpebral type of VKC and perennial presentation in 78% patients. This study also shows family history of atopy in 12 patientsClinical signs and symptoms are comparable to our study. Our study has shown more prevalence of palpebral type VKC which is comparable to study of Iqbal A, Jan S, et al which shows the same results. Keratoconus is one of the important complication / association of VKC which has been noted in our study in 3.21% patients. This is in contradiction to study of M. Daud Khan, N.K Kundi et al who reported keratoconus in 7% patients of VKC while study done in Japan has shown that 40% of Keratoconus cases have allergic back ground.

Study of Panido kosrirukvongs, shows limbal VKC in 58.3% patients palpebral in 33.3% and mixed VKC in 8.3% patients which is contradictory to our study. However this study reports male preponderances (81%), 69% positive family history such as allergic rhinitis in 65.7% seasonal allergic asthma in 28.6%, urticaria in 8.6% and atopic dermatitis in 5.7% patients which are comparable to our study. Clinical symptoms and signs reported in this study have also similarities to our study. Our study has shown non ocular allergy like atopic dermatitis in 7.5% patients, seasonal allergic asthma in 16.42%, allergic eczema in 11.78% and allergic rhinitis in 20.71% patients. This data is comparable to study conducted by Boninis S, Lainbiase A.

Keratopathy in VKC may be in the form of innocuous punctate keratitis leading to shield ulcer. Shield ulcer is thought to be due constant rubbing of the cornea by papillae and immunological reaction to basal cell protein released by eosinophils. Shield ulcer will cause corneal scarring and visual impairment. Recently it has been concluded that these ulcerations are due to eosinophils.

**CONCLUSION:**

VKC is bilateral allergic conjunctivitis involving cornea. It is more common in male. Perennial occurrence is more. Most of the patients are in the 1st decade of life. Palpebral type of VKC is more common. Although allergic in nature environmental factors do play role. Family history is positive in most patients. Clinical presentation in most of patients are usually comparable. Some of the patients have associated disorders like seasonal allergic asthma, atopic dermatitis, allergic eczema and allergic rhinitis etc.

**REFERENCES:**

Comparison of the efficacy of topical Moxifloxacin 0.5% used as preoperative with intracameral injection of cefuroxime given at the end of phacoemulsification surgery in prophylaxis of postoperative endophthalmitis

Ashok Kumar Pinjani FCPS1, Anwar Ali FCPS2, Amena Masrur3, Inayatullah Khan4

ABSTRACT
Objective: To compare the efficacy of preoperative topical moxifloxacin 0.5% with an intracameral injection of cefuroxime given at the end of phacoemulsification cataract surgery in the prophylaxis of postoperative endophthalmitis.
Design: prospective, comparative, randomized, interventional study.
Duration: One year
Place: Department of ophthalmology, Pakistan institute of medical sciences, Islamabad.
Material and Methods: The study was conducted from August 2009 to July 2010 on 600 eyes of 600 patients. The patients were randomly divided into two equal groups. The patients in group 1 received an intracameral injection of cefuroxime at the conclusion of surgery while those in group 2 were given preoperative topical moxifloxacin eye drops starting one hour before surgery. Study outcome in both groups was the development of vitreous cells postoperatively.
Results: 48.5% of the patients were male and 51.5% were female. The age ranged between 18 and 100 years with an average of 61.3±12.2 years. 0.3% of the patients allocated to preoperative topical moxifloxacin developed vitreous cells while none in the cefuroxime group did.
Conclusion: There was no statistically significant difference between the use of topical moxifloxacin and intracameral cefuroxime in the prevention of postoperative endophthalmitis.
Key Words: Endophthalmitis, intracameral cefuroxime, topical moxifloxacin.

INTRODUCTION
Cataract is an important cause of visual impairment and decreased mobility in the elderly. The cataract surgery has become the most frequently performed ocular procedure in the recent years. While surgery is usually successful, it is also responsible for permanent loss of vision in up to 0.1% of patients due to severe postoperative infection (endophthalmitis) which may be defined as inflammation involving both the anterior and posterior segments of the eye.
Postoperative endophthalmitis is usually infectious in nature, and the cause is postulated to be either direct inoculation of bacteria into the anterior chamber from the ocular surface or the use of improperly sterilized instruments. However, endophthalmitis can also be inflammatory in nature and be a result of a hypersensitivity reaction to surgical manipulation. Infectious endophthalmitis is generally seen within the first six weeks after surgery, however slow growing organisms may produce symptoms months, or even years, later. Once the infectious agent gains access to the vitreous cavity, overwhelming inflammation is the rule and this makes rapid recognition, diagnosis, and treatment critical in optimizing final outcomes.
Once endophthalmitis occurs, relentless damage to ocular tissues is seen; this is in part due to the direct effects of bacterial replication. Initiation of a cascade of inflammatory mediators in response to this bacterial replication wreaks further havoc. Bacterial products, such as endotoxins appear to cause direct cellular injury while the recruitment of inflammatory mediators such as cytokines, that attract neutrophils, enhances the inflammatory effect. No matter how quick the intervention, the visual results are usually dismal. That is why in the past few years focus has largely shifted towards methods that might further reduce the incidence of this dreaded complication.
Before the ESCR endophthalmitis study was undertaken, there was no valid scientific studies which proved that the prophylaxis with antibiotics reduces the risk of post operative endophthalmitis. The only universally accepted measure was the use of Betadine.
as a preoperative antiseptic. The results of the ESCRS study strongly advocate the use of intracameral cefuroxime with or without perioperative topical fluoroquinolone for the prevention of postoperative endophthalmitis in patients undergoing cataract extraction. The purpose of our study was to compare the effectiveness of intracameral cefuroxime to topical moxifloxacin in the prevention of infectious postoperative endophthalmitis.

MATERIAL AND METHODS

The study was conducted between August 2009 and July 2010 in the Ophthalmology department of Pakistan Institute of Medical Sciences, Islamabad. It was a prospective, comparative interventional study and a total of 600 eyes of 600 patients were included. Informed consent was taken from all the patients. Inclusion criteria included all patients above the age of 18 years with visually significant uncomplicated cataract that required surgery. Patients with a single functioning eye, those allergic to cephalosporin or penicillin or with a history of concomitant ocular surface disease (including disorders of the lacrimal drainage system) were excluded from the study. Pregnancy, age less than 18 years, inability to give an informed consent and the presence or history of any other ocular disease such as glaucoma and uveitis were also factors used to screen out patients. The data was collected and recorded on a separate performa for every patient and analyzed using the SPSS version 15. Prior to recruiting the patients a thorough systemic and ocular history were obtained and a complete eye examination including best corrected visual acuity, slit lamp examination, measurement of intraocular pressure using Goldman applanation tonometer and a dilated fundal examination were performed. The patients were randomly allotted to one of the following two groups; group one received an intracameral injection of cefuroxime (0.1mg/ml) at the end of surgery while those in group two were given topical moxifloxacin (0.5%) eye drops, one drop every 15 minutes one hour before surgery. All the patients underwent phacoemulsification with posterior chamber intraocular lens implantation which was done by the same surgeon. Any eye that developed complications during surgery was excluded from the study.

The patients in both the groups were given a peribulbar injection of equal amounts of 1% lidocaine and 0.2% bupicaine to achieve akinesia and anesthesia. A total of 3-4 milliliters of the anesthetic were used. The eyes were draped and the surgical field isolated according to aseptic technique. 5% Betadine was instilled in the conjunctival sac and washed out after two minutes in all the patients. A vial containing 250 mg of powdered cefuroxime was dissolved in 12.5 ml of normal saline to achieve a concentration of 20mg/ml.

One ml of this was drawn in a 2 ml syringe and diluted with another one ml of normal saline to achieve strength of 10mg/ml. 0.1 ml of this solution (1mg/0.1ml) was injected in the anterior chamber using a Rycroft cannula at the end of surgery. A fresh bottle of commercially available moxifloxacin (Vegamox, Alcon Laboratories), eye drops was used for each patient in group 2 and the drops were instilled in the lower fornix without touching the adnexa to insure sterility. All the patients were prescribed topical steroid antibiotic drops postoperatively.

The patients were followed up on the first, eighth and twenty eighth post operative days. At each visit the patients underwent visual acuity assessment, slit lamp examination and a dilated fundal examination. The study variables were analyzed for comparative statistics using SPSS version 15. Confounding factors such as age and sex were matched between the two groups; the mean age and the male to female ratio were calculated. The chi-square test was applied to assess the significance of data.

RESULTS

In this study 48.5% of the patients were male and 51.5% were females. The age ranged between 18 and 100 years with an overall average of 61.3±12.2 years. Table 1 presents baseline characteristics of patients in two study groups. Gender and age were equally distributed among study groups, in the cefuroxime group (47.3%) patients were male compared to (49.7%) in the moxifloxacin group while the remaining were females (52.7%) and (50.3%) respectively. The average age was also equal in cefuroxime (60.7 years) and moxifloxacin (61.9 years) study groups. Table 2 presents distribution of vitreous cells among study groups. Only 2 (0.7%) patients who received topical moxifloxacin eye drops showed cells in the vitreous cavity. None of those receiving intracameral cefuroxime showed vitreous cells and the difference in the two groups was not statistically significant (p-value = 0.15). Both of the patients who developed vitreous cells were females, one aged 18 years and the second 50 years. (Figure I) and (Figure II)

DISCUSSION

Endophthalmitis may be defined as inflammation involving both the anterior and posterior segments of the eye; it may be infectious which usually results from seeding of organisms into the eye following surgery (postoperative), trauma (post-traumatic) or from metastatic spread from a distant site in the body (endogenous) or sterile which is an immune reaction to either exposed ocular antigens or retained surgical. In most of these patients the infection is caused by gram positive aerobic bacteria* (76-90% cases of culture positive postoperative endophthalmitis). The rate of this dreaded complication of cataract surgery is estimated to
be 0.07% -0.13% and has remained steady over the past several years. In most cases of endophthalmitis, useful vision can be salvaged if the problem is diagnosed early and prompt intervention instituted. However, in severe cases of bacterial endophthalmitis, blindness often occurs despite treatment.

The past two decades have shown a gradual rise in the incidence of post operative endophthalmitis. It was estimated to be 0.1% in the 1990s but rose to around 0.2% in the early 2000s. Cataract surgery results in more cases of postoperative endophthalmitis than any other type of ocular surgery. Although the majority of postoperative endophthalmitis cases (48–70%) are caused by coagulase-negative staphylococci, other Gram-positive bacteria such as streptococci, enterococci and Staphylococcus aureus have also been isolated from the vitreous samples of some patients.

The intraocular environment is an immunologically privileged site in the sense that it lacks inflammatory mediators and pro-inflammatory cells present that elicit an immune response in the setting of an infection. Once bacteria violate the sanctity of the intraocular environment the initial immune responses that handle infection are delayed or absent, providing an optimal growth medium for organisms that reach the area. Eventually however, the immune mechanisms do come into play in an attempt to control the infection. The severity of the inflammatory response is largely organism dependent; relatively benign organisms like S. epidermidis cause mild inflammation, while virulent organisms like B. aureus, S. aureus or streptococci wreck havoc through severe and intractable inflammation.

Since the advent of extra capsular cataract extraction in the eighteenth century and especially since the introduction of suture-less phacoemulsification by Dr. Kelman in 1967, ophthalmologists the world over have striven to identify factors that place a patient at an increased risk for the development of post operative endophthalmitis, as well as means of decreasing this risk. Before the European society of cataract and refractive surgery conducted the endophthalmitis study, there were no valid scientific studies proving that prophylaxis with antibiotics reduces the risk of post operative endophthalmitis. The only universally accepted measure was instillation of 5% Betadine in the conjunctival sac as pre operative antiseptic agent. The results of the ESCRS study strongly advocate the use of intracameral cefuroxime with or without perioperative topical moxifloxacin for the prevention of postoperative endophthalmitis in patients undergoing cataract extraction. This clinical trial was a prospective, randomized, and partially masked multi center study conducted in twenty-four ophthalmology units in Austria, Belgium, Germany, Italy, Poland, Portugal,
Spain, Turkey, and the United Kingdom. A total of 16603 patients were included in this study, which was based on a 2×2 factorial design. This resulted in the formation of four treatment groups. Cefuroxime (1mg in 0.1ml) was injected into the anterior chamber at the end of surgery. One drop of Levofloxacin (0.5%) was instilled one hour before surgery; this was then repeated thirty minutes before surgery. Another 3 drops were given at five minute intervals commencing immediately after surgery. All the patients were given with povidone–iodine 5% drops 3 minutes before surgery, and all were prescribed levofloxacin 0.5% drops 4 times daily for 6 days starting the day after surgery. The results of this study showed that patients not receiving intracameral cefuroxime prophylaxis were at an almost 4.9-fold risk for the development of post operative endophthalmitis and at a 5.86-fold increase in the risk for culture proven endophthalmitis.

In spite of these over whelming results, the use of intracameral cefuroxime for the prophylaxis of endophthalmitis is not wide spread. Some of the reasons for the reluctance on the part of ophthalmologists in using this preparation include the non availability of a single dose commercially available preparation and the endothelial toxicity seen if a higher concentration is erroneously injected into the anterior chamber. Our study compared the efficacy of topical, commercially available moxifloxacin eye drops to intracameral cefuroxime as a prophylactic measure for endophthalmitis. 0.5% Moxifloxacin Hcl ophthalmic solution (VIGAMOX®) is commercially available and has an easy to use protocol. We found that only two patients receiving topical moxifloxacin developed cells in the vitreous cavity on the first post operative day. However, the inflammatory response dampened in response to intensive topical steroids and antibiotic drops which were initially administered at two hourly intervals and tapered to one drop QID over the following two weeks as the inflammation subsided. None of the patients receiving intra cameral cefuroxime at the end of surgery developed vitreal cells. While a difference existed between the two groups, it was not statistically significant. This, coupled with the careful preparation and short shelf life of intracameral cefuroxime, has led to the majority of ophthalmic surgeons preferring topical moxifloxacin eye drops for the prophylaxis of postoperative endophthalmitis.

CONCLUSION

Both intracameral cefuroxime and topical peri-operative moxifloxacin may be equally efficient in the prevention of post operative infectious endophthalmitis. Topical moxifloxacin eye drops are easy to instill and do not require any preparation. Cefuroxime for intracameral injection, however, has to be prepared by the surgeon and has to be diluted several times before the required concentration is achieved. Hence, many ophthalmic surgeons prefer to use topical moxifloxacin eye drops in the prevention of post operative infectious endophthalmitis.

REFERENCES

To Compare the Recurrence Rate of Pterygium Excision with Bare Sclera, Application of 0.02% Mitomycin-C & Conjunctival Auto Stem Cell Graft Techniques

Muhammad Arshad Mahmood¹, Kashif Raza Khan², Muhammad Saeed³
Rana Riaz Ahmad⁴, Zahid Kamal⁵, Prof. Nazeer Ahmad Aasi⁶

ABSTRACT
Purpose: To compare the recurrence rate in pterygium excision with bare sclera, application of 0.02% Mitomycin C and conjunctival auto stem cell graft.

Material and Methods: 60 Patients presented with pterygium in the outpatients department of Ophthalmology in Nawaz Sharif Social Security Teaching Hospital, Multan Road Lahore, from May 2010 to November 2010 were included in this study. Patients of both gender with confirmed diagnosis of pterygium on slit lamp examination were included while the patients with pseudo- pterygia, inflamed eyes and Diabetes mellitus were excluded from the study. These patients were divided in three groups. Group-A included bare sclera, group-B Mitomycin C application and group-C conjunctival auto stem cell graft. Patients were randomly selected on the basis of inclusion and exclusion criteria and details were recorded on a pre-developed performa. All patients were operated with 0.5 ml of subconjunctival injection of 2% xylocaine at the donor site. In group-A, the pterygia were excised, the abnormal tissues were cleared from the sclera and the remaining area including the healthy conjunctiva was left as such. In group-B, Injection Mitomycin C 0.2 mg/ml was applied on sclera for 02 minutes after excision of pterygium. In group-C, the bare area was first measured with caliper. Then the auto graft of the same size was fashioned from the supero-temporal region of the bulbar conjunctiva and sutured with 10/0 nylon to the surrounding conjunctiva. After the completion of procedures in all three groups, Antibiotic eye ointment was instilled and eye was closed for 24 hours with eye pad. Patients were advised oral anti-inflammatory tablets and antibiotics for at least 03605 days. After 24 hours eye pad was removed and antibiotic eye ointment was instilled for next 10 days. Regular follow up was done for six months. The primary aim of the study was to measure the recurrence of Pterygium. The recurrence of Pterygium is defined as growth of fibro-vascular tissues for at least 2 mm on cornea.

Results: Total 60 patients were included in this study. The mean age was 47 years. Out of 60 cases, 41 (68.3%) were male and 19 (31.6%) were female. 20 patients (33.3%) each were operated by each of the above mentioned three techniques. 06 (30%) patients developed recurrence in group-A, while in group-B and group-C, recurrence was noted in 1 patient (5%) in each group.

Conclusion: Application of Mitomycin C at the site of excision and conjunctival auto stem cell graft proved to be more successful in preventing recurrence as compared to bare sclera technique.

INTRODUCTION
Pterygium is defined as wing shaped fibrovascular encroachment of conjunctiva on to the cornea. The typical pterygium is triangular in shape and is made up of a

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Cap, head and body. Usually it is located nasally rather than temporally¹. Although the definite cause is not known, the ultraviolet radiations (UVR), especially UVR-A and UVR-B (290-400 nm) is considered the most dangerous² ³. Moreover environmental factors also contribute. It is more frequent in hot, dry, windy, dusty and smoky environments⁴. There is also a hereditary factor that may be responsible⁵.

Elastotic degeneration of conjunctival collagen is the main histopathological change seen in the primary pterygium⁶. The complaints which it may give rise are foreign body feeling, visual deterioration due to corneal astigmatism or growth over the pupil and cosmetic problems⁷. Anti inflammatory drugs and lubricants have an important role in minimizing the patients discomfort but do not cure the disease. Ablation with erbium, YAG Laser⁸ and smoothening the corneal surface with excimer⁹ laser has been tried but the results were not so encouraging. Ultimately surgical removal is the treatment of choice. Recommended surgical management includes simple excision with or without adjunctive...
measures like postoperative Beta irradiation, thiotepa drops, intraoperative and postoperative mitomycin C and various techniques of conjunctival grafting. Whichever method is used, after surgical removal there are still many recurrences. However conjunctival auto stem cell grafting seems to be the best method, giving both low recurrence rate and high safety. Kenyon et al, first described a conjunctival autograft in 1985. They reported a recurrence rate of 5.3%, and infrequent and relatively minor complications. The primary disadvantage of this technique is the prolonged operative time required when compared to the bare sclera technique. These disadvantages are out weighted; however by the lack of sight threatening complications and the relatively low recurrence rate, this procedure gained popularity in many centers of the world. Kunitomo and Nori were the first to report the promising effect of mitomycin C on the recurrence rate of pterygium. The application of intraoperative 0.02% mitomycin C for 5 minutes is efficient in reducing the recurrence rate to the minimum.

Many other methods were implemented with the aim of improving the success rate and reducing recurrence rate, among them transplantation of the head of the pterygium, conjunctival flaps, lamellar keratoplasty, mucous membrane grafts, chemotherapy by Thiotepa, radiation therapy by radon bulbs, radium plaques, beta irradiation ablation with erbium YAG laser and smoothening the corneal surface with excimer laser and antimetabolite such as 5-flourouracil. Mitomycin C has been tried. Several of them succeeded in lowering the recurrence rates but did so at the price of sight-threatening complications from the tissue damage associated with the treatment.

In general, the results of surgery whatsoever method is applied are best in old patients with thin atrophic and stationary pterygia. Recurrences are quite common in young patients and in patients with active inflamed and rapidly growing pterygia, even with surgery and adjunctive treatment. In our study, we compared the recurrence rate of pterygium excision by three methods.

MATERIAL AND METHODS

A total of 60 patients were operated for pterygium with bare sclera, Mitomycin C and conjunctival auto stem cell graft, in the department of ophthalmology, Nawaz Sharif Social Security Teaching Hospital, Multan Road Lahore. The total duration of study was from May 2010 to June 2011. Diagnosis of pterygium was made by clinical examination. After informed consent, cases were included in the study and were divided randomly into 3 groups.

Patients included in the study were of the age, ranging from 20 to 60 years. Both genders were included while the patients with pseudo- pterygia, inflamed eyes, diabetes, ocular surface disorders and age below 20 years and above 60 years were excluded from the study.

History was taken and recorded on a preset performa in which special enquiry was made about the main complaints, occupation, duration of growth, and any previous medical or surgical treatment. Complete ocular and systemic examination was performed. The state of the growth was asked whether it was stationary, slow growing or rapidly growing. All the procedures performed by same surgeon with six months followed up cases. All the operations were performed under microscope using topical and local subconjunctival anaesthesia. No significant intraoperative complications were noted. All patients were followed up post operatively at one month, three months and six months intervals.

RESULTS

Total sixty patients were included in this study. The mean age was 47 years (ranging from 20 to 60 years). Out of 60 cases, 41 (68.3%) were males and 19 (31.6%) were females. They were divided into three groups. In group-A, the patients with bare sclera were included. In this group 20 cases were operated, out of which recurrence was noted in 06 (30%) patients.

In group-B, patients with application of Mitomycin C were included. In this group 20 cases were operated and 5% recurrence rate was noted. In Group C 20 patients with conjunctival auto stem cell graft were included. All cases were operated by this technique and recurrence occurred only in one (5%) case.

No complication was noted in group-A bare sclera technique except recurrence of the pterygium after the six months of follow up. While in group-B mitomycin C application, two patients had mild congestion at the site of application of Mitomycin C and one patient had mild progression of pterygium. Complication after conjunctival auto stem cell graft were graft edema in 2 cases (10%) and graft retraction in 1 patient (5%).

DISCUSSION

Tear film inadequacy results in chronic dellen

<table>
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<tr>
<th>Gender</th>
<th>Number of patients n (%)</th>
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<tr>
<td>Male</td>
<td>41 (68.3%)</td>
</tr>
<tr>
<td>Female</td>
<td>19 (31.6%)</td>
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<tr>
<td>Total</td>
<td>60 (100%)</td>
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<th>Groups</th>
<th>Number of patients n (%)</th>
<th>Recurrence Rate n (%)</th>
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<tr>
<td>Group-A</td>
<td>20 (33.3%)</td>
<td>06 (30%)</td>
</tr>
<tr>
<td>Group-B</td>
<td>20 (33.3%)</td>
<td>01 (5%)</td>
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<tr>
<td>Group-C</td>
<td>20 (33.3%)</td>
<td>01 (5%)</td>
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formation which triggers the formation of Pterygium. So basically it is a protective mechanism. Pterygium excision is often considered a minor procedure, but without any adjunctive therapy, the recurrence rate after surgery may be as high as 69% especially in hot, dry and sunny atmospher. While the definitive management of a pterygium is surgical, the ideal adjunctive procedure is still to be determined. Suture less applications with fibrin glue have been aimed at making the procedure easier and more comfortable for the patient.

We did this comparative study and the conclusion was that simple excision of pterygium was associated with very high recurrence as compared to that of Mitomycin C application and conjunctival auto stem cell graft.

In a study, Prabhasawat first compared amniotic membrane graft (n=54) to a retrospective study using conjunctival auto graft (n=122) in both primary and recurrent pterygium. They noted that the recurrence rate is 10.9% using amniotic membrane graft, which is still higher than 2.6% of conjunctival graft. Nevertheless, both results of amniotic membrane grafts and conjunctival auto grafts are significantly better than the primary closer (n=20), which resulted in 45% high recurrence rate. Subsequently Solomon reported that by incorporating a larger removal of subconjunctival fibrous tissue and injection of long acting steroids, amniotic membrane grafts achieved a lower recurrence rate of 3.0%, compatible with 2.6% of conjunctival auto grafts as experienced by Prabhasawat. Similarly Lateef-ur-rehman et al during follow up period, showed that recurrence of pterygium was high 41.33% in the patients with bare sclera method as compared to recurrence 33.33% while using 5-Floro-Urocil antimetabolite. Mohammad Saleem et al also show high results of recurrence 30% in pterygium with simple excision, as compared to that with Mitomycin C drop. Ashok Kumar Narsani et al showed that there was 7.69% recurrences in conjunctival auto graft as compared to 16.13% recurrences with Mitomycin C i.e. the graft yielded better results.

In 1998, Lewallen published report of a randomized trial of the conjunctival autografting technique for pterygium removal. She documented a lower recurrence rate (21%) in grafted cases compared with controls done by the bare sclera technique (37%). Riodan-Eva et al of Moorefield Eye Hospital London supported Lewallens finding when they reported a statistically significant reduction in recurrences rate following conjunctival autografting for pterygium. They quoted a probability of recurrences of 14% with this procedure at 36 months after surgery. In 2005 Fahmi et al reported 13.3% recurrence rate with conjunctival autograft while in our study recurrence rate was found to be 5%.

An alternate to conjunctival graft technique to improve outcome is use of mitomycin C. Mitomycin C is an alkylating antineoplastic agent produced by strains of streptomycetes caespinosus which inhibits synthesis of DNA, RNA and proteins. Current regime of mitomycin C is 0.02% for 5 minutes have been found to be effective. In this series the mitomycin C recurrence rate was 19% in comparison with 38% reported by Chen et al and 10.5% by Maning et al with the application of 0.4 mg / ml for 3 minutes. Ma et al (post operative mitomycin C) and Sharma et al also compared mitomycin C with conjunctival graft but neither showed any significant statistical difference. These studies fail to show any difference between mitomycin C and conjunctival autograft. The results of our study show an advantage of conjunctival auto stem cell graft and mitomycin C over simple bare sclera technique. Our results are compatible with national and international studies.

**CONCLUSION**

In conclusion application of Mitomycin C at the site of excision and conjunctival auto stem cell graft proved to be more successful in preventing recurrence as compared to bare sclera technique.

**REFERENCES**

12. Joelson GA, Muller P. Incidence of pterygium recurrence in
Steroid Induced Glaucoma in patients using Topical Steroids in relation to the duration & type of steroid used - A review of 325 patients

Mohammad Alam¹, Naseer Ahmad², Sardar Ali³

INTRODUCTION:

Steroids which are easily available and can be used self-medication today, were synthesized in 1937. Commercially for clinical use its availability was made in 1948 ¹. Steroids have been prepared in different potencies for their indicated use. Steroids are being used in life saving and sight saving situations despite very serious side effects.

High IOP can occur due to topical, periocular, intravitreal, oral or systemic use of steroid ²,³,⁴,⁵. Steroids induced ocular hypertension was first documented in 1950 by Mc Lean when he found increase in IOP with systemic administration of ACTH ⁶. SIG is a form of secondary primary open angle glaucoma that is mostly associated with topical use of steroids, but this may also results from systemic use. Topical use of steroids for prolonged periods can result in rise of IOP and inducing glaucoma ⁷,⁸. But all patients using topical steroids may not develop glaucoma because this depends upon the patient response. In steroids responders, glaucoma onset is early. More over SIG depends upon the potency of steroids whether more potent or week. SIG is due to three mechanisms in trabecular meshwork.

1. It decreases phagocytotic activities of trabecular meshwork.
2. It decreases ATP mechanism of trabecular meshwork and
3. It causes deposition of glycosaminoglycan in the trabecular meshwork.

High IOP is due to increased resistance to out flow of aqueous through trabecular meshwork caused by biochemical and morphological changes ⁹. Steroids not only cause SIG but it has other ocular complications like ptosis, inhibition of corneal epithelium or Stromal healing, cataract, punctuate staining and optic neuropathy etc. Topical steroids in common use may be potent like Dexamethasone, Betamethasone and Prednisolone, while ³⁴(10.46%) used fluometholone. ²¹°(64.61%) patients were advised steroids medically while ²²°(35.38%) patients had self medicated or by quackery. ²³°(12.30%) patients used steroids for 6 months, 2²°(34.76%) patients for up to one year, ²⁴°(21.53%) patients up to 2 years and ²⁵°(31.38%) patients for more than 2 years. IOP was above 2¹ mmHg in ²¹° patients. Out of ²¹° patients Glucomatous cupping was present in ²²°(57.14%) patients and visual field defect in ²³°(23.80%) patients.

Conclusion: Steroids can cause ocular hypertension and steroid induced glaucoma. Its long use has dreadful consequences. If its use is necessary then it should be under supervision and regular ocular check up is mandatory.

Key words: Intraocular Pressure (IOP) Steroids induced Glaucoma (SIG) Vernal Keratoconjunctivitis (VKC)

Materials and Methods:

This prospective study was conducted to find the prevalence of Steroid induced Glaucoma in patients using topical steroids for various ocular morbidities in...
KTH Peshawar, DHQ Hospital Karak and group of teaching hospitals Bannu from Dec 2006 to Dec 2010. A proper proforma was designed for evaluation and documentation of patients. Informed consent was obtained from patients/parents depending upon the age. Visual acuity without and with pin hole was checked and ocular examination was done with direct and indirect ophthalmoscope, Slit lamp direct and indirect bimicroscopy including perimeter. IOP was checked with applanation Tonometer and 21 mmHg was taken as upper normal limit. Total 325 patients were documented for the study.

**Inclusion Criteria:**
- Patients aging 8 years or above
- Patients using topical steroids

**Exclusion Criteria:**
- Patients below the age of 8 years
- Traumatic eyes
- Already diagnosed other type of glaucoma

**RESULTS:**
Total 325 patients out of which 258(79.38%) were male while 67(20.61%) were female. (Table 1). 266(81.84%) patients were using topical steroids for VKC, 48(14.76%) were using for ocular allergy, 7(2.15%) patients using for herpetic Keratitis and 5(1.53%) using steroids for chronic Uveitis. (Table 2). 291(89.53%) patients were using potent steroids like Dexamethasone, Betamethasone and prednisolone, while 34(10.46%) were using weak steroids like flourometholone. (Table 3). 210(64.61%) patients were advised steroids medically but they continued it for long term against medical advice while 115(35.38%) patients were self medicated or advised by quacks. (Table 4). Regarding duration of use, 40(12.30%) patients used steroids for 6 months, 113(34.76%) patients for up to one year, 70(21.53%) patients up to 2 years and 102(31.38%) patients for more than 2 years. (Table 5). IOP was above 21 mmHg in 21(6.46%) patients and in 304(93.53%) IOP was below 21mmHg being taken as upper normal limit. (Table 6). Out of 21 patients with high IOP Glaucomatous cupping was present in 12(57.14%) patients and visual field defect in 5(23.80%) patients while in the remainder 4(19.05%) patients, visual field changes and cupping were not present. (Table 7). Regarding type of steroids causing glaucoma, out of 21 patients 20(95.23%) patients were using potent steroids like Dexamethasone, Betamethasone and prednisolone while 1(4.76%) has used weak steroids like flourometholone. (Table 8)

**DISCUSSION:**
SIG is a type of secondary open angle glaucoma which is associated most commonly with topical use of steroids. It may results from systemic steroids as well. Although steroid is a life and sight saving drug but it has got dreadful complications. Due to easy availability and quackery, it is mostly misused. People consider it quick relief medicine. It is so vigorously used in VKC; ocular allergy that its complications supersedes its benefits. It is most commonly used drug in VKC, Ocular

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<tr>
<th>Table 1 showing gender distribution. Total 325</th>
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<tr>
<td>Gender</td>
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<td>Male</td>
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<td>Female</td>
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<th>Table 2 showing steroids used for ocular disorders</th>
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<td>Ocular Disorder</td>
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<tr>
<td>VKC</td>
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<td>Ocular Allergy</td>
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<td>Recurrent Herpetic Keratitis</td>
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<td>Chronic Uveitis</td>
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<th>Table 3 showing type of steroids used</th>
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<tr>
<td>Category</td>
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<tr>
<td>Potent Steroids</td>
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<td>Weak Steroids</td>
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<th>Table 4 showing steroids advised medically or self medicated /Quackery</th>
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<tr>
<td>Category</td>
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<td>Medically advised</td>
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<td>Self medicated/Quackery</td>
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<th>Table 5 showing duration of use</th>
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<tr>
<td>Duration of use</td>
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<td>Up to 6 months</td>
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<td>Up to 1 year</td>
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<td>Up to 2 years</td>
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<td>More than 2 years</td>
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<th>Table 6 showing IOP</th>
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<td>IOP</td>
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<td>d&gt;21mmHg</td>
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<td>&gt;21mmHg</td>
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<th>Table 7 showing patients of Glaucomatous changes Total No.21</th>
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<tr>
<td>Category</td>
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<tr>
<td>IOP&gt;21mmHg</td>
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<tr>
<td>Visual Field defects</td>
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<tr>
<td>Glaucomatous cupping</td>
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<td>No VF changes and Cupping</td>
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<th>Table 8 showing type of steroids causing Glaucoma Total No.21</th>
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<tr>
<td>Type of Steroid</td>
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<td>Potent Steroid</td>
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<td>Weak Steroid</td>
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allergy and postoperatively as medically advised or self-medicated or by quacks.

Our study is focused on its uses and complication like SIG which study reveals that most common use of steroids is in VKC followed by other ocular allergies. The severity of its side effects is directly proportional to the type of steroids used and its duration. Generally it is said that 5% population is steroid responders 10;11. But our study report this ratio in 6.46% patients. There may be variation in sample size, family history, geographical distribution, age and sex variables. Study of Sameen Afzal Junejo, Nazir Ashraf Laghari and Abdul Ahad Qazi reports SIG in 7.5% of patients 12 which is being higher figure than our study. Our study shows that 20(95.23%) patients developed glaucoma with the use of potent steroids as compared to 1(4.76%) patients who developed SIG with weak steroids. This has also been reported by the study of Melton R and Thomas R 13.

There are other national and international studies whose reports are in some variables are comparable to our study. Study of M.Daud Khan, Shad Mohammad et al reported SIG in 7% patients using steroids and the frequency of patients using steroids was more in VKC 14. Study of R Sohata, VL Konkal et al documents VKC the most common indication for steroids who developed SIG 15. Bonini et al had a long term review study on steroids used for VKC that reported 2% incidence of SIG which is lesser than the reports of our study 16. SIG not only depends upon the steroid use responders but also on the duration of steroid use. There are various reports on this issue, also addressing the high IOP caused by steroids whether comes down to normal or not after cessation of steroid use. Espildora et al 17 reported that patients with SIG who had used steroids for less than 8 weeks recovered normal IOP after cessation of steroids and on the contrary these patients of SIG who have used steroids for more than 4 years did not regain normal IOP after cessation of steroids. Munjal et al has reported that 64.29% patients using steroids for one year or more than one year have SIG 18. Locrine RN, Polansky JR et al has reported elevation of IOP with in hours of initiating intensive topical steroids therapy 19. There may be some risk factors for SIG in addition to steroids. Primary angle glaucoma, family history of glaucoma and younger age patients have positive relation with SIG which has been reported by Relief Jones 111 and Douglas J Rhee 20. On the basis of type of steroids and potency to induce glaucoma R Mohan, AR Muralidharan has concluded that Betamethasone and Dexamethasone are more potent both topically and systemically to induce SIG and cataract as compared to other steroids 21.

CONCLUSION:

It is evident that the topical use of steroids can induce glaucoma which is irreversible damage if sustained for long duration. Self medication and quackery should be stopped. Public awareness programme, seminars etc., should be arranged on electronic and front media. People should be properly educated about the dreadful complications of steroids use, and it should not be used as first line therapy; preferably replaced by NSAIDs.

REFERENCES:

Augmented Recession of Horizontal Recti for the treatment of large angle Horizontal Tropias: A Safe & Effective Approach

Muhammad Saeed1, M. Arshad Mahmood2, Shahid Aslam3, Kashif Raza Khan4 Aneela Shaheen5, Prof. Abdul Rasheed Qamar6, Prof. Nazeer Ahmed Aasi7

ABSTRACT

Purpose: To study the effects of augmented recession of horizontal recti in the treatment of large angle horizontal tropias.

Material and Methods: The study was conducted at Department of Ophthalmology Central Parks Medical College, Lahore & University College of Medicine & Dentistry, The University of Lahore from February 2009 to December 2010. Forty one patients having greater than 50 prism diopter esotropia or exotropia were included in this study. Patients having had a previous surgery, paretic strabismus or cicatricial strabismus were excluded. Single non-dominant eye of each patient was operated. The horizontal rectus muscle to be recessed was dis-inserted from its origin and re-inserted after maximum recession leaving an additional loop of a non-absorbable suture.

Results: 31 (75.61%) out of 41 patients achieved orthophoria after augmented recession, 06 (14.63%) patients were corrected within 10PD and 04PD (9.76%) patient were corrected within 15PD.

Conclusion: Augmented recession of horizontal muscles is an effective way for the treatment of large angle horizontal tropias. It requires surgery on a single non-dominant eye and is more acceptable to the patient rather than having both the eyes operated and avoiding multiple muscle surgery involving both eyes.

INTRODUCTION

Large angle squints pose special problem for the ophthalmic surgeons as they have to make decision regarding how many muscles to operate upon and whether to operate on one or both eyes. Sometimes one has to operate on even all four recti to correct amount of deviation fully. For treating large angle concomitant horizontal tropias different surgical techniques have been tried with variable success rates i.e. 40 to 90%. These include large bimedial recessions, conjunctival recession combined with standard bimedial recession procedure, and Augmented recession by use of intra operative Botulinum Toxin-A injection. All the surgical approaches mentioned above have their own advantages and disadvantages. In this paper we have discussed a relatively new augmentation technique (leaving a loop of non absorbable suture in excess of maximum allowed recession) for surgical correction of large angle horizontal tropias.

MATERIALS AND METHODS

The study was conducted at The Department of Ophthalmology, Central Parks Medical College, Lahore and University College of Medicine & Dentistry, The University of Lahore from February 2009 to December 2010. All patients having alternating horizontal concomitant squint, more than 50 prism diopter, esotropia and exotropia were included in the study. Patients with previous squint surgery, traumatic squint, and paralytic squint were excluded from the study.

All patients were examined for recording of visual acuity, extra ocular eye movements. Deviation was assessed and measured using Hircshberg, cover/uncover and Krimsky test. Refractive status of all patients was assessed and where ever found necessary cycloplegic refraction with cyclopentolate or 1% atropine was done.

In our study alignment within 10 prism dioptre of orthophoria at 6 weeks post operatively was taken as success. Forty one (41) patients with large angle esotropia (>50 prism dioptre) underwent augmented recession surgery. Single non dominant eye of each patient was operated. After giving limbal conjunctival incision, the muscle to be operated was identified and isolated by blunt dissection. The muscle was dis-inserted from its insertion after securing it with non absorbable suture and suture was left to the desired position and under maximum recession. All patients were followed up for 6 weeks post operatively.
suture and re-inserted after maximum recession allowed leaving an additional loop of predetermined length of the suture connecting muscle to its site of new insertion as shown in figures 1a compared to standard procedure of recession of recti muscle has shown in figure 1. The length of the loop varied with the amount of deviation i.e. from 06 mm to 15 mm. Conjunctival incision was closed. The rectus muscle of the opposite side was resected as in standard squint surgery and conjunctival incision closed with 10/0 Nylon. It was made sure that muscle and extra loop of non absorbable suture was free of adhesion etc so that it may not hamper extra ocular movements. Follow up information was noted at 7 days, 1 month, 2 months and finally at 6-8 months postoperatively.

RESULTS

Total 41 patients were included in the study. The follow up continued for 6-8 months. They had eso or exo deviations of more than 50 PD ranging from 50 to 90 PD (Ave Pre op deviation= for esotropia was 68.75 PD and for exotropia was 68.57 PD). 31 patients (75.6%) were ortho after surgery. As case shown in Figure 2 preoperative esotropia >80PD was ortho after augmented recession of medial rectus and resection of lateral rectus. In Figure 3 the other case of exotropia >90PD was ortho after lateral rectus augmented recession and medial rectus resection. The final deviation was within 10 PD in 37 patients (90%) on last follow up. Rest of the 4 patients (10%) had residual deviation of less than 15 PD. There was no over correction seen. Transient limitation of movement was seen in few eyes on 1st post op day. No movement deficit was noted in any eye at final follow-ups (Table 1).

DISCUSSION

Traditionally a stepwise approach is recommended for treating large angle horizontal deviations. This involves symmetrical bi-medial rectus recession or recession of medial rectus and resection of lateral rectus of non dominant eye. Further surgery on remaining muscles of same or other eye was done as and when required. Generally alignment within 10 PD of orthophoria is considered as successful outcome of squint surgery.5,6,7

In traditional squint surgery success rate of 42 to 50 % has been reported. (Ing & co worker, 8 and Van Noorden et al.9 Helveston and colleagues8 have reported 72 to 80% success rate by their augmented recession technique consisting of a graded bimedial recession (maximum recession of 5.5mm) combined with recession of conjunctiva and tenon’s capsule.

In one study Harry Wilshaw et al compared bimedial standard recession combined with recession of conjunctiva and anterior Tenon’s capsule (augmented recession) with standard Bi-medial recession and found the former technique significantly effective than the later

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<th>Table 1: Analysis of clinical data</th>
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<td>Patient Group</td>
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<tr>
<td>Average Age</td>
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<td>Male: Female ratio</td>
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<tr>
<td>Average Deviation (Pre operative)</td>
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<td>Average Deviation (At 1st day Post operative)</td>
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<td>Average Deviation (At 06 month Post operative)</td>
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vertical deviation and mild ptosis probably due to leakage of BTA from the muscles.

In our study all the patients had their alignments stable till the last follow up. Complications like abnormal or restricted eye movements or consecutive squint were not seen in any of the case. There was less post op reaction owing perhaps to the use of non-absorbable suture as additional loop. The main advantages in our procedure were: surgery on one eye only, less procedure time and less exposure to anesthesia owing to less no of procedures required. Suture granuloma was seen in one patient and that was on the side where resection was done using absorbable suture.

CONCLUSION

From the study of our findings we conclude that augmented recession of horizontal muscles by the method described above is an effective and safe way for the treatment of large angle horizontal tropias. It requires surgery on a single non-dominant eye and is more acceptable to the patient rather than having both the eyes operated and avoids multiple muscle surgery involving both eyes and repeated exposure to general anesthesia.

REFERENCES

Comparison of Eye Ointment & Subconjuctival Injection of Steroid-Antibiotic Combinations at the Completion of Cataract Surgery

Suhail Mushtaq Boobak, FCPS, FRCS*

ABSTRACT
Purpose: To assess the efficacy, safety and tolerability of different methods of application of steroid-antibiotic combinations at the end of cataract surgery.

Materials and Methods: This analytical study was conducted in Divisional Headquarters Teaching Hospital Sargodha from 1st June 2008 to 31st January 2009. There were total 40 patients and they were randomized into two groups, each group had 20 patients. The patients of senile cataract without any other ocular pathology and systemic diseases like; diabetes mellitus and hypertension were included in this study. The age range of the patients was 55 to 65 years. A performa was designed to record all the relevant information and findings preoperatively, at the completion of surgery and during the follow up visits of the patients. Conventional extra capsular catarac extraction with intraocular lens implant was performed in each case. The patients in Group A, were given subconjunctival injection of steroid-antibiotic combinations and in Group B, steroid-antibiotic combinations eye ointment was instilled in the conjunctival sac at the end of the surgery. The severity of the pain at the completion of the surgery was assessed in each group. In postoperative follow-up from day 1 to 6 weeks, conjunctival reaction, corneal stromal oedema, cells and the flare in the anterior chamber were recorded.

Results: There were 14(35%) male and 26(65%) female patients. The mean age was 59.97 years. The patients in Group A experienced more ocular pain than patients in Group B at the completion of cataract surgery. Postoperatively, subconjunctival haemorrhage was noted more in Group A cases. In the follow-up visits, corneal stromal oedema, cells and flare in the anterior chamber were relatively less in Group A cases than Group B cases. But all the patients in both groups had clear cornea and quiet anterior chambers at their last follow-up visit.

INTRODUCTION
Cataract is the single most important cause of blindness and the cataract surgery is one of the most cost effective health care interventions. Mostly the cataract is related to aging and can not be prevented, but the cataract surgery and intraocular lens implant is highly effective in restoration of vision.

Poor visual outcome, low visual function and quality of life and poor uptake of services are noted in conjunction with cataract surgery especially in rural areas. To have a good result of cataract surgery the use of anti-inflammatory drugs like steroids have a pivotal role. The local use of antibiotics in combination with steroids is very effective to reduce the ocular bacterial flora and as a result, the chances of postoperative endophthalmitis are minimized. The successful cataract surgery is focused on the comfort of the patient, control of postoperative inflammation and infection to have a good visual outcome.

MATERIALS AND METHODS
This analytical study was conducted in Divisional Headquarters Teaching Hospital Sargodha, from 1st June 2008 to 31 January 2009. Probability sampling was done and patients were randomized into two groups; Group A (n=20) and Group B (n=20). There were total 40 patients.

Inclusion criteria of the study, were senile cataract between 55 to 65 years of age without other ocular pathology, no previous ocular surgical intervention and patients without any history of systemic diseases like; diabetes mellitus and hypertension. The exclusion criteria, were complicated cataract, patients below 55 and more than 65 years of age, patients having history of previous ocular surgical intervention, allergy of any drug used during procedure and systemic diseases like; diabetes mellitus and hypertension.

A performa was prepared to record all the relevant information and findings at presentation and during the follow-up visits of the patients. The visual acuity of all patients was recorded with illuminated Snellen’s chart, ocular adnexa and extraocular movements were assessed by torch. The pupil reaction to light and accommodation was assessed in each case. The anterior
segment was examined by slit lamp and intraocular pressure was checked by applanation tonometer. The posterior segment was evaluated after dilatation of the pupil with the help of slit-lamp biomicroscopy by +78D lens and indirect ophthalmoscopy by +20D lens. The pupils were dilated with the topical use of tropicamide 1% and phenylephrine 2.5%. All the patients were operated under local anaesthesia. Conventional extracapsular cataract extraction with intraocular lens implant was performed in each case.

At the completion of surgery, the patients in Group A were given 1 ml subconjunctival injection of steroid antibiotic combinations (Dexamethasone 2mg + Gentamicin 20mg). In Group B, the steroid antibiotic combinations eye ointment (each gram contains Dexamethasone 1mg and Tobramycin 3mg) about 1 inch ribbon was instilled into the conjunctival sac at the end of each surgery and eye pads were applied on the operated eyes.

The severity of the ocular pain was graded as none, mild, moderate and severe. It was observed on patient’s response through an interview at the completion of the surgery. Post operatively, the patients from day one to 6 weeks were evaluated and findings were recorded on a performa. The conjunctival reaction was graded into none, diffuse, more intense and subconjunctival haemorrhage. The corneal stromal oedema was graded into none, mild with visible iris details and moderate with less visible iris details. The activity in the anterior chamber was monitored with the help of slit lamp by adjusting the slit beam 2mm long and 1mm wide with maximum light intensity and magnification by grading the number of cells and intensity of the flare in anterior chamber.

During postoperative follow up, the topical use of steroid antibiotic combinations eye drops (each ml contains Dexamethasone 1mg and Tobramycin 3mg), 1 drop 4 times a day was continued till 4th week after surgery. Topical use of only antibiotic drops (each ml contains 3mg Tobramycin) was continued for further two weeks.

**RESULTS**

Forty eyes of 40 patients were included in this study. There were 14 (35%) male patients and 26 (65%) female patients (Fig. 1). The mean age was 59.97 years. All the patients in Group A, who have been given subconjunctival injection of steroid antibiotic combinations at the end of the surgery, experienced pain (Table 1.).

Mostly the patients in Group A had moderate pain (45%) and 5% patients showed severe ocular pain. But in Group B patients receiving steroid antibiotics combinations eye ointment had no ocular pain in 80% of the cases at the completion of the surgery and no severe pain in any case. Postoperatively in the follow up, conjunctival reaction was noted (Table 2). In Group A, 55% cases showed diffuse mild conjunctival congestion and 20% cases had subconjunctival haemorrhage on the day 1 after surgery. But in Group B, the 70% of the cases had diffuse conjunctival congestion and only 10% patients developed subconjunctival haemorrhage on the day 1 after surgery. The postoperative conjunctival reaction disappeared in almost all cases except one in Group A who had diffuse mild conjunctival reaction even at the end of 6th week of postoperative care.

In our postoperative follow up, we had also evaluated the status of corneal oedema (Table 3). In Group A, 89% cases showed no corneal oedema in first postoperative day and only 20% patients had corneal stromal oedema. In Group B, 75% cases experienced no corneal stromal oedema in their first day of postoperative follow up and only 25% had corneal stromal oedema. In both Groups all the cases have clear cornea at the end of 6th week of their postoperative follow up visit.

The postoperative evaluation of the cases was also determined by the presence of cells in the anterior chamber (Table 4). In Group A, 30% cases showed no cells and 70% showed some cells in the anterior chamber in their first postoperative day. In Group B, 20% cases had no cells but 80% showed some cells in the anterior chamber on day one after surgery. But in both groups all the cases were free of anterior chamber cells at the completion of their last follow up visit.

The other yard of comparison of both groups was grading of anterior chamber flare in postoperative follow up (Table 5). In Group A, 50% cases showed no flare in the anterior chamber on the 1st postoperative day and only 5% had intense fibrinous exudates in anterior chamber. In Group B, 40% cases showed no flare in the anterior chamber. In Group B, it was noted that there was not even a single case having intense fibrinous exudates in the anterior chamber in their follow up visits. But in both groups, the anterior chamber was quiet in all
### Table 1. Pain at the completion of surgery

<table>
<thead>
<tr>
<th>Patients</th>
<th>No Pain- n (%)</th>
<th>Mild- n (%)</th>
<th>Moderate- n (%)</th>
<th>Severe- n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>0 (0.0%)</td>
<td>6 (30%)</td>
<td>9 (45%)</td>
<td>5 (25%)</td>
</tr>
<tr>
<td>Group B</td>
<td>16 (80%)</td>
<td>3 (15%)</td>
<td>1 (5%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

Group A = Patients receiving steroid-antibiotic combinations subconjunctival injection.  
Group B = Patients receiving steroid-antibiotic combinations eye ointment.  
n = Number of patients       % = Percentage of patients

### Table 2. Postoperative conjunctival reaction

<table>
<thead>
<tr>
<th>Group A</th>
<th>Reaction</th>
<th>Day 1- n (%)</th>
<th>1st week- n (%)</th>
<th>2nd week- n (%)</th>
<th>4th week- n (%)</th>
<th>6th week- n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>0 (0.0%)</td>
<td>10 (50%)</td>
<td>14 (70%)</td>
<td>16 (80%)</td>
<td>19 (95%)</td>
</tr>
<tr>
<td></td>
<td>Diffuse &amp; mild</td>
<td>11 (55%)</td>
<td>4 (20%)</td>
<td>3 (15%)</td>
<td>2 (10%)</td>
<td>1 (5%)</td>
</tr>
<tr>
<td></td>
<td>More intense subconjunctival haemorrhage.</td>
<td>5 (25%)</td>
<td>3 (15%)</td>
<td>1 (5%)</td>
<td>2 (10%)</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

Group A = Patients receiving steroid-antibiotic combinations subconjunctival injection.  
n = Number of patients       % = Percentage of patients

### Table 3. Postoperative corneal oedema

<table>
<thead>
<tr>
<th>Group A</th>
<th>Oedema</th>
<th>Day 1- n (%)</th>
<th>1st week- n (%)</th>
<th>2nd week- n (%)</th>
<th>4th week- n (%)</th>
<th>6th week- n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>16 (80%)</td>
<td>16 (80%)</td>
<td>17 (85%)</td>
<td>19 (95%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td></td>
<td>Mild stromal oedema with visible iris details</td>
<td>2 (10%)</td>
<td>2 (10%)</td>
<td>2 (10%)</td>
<td>1 (5%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td></td>
<td>Moderate stromal oedema with less visible iris details</td>
<td>2 (10%)</td>
<td>2 (10%)</td>
<td>1 (5%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

Group A = Patients receiving steroid-antibiotic combinations subconjunctival injection.  
n = Number of patients       % = Percentage of patients

<table>
<thead>
<tr>
<th>Group B</th>
<th>Oedema</th>
<th>Day 1- n (%)</th>
<th>1st week- n (%)</th>
<th>2nd week- n (%)</th>
<th>4th week- n (%)</th>
<th>6th week- n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>15 (75%)</td>
<td>16 (80%)</td>
<td>17 (85%)</td>
<td>20 (100%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td></td>
<td>Mild stromal oedema with visible iris details</td>
<td>3 (15%)</td>
<td>3 (15%)</td>
<td>2 (10%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td></td>
<td>Moderate stromal oedema with less visible iris details</td>
<td>2 (10%)</td>
<td>1 (5%)</td>
<td>1 (5%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

Group A = Patients receiving steroid-antibiotic combinations subconjunctival injection.  
n = Number of patients       % = Percentage of patients
Table 4. Grading of anterior chamber cells

<table>
<thead>
<tr>
<th>Grading</th>
<th>Day 1-n (%)</th>
<th>1st week-n (%)</th>
<th>2nd week-n (%)</th>
<th>4th week-n (%)</th>
<th>6th week-n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (No cells)</td>
<td>6 (30%)</td>
<td>13 (65%)</td>
<td>14 (70%)</td>
<td>18 (90%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>1+ (1-5 cells)</td>
<td>10 (50%)</td>
<td>5 (25%)</td>
<td>5 (25%)</td>
<td>2 (10%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>2+ (6-10 cells)</td>
<td>2 (10%)</td>
<td>1 (5%)</td>
<td>1 (5%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>3+ (11-15 cells)</td>
<td>1 (5%)</td>
<td>1 (5%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>4+ (&gt;15 cells)</td>
<td>1 (5%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

Group A = Patients receiving steroid-antibiotic combinations subconjunctival injection.
Group B = Patients receiving steroid-antibiotic combinations eye ointment.
n = Number of patients       % = Percentage of patients

Table 5. Grading of anterior chamber flare

<table>
<thead>
<tr>
<th>Grading</th>
<th>Day 1-n (%)</th>
<th>1st week-n (%)</th>
<th>2nd week-n (%)</th>
<th>4th week-n (%)</th>
<th>6th week-n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (No flare)</td>
<td>10 (50%)</td>
<td>13 (65%)</td>
<td>15 (75%)</td>
<td>19 (95%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>1+ (Faint)</td>
<td>3 (15%)</td>
<td>2 (10%)</td>
<td>2 (10%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>2+ (Moderate, iris details clear)</td>
<td>2 (10%)</td>
<td>3 (15%)</td>
<td>3 (15%)</td>
<td>1 (5%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>3+ (Marked, iris details hazy)</td>
<td>4 (20%)</td>
<td>2 (10%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>4+ (Intense, fibrinous exudate)</td>
<td>1 (5%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

Group A = Patients receiving steroid-antibiotic combinations subconjunctival injection.
Group B = Patients receiving steroid-antibiotic combinations eye ointment.
n = Number of patients       % = Percentage of patients
and flare after 6 weeks of postoperative treatment. Table 1 groups showed that there is no anterior chamber cells early postoperative follow-up visits. But the cases of both relatively less in Group A as compared to Group B in (Table 1). The flare and cells in the anterior chamber are statistically significant difference between the Groups.4

suspension preparation. They found that there was no subjective symptoms was done. They did the comparison of topical steroid use in the form of eye gel and ocular discomfort, the assessment of objective and presence of cells in the anterior chamber. If there was surgery are reduction in anterior chamber flare and keratopathy is also evaluated on day one and remaining period of postoperative care.3In our study, it is noted that ocular discomfort is more in Group A than in Group B cases. The rate of the striate keratopathy is also evaluated on day one and remaining period of postoperative care.4In our study, postoperatively there is no significant difference in corneal oedema in the cases of both groups.

The study conducted by Stuck HG and Bariszlovich A in Germany, revealed the criteria for evaluation of postoperative inflammation after cataract surgery. In our study 14 (70%) cases in Group A showed moderate to severe pain and in Group B, only 1(5%) case showed moderate pain at the completion of surgery. So the application of steroid-antibiotic combinations eye ointment is preferred than subconjunctival injection at the end of the surgery.

Prophylactic measures are adopted for the prevention of drastic postoperative complication like postoperative endophthalmitis. The Yemeni ophthalmologists used intraoperative subconjunctival gentamicin and postoperative topical antibiotic as prophylactic measure for the prevention of postoperative endophthalmitis. Gentamicin in combination with steroid eye drops, is effective like maxitrol eye drops for the control of postoperative endophthalmitis.1,2 We have also used the same treatment for patients undergoing cataract surgery and did not find any case of postoperative endophthalmitis. In our case series as the Table2 showed, postoperatively there is more intense conjunctival reaction and subconjunctival haemorrhage in Group A than in Group B cases. The rate of the striate keratopathy is also evaluated on day one and remaining period of postoperative care.4In our study, postoperatively there is no significant difference in corneal oedema in the cases of both groups.

The study conducted by Stuck HG and Bariszlovich A in Germany, revealed the criteria for evaluation of postoperative inflammation after cataract surgery are reduction in anterior chamber flare and presence of cells in the anterior chamber. If there was ocular discomfort, the assessment of objective and subjective symptoms was done. They did the comparison of topical steroid use in the form of eye gel and suspension preparation. They found that there was no statistically significant difference between the Groups.4

In our study, it is noted that ocular discomfort is more in Group A that is due to subconjunctiva injection (Table 1). The flare and cells in the anterior chamber are relatively less in Group A as compared to Group B in early postoperative follow-up visits. But the cases of both groups showed that there is no anterior chamber cells and flare after 6 weeks of postoperative treatment (Table 4&5).

Similarly, a clinical trial was conducted by Gayton JL to do the clinical comparison of two different prednisone formulations and found the same efficacy for the control of postoperative inflammation.5We used the steroids postoperatively by two different ways and determined the same efficacy in our cases.

A double masked placebo controlled study was also conducted in France, and Rimexolon 1% steroid was used to control the postoperative inflammation after cataract extraction. It was established the effective and safe steroid anti-inflammatory agent to control the postoperative inflammation.6 But sometimes, herpes simplex keratitis is developed in patients with no previous history of herpes infection.7 In our cases, we did not come across with this viral infection. Herpes infection erupts when the immunity of the patient is compromised.

The day after surgery visit is necessary to assess the postoperative inflammation that causes pain, decreased vision and patient anxiety.5,9 The main objective of the 1st day postoperative visit is to check for ocular hypertension. Rarely we can detect the wound leak, incorrect position of the intraocular lens implant, presence of irregular pupil, iris adherence to the wound, vitreous visible in anterior chamber, visible posterior capsule rent or cystoid macular oedema.8,10 Sometimes, there are other ocular diseases; like choroidal neovascularization scar, age related macular degeneration, advanced glaucoma or corneal opacity which can be cause of reduced best corrected visual acuity even after uneventful cataract surgery.

The importance of anti-inflammatory drugs for good outcomes of cataract surgery is already established. Laurell CG and Zetterstrom C compared the results of postoperative treatment with dexamethasone, diclofenac and placebo after cataract surgery and found the both drugs are equally effective in reducing postoperative inflammation.11 In another study, steroids are only used to control the postoperative inflammation in cataract surgery with intracameral triamcinolone acetamide 1mg and topical prednisolone 1% eye drops. It was observed in the study that there was no significant difference between the two groups for efficacy, safety and tolerance variable.12 The other parameter to assess the post inflammatory response of anti-inflammatory drug like steroid is, reduction in corneal oedema in cataract surgery. It is found that topical use of prednisolone eye drops is more effective than dexamethasone eye drops in reducing corneal oedema after cataract surgery.13

Rarely after cataract surgery, toxic anterior segment syndrome is developed. Use of topical steroid antibiotic combinations eye drops reduces the postoperative anterior chamber reaction but diffuse corneal oedema

Comparison of Eye Ointment & Subconjuctival Injection of Steroid-Antibiotic Combinations at the Completion of Cataract Surgery
persists that is feature of toxic anterior segment syndrome. In a study conducted by Jun EJ and Chung SK, the antiseptic solution used to soak surgical instruments before surgery was identified as the source of the problem.14 So mere assessment of the corneal oedema is not sufficient to determine the effect of topical use of steroid-antibiotic combination medication for control of postoperative inflammation after cataract surgery.

A study conducted in New Zealand documents the importance of use of injection of steroid-antibiotic combinations to control the infection and inflammation in cataract and refractive surgery.15 But in our study, it is found that there is no significant difference in both groups in postoperative inflammation after cataract surgery.

**CONCLUSION:**

The topical use of steroid antibiotic combinations eye ointment is preferred to steroid antibiotic combinations in the form of subconjunctival injection at the end of the cataract surgery.

**REFERENCES:**

INTRODUCTION
Consecutive exotropia develops as a result of over correction of esotropia. It has been reported in 5 to 25% of patients following surgical correction for esotropia. Probable factors for the development of post operative consecutive exotropia include, physical and mental retardation, presence of amblyopia, post operative limitation of adduction, high hypermetropia, absence of binocularity, early onset esotropia, esotropia surgery before 6 months of age, dissociated vertical deviation, A & V pattern, nystagmus, large medial rectus recession, surgery on 3 or 4 rectus muscles in one sitting and multiple previous ocular surgeries. Various surgical procedures that have been performed to correct consecutive exotropia include unilateral or bilateral lateral rectus recession, unilateral or bilateral medial rectus advancement with and without resection and a combination of these methods. In past, option of treating consecutive exotropia by unilateral lateral rectus recession combined with medial rectus resection or advancement has not been very popular. In one study majority of patients underwent lateral rectus recession combined with medial rectus resection to the original insertion.

In the present study the effectiveness of unilateral lateral rectus recession combined with medial rectus resection and advancement in treating post operative consecutive exotropia is evaluated

MATERIAL AND METHODS:
It is a retrospective study. Charts of those patients who underwent corrective surgery for consecutive exotropia were reviewed. All the patients had unilateral lateral rectus recession combined with medial rectus resection and advancement. Patients with consecutive exotropia due to slipped or lost medial rectus muscle, those with exotropia less than 20 prism diopeter, patients having neurological disorders such as epilepsy or cerebral palsy were excluded from the study. From the charts the following points were noted, presence of amblyopia, type of esotropia surgery, dissociated vertical deviation, A and V pattern, any vertical squint, limitation of adduction, angle of deviation and number of surgeries. Amblyopia was defined as a difference of two or more
lines between the best corrected visual acuity of two eyes on the snellen chart and was treated with patching whenever possible before performing surgery for consecutive exotropia.

Surgery for correction of consecutive exotropia was performed on one eye only and none of the patients had surgery on the other eye. Unilateral lateral rectus recession combined with resection of medial rectus of the same eye was performed as primary procedure. Advancement of the medial rectus was performed only if the desired amount of resection of the muscle was not possible due to a far posterior position of the previously recessed muscle. One mm of advancement was considered to correct exodeviation equivalent to that of 1 mm of resection of the medial rectus. The muscle was advanced equal to the amount of desired resection if it was not at all possible to resect the muscle. If only a partial resection of muscle was possible, it was performed and the partly resected muscle was advanced equal to the remaining amount of desired resection. Five patients had additional vertical transportation of the lateral and medial recti for the associated A-V pattern.

Patients were followed up for 6 months. Ocular alignment and status of adduction at the last follow up were recorded. We consider a successful postoperative result to be an alignment within 10 pd of orthophoria. Data was analyzed using SPSS version 17.

RESULTS

Charts of patients, who had surgical correction for consecutive exotropia, were reviewed. There were 51 patients with 21 males and 30 females, ages ranged from 3 to 16 years. The other characteristics which were noted, showed that 28 patients (55%) had limitation of adduction, 18 patients (35%) had amblyopia, 9 patients (17.6%) had DVD or vertical tropia, and 8 patients (15.7%) had A-V pattern. The mean preoperative exodeviation was 45.5 PD (range 20-78 PD). Forced duction test was performed in 13 patients. It was positive in 8 patients and negative in 13 patients. Ten out of 18 patients with amblyopia were below the age of 10 years and they underwent amblyopia therapy with patching before surgery for consecutive exotropia. Forty two (82.4%) out of 51 patients achieved a successful postoperative result, 8 (15.7%) had residual exotropia and one (1.96%) had consecutive esotropia at the last follow up. Ocular alignment after various types of surgery for consecutive exotropia is presented in the table. Patients treated with unilateral recession and medial rectus resection had a successful alignment in 78.6% of them. There was no statistically significant difference in the successful result in patient who underwent LR recession and MR resection compared to those who underwent LR recession and MR resection combined with advancement. Patients treated with LR recession and MR advancement had a significantly higher successful outcome compared to those treated with other two modalities.

DISCUSSION

Surgical overcorrection of esotropia is called consecutive exotropia and may occur in the hands of any ophthalmologist. It needs to be corrected both for functional and cosmetic purposes. In the past many different procedures have been tried by ophthalmologists to correct consecutive exotropia. They include unilateral or bilateral lateral rectus recession, unilateral or bilateral medial rectus advancement with or without resection or any combination of these procedures. These procedures have resulted in a successful alignment (a residual deviation of 10 PD or less) in 65% to 85% of the patients. Previously, unilateral lateral rectus recession combined with medial rectus resection and/or advancement for treating consecutive exotropia has not enthusiastically been evaluated but in a recently reported study by Donaldson et al, satisfactory alignment was achieved in 69% of patients. They, however, performed unilateral lateral rectus recession with medial rectus resection without advancement in a few patients only. In 1961 Cooper et al suggested that overcorrections after strabismus surgery should be freshly evaluated from the start and the surgical plan should be based on the characteristics of the new postoperative deviation rather than undoing what was done. As our patients had basic exotropia, we planned to perform unilateral lateral rectus recession with medial rectus resection on the exotropic eye. We were able to perform the desired amount of resection of the medial rectus in 78% of patients. In the remaining g

<table>
<thead>
<tr>
<th>Type of surgery</th>
<th>No of patients</th>
<th>Within 10 PD</th>
<th>Residual XT</th>
<th>Consecutive ET</th>
</tr>
</thead>
<tbody>
<tr>
<td>LR recession and MR resection</td>
<td>28</td>
<td>22 (78%)</td>
<td>5 (17.8%)</td>
<td>1 (3.6%)</td>
</tr>
<tr>
<td>LR recession and MR resection and advancement</td>
<td>18</td>
<td>15 (83%)</td>
<td>3 (16.7%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>LR recession and MR advancement</td>
<td>5</td>
<td>5 (100%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

LR= lateral rectus, MR= medial rectus, XT= exotropia, ET=esotropia
patients, we had to perform lateral rectus recession and medial rectus advancement with or without resection. Miltreman and Folk suggested advancement of the medial rectus muscle for patients with limited adduction. Ohtsuki and associates however performed advancement of the medial rectus in all patients irrespective of the status of adduction\textsuperscript{13}. Our decision to perform advancement of medial rectus was not based on the presence of limitation of adduction. Rather we performed advancement of medial rectus in those patients only where the desired amount of resection was not possible due to a far posterior position of the muscle because of previous recession. These observations are similar to those made by Nabie et al\textsuperscript{14}. Amblyopia has been considered to be a contributing factor in the development of consecutive exotropia in 20\% to 53\% of the patients\textsuperscript{8,10}. Donaldson and associates, however did not find any influence of amblyopia on successful result\textsuperscript{11}. 35\% of our patients had amblyopia but it had no influence on our postoperative ocular alignment.

CONCLUSION

Unilateral lateral rectus recession combined with medial rectus resection and/or advancement is effective in treating consecutive exotropia and can safely be selected as first choice option of treatment for such patients.

REFERENCES:

2. Von Noorden GK, Campos EC. Binocular vision and ocular motility: theory and management of strabismus. 6\textsuperscript{th} ed. St Louis: Mosby;2002.
Comparison of the Efficacy of Ketorolac Tromethamine & Dexamethasone in reducing Postoperative Inflammation after Phacoemulsification & IOL Implantation

Mubashir Rehman¹, Mumtaz Alam², Zeeshan Tahir³, Ibrar Hussain⁴

ABSTRACT

Objectives: To compare the efficacy of Ketorolac tromethamine and Dexamethasone in reducing postoperative inflammation after phacoemulsification and intraocular lens implantation.

Study design: It was a randomized controlled trial.

Place and duration of study: The study was conducted in Eye IB Unit Khyber Teaching Hospital Peshawar, over a period of 15 months i.e. from March 2009 to June 2010.

Patients and Methods: The study was carried out on 118 patients who had undergone phacoemulsification with intraocular lens implantation. They were divided into two groups i.e. group IA and group IB. Group IA received dexamethasone (0.1%) drops and group IB received ketorolac tromethamine (0.5%) drops. They were followed up at 1st, 7th and 30th postoperative days. At each follow up, grades of anterior chamber (AC) cells and grades of aqueous flare were examined on slit lamp and intraocular pressure (IOP) was measured with Goldmann applanation tonometer.

Results: Ketorolac tromethamine was equally effective to dexamethasone in reducing anterior chamber cells (P value = 0.61) and flare after phacoemulsification. Patients treated with dexamethasone showed increase of intraocular pressure in six cases compared to normal intraocular pressure in all cases treated with ketorolac tromethamine (p value = 0.001).

Conclusion: Ketorolac tromethamine is a safe and effective alternative to dexamethasone for control of post operative inflammation after uncomplicated phacoemulsification.

Key words: Postoperative intraocular inflammation, Dexamethasone, NSAIDs, Ketorolac tromethamine

INTRODUCTION

Cataract is the world’s leading cause of avoidable blindness affecting an estimate of 20 million people and this figure is expected to increase to 50 million by the year 2020.¹ Cataract surgery is the most common refractive surgery performed on aging individuals.² Surgical trauma triggers the arachidonic acid cascade which in turn generates prostaglandins (PG) by activation of cyclo-oxygenase 1 and 2 (COX 1 and 2). Phospholipids in the cell membrane are the substrate for phospholipase A to generate arachidonic acid from which a number of prostaglandins and leukotrienes are produced. Prostaglandins are mediators of inflammation.³ Prostaglandin synthesis can be reduced by inhibiting phospholipase A₂ or by inhibiting the COX enzyme.

Topical corticosteroids effectively control ocular inflammation.⁴ They interfere with the activity of phospholipase A₂, thereby inhibiting the release of arachidonic acid and the production of all arachidonic acid metabolites, including prostaglandins. In contrast, nonsteroidal anti-inflammatory drugs (NSAIDs) inhibit the synthesis of prostaglandins by interfering with the activity of COX-1 and COX-2. Corticosteroids are considered the gold standard for the treatment of ocular inflammation, but are associated with a number of adverse events, including cataract formation, a rise in IOP and increased susceptibility to microbial infections.⁵,⁶ A possible safer alternative to corticosteroids for the treatment of ocular inflammation are the NSAIDs. Ophthalmic NSAIDs prevent intraoperative miosis during cataract surgery, controls postoperative inflammation, reduces pain and discomfort after surgery, and prevent or control cystoid macular edema (CME) after cataract surgery.⁷,⁸

The beneficial effects of NSAIDs over corticosteroids include stabilization of IOP, provision of analgesia and reduction of the risk of secondary infections.⁹,¹⁰ The purpose of our study was to compare the efficacy of ketorolac tromethamine (a NSAID) and dexamethasone (a corticosteroid) in reducing postoperative inflammation after phacoemulsification and intraocular lens implantation.
OPERATIONAL DEFINITIONS
Post operative inflammation:
Intraocular inflammation occurs due to tissue damage during surgery and is measured in terms of grades of anterior chamber (AC) cells and grades of aqueous flare on slit lamp examination with a 2 mm long and 1 mm wide slit beam with maximal light intensity (Table I).

Table I: Grading of AC cells and aqueous flare

<table>
<thead>
<tr>
<th>Grade of AC cells</th>
<th>Grades of Aqueous flare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cells in field</td>
<td>Description</td>
</tr>
<tr>
<td>0</td>
<td>0 Nil</td>
</tr>
<tr>
<td>0.5</td>
<td>1 Faint</td>
</tr>
<tr>
<td>1</td>
<td>2 Moderate (iris and lens detail clear)</td>
</tr>
<tr>
<td>2</td>
<td>3 Marked (iris and lens detail hazy)</td>
</tr>
<tr>
<td>3</td>
<td>4 Severe (Fibrinous exudate)</td>
</tr>
<tr>
<td>4</td>
<td>&gt; 50</td>
</tr>
</tbody>
</table>

MATERIAL AND METHODS
It was a randomized controlled trial, conducted at Eye “B” Unit Khyber Teaching Hospital Peshawar, from March 2009 to June 2010. Sample size was 118 patients (with 59 patients in each group). Sample size was calculated using Epi info 6 software with these parameters: Subjects ratio on each group: 1:1, Success difference of the two groups: 20 %, power of the study is 80 %, for a risk of 5 %. Patients who had undergone uneventful phacoemulsification with acrylic intraocular lens implantation by same surgeon were included in the study. Patients who had complicated cataracts including cataracts associated with uveitis, pigment-dispersion syndrome, pseudoexfoliation and lens induced glaucoma were excluded from the study. Written informed consent was taken from each patient preoperatively.

Patients were either placed in group “A” and started on dexamethasone (0.1%) eye drops four times per day, or in group “B” and started on ketorolac tromethamine (0.5%) eye drops four times per day. Both groups were also given tobramycin (0.3%) eye drops four times per day. Ocular examination was done at 1st, 7th and 30th postoperative day. At each visit grades of AC cells and aqueous flare were examined with slit lamp and IOP was measured with Goldmann applanation tonometer. SPSS 10.0 was used for data analysis. Mean, standard deviation and range were calculated for quantitative variables (age and IOP) and percentage was calculated for qualitative variables (gender, grades of AC cells and grades of aqueous flare). P-Value was generated using student t-test for comparison of mean and chi-square test for comparison of percentages. P-Value <0.05 was considered statistically significant.

RESULTS
There were 59 patients in each group. The mean age in group “A” was 61.45 ± 6.22 years and in group “B” was 62.50 ± 5.51 years (P value = 0.33). The male to female ratio in group A was 1.56 : 1 and group “B” was 1.26 : 1 (P value = 0.70). On first post-operative day before starting the topical drops, majority of the patients in both groups had moderate degree of inflammation in the anterior chamber as shown in table II (P value = 0.69). Flare in the anterior chamber was faint in a few cases in both groups as shown in the table III (P value = 0.69). IOP on first post-operative day in group “A” ranged between 15.00 to 17.00 mmHg with a mean of 15.93 ± 0.58 and in group “B” ranged between 15.00 to 18.00 mmHg with a mean of 15.71 ± 0.69 (P value = 0.06).

On 7th post-operative day intraocular inflammation was much reduced in both groups, in terms of AC cells (P value = 0.58) and flare (P value = 0.58). IOP on 7th post-operative day in group “A” ranged between 15.00 to 18.00 mmHg with mean of 15.89 ± 0.82 and in group “B” ranged between 14.00 to 18.00 mmHg with a mean of 15.91 ± 0.81 (P value = 0.69). Flare got resolved in all cases from both groups except in 1 patient in group “B”. On 30th post-operative day, in group “A” only 8 patients had 1-5 cells in the AC, while the remaining had < 1 cell. In group “B” only 11 patients had 1-5 cells in the AC, while the remaining had < 1 cell (P value = 0.61). Flare got resolved in all cases from both groups except in 1 patient in group “B”.

Table II: AC cells on 1st, 7th and 30th post-operative day

<table>
<thead>
<tr>
<th>Anterior chamber cells</th>
<th>1st post-op day</th>
<th>7th post-op day</th>
<th>30th post-op day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cells in AC field</td>
<td>1-5</td>
<td>6-15</td>
<td>16-25</td>
</tr>
<tr>
<td>Group A</td>
<td>51 (86.44%)</td>
<td>53 (89.83%)</td>
<td>50 (84.74%)</td>
</tr>
<tr>
<td>Group B</td>
<td>48 (81.35%)</td>
<td>50 (84.74%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11 (18.64%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 (6.77%)</td>
<td>03 (5.08%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>56 (94.91%)</td>
<td>50 (84.74%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>04 (6.77%)</td>
<td>09 (15.25%)</td>
</tr>
</tbody>
</table>

Ophthalmology Update Vol. 9. No. 4, October-December 2011 79
cases in both groups. IOP on 30th post-operative day in group “A” ranged between 15.00 to 24.00 mmHg with a mean of 17.08 ± 2.68 and in group “B” ranged between 15.00 to 18.00 mmHg with a mean of 15.86 ± 0.68. In group “A” in 6 patients IOP got increased above 21 mmHg, out of which 2 patients had IOP of 22 mmHg, 3 had IOP of 23 mmHg and 1 had IOP of 24 mmHg. In group “B” IOP remained within the normal limit in all cases (Table IV) (P value = 0.001).

DISCUSSION

Cataract surgery always causes a certain degree of post-surgical ocular inflammation, which is usually treated with eye drops containing a combination of anti-inflammatory and anti-infective drugs. Although inflammation after phacoemulsification is usually self-limited; the aim of anti-inflammatory therapy is to reduce intraocular inflammation as it can prolong patient recovery, raise IOP, and increase the likelihood of cystoid macular edema (CME), synechiae formation, posterior capsule opacification (PCO), and secondary glaucoma.

Steroidal ophthalmic solutions are routinely administered for approximately 1 month after uneventful cataract surgery in order to reduce inflammatory reaction. However they may predispose to infection, induce secondary glaucoma and delay epithelial wound healing. Topical NSAIDs secured an important role in the treatment of ocular inflammatory disease. NSAIDs also exert anti-inflammatory activity by mechanisms unrelated to COX inhibition through suppression of polymorphonuclear (PMN) locomotion and chemotaxis as well as by decreasing expression of inflammatory cytokines and mast cell degranulation. Topical NSAIDs offer comparable efficacy to corticosteroids in the reduction of postoperative inflammation and offer lower risks of adverse events.

We compared ketorolac tromethamine (a NSAID) to dexamethasone (a glucocorticoid) in the treatment of postoperative inflammation after phacoemulsification in otherwise normal eyes. The efficacy variables of our study included signs of the anterior segment inflammation, primarily cells and flare in the anterior chamber as observed by slit lamp biomicroscopy and measurement of intraocular pressure. Our study included 59 patients in each group. All the cases underwent uneventful phacoemulsification by same surgeon and majority of them had equal degree of inflammation on 1st postoperative day before starting the topical eye drops. IOP in both groups was within normal limits on first post-operative day. On 7th postoperative day, in both groups, inflammation was much reduced and IOP remained within the normal limit in all cases. The final analysis was done on 30th post-operative day when no statistically significant difference was noted in control of inflammation in the form of anterior chamber cells (P value = 0.61) and flare in both groups. Majority of cases in both groups had only mild degree of inflammation i.e. in group “A” 51 (86.44 %) patients and in group “B” 48 (81.35%) patients had less than 1 cells while 8 (13.55 %) in group “A” and 11 (18.64 %) in group “B” had 1-5 cells. Flare got resolved in all the cases in both groups. Our results are comparable to the results of Ostrov CS et al and Flach AJ et al. IOP above 21mm Hg was noted in 6 patients in group “A” at 30th post-operative day while no patient in group “B” had IOP above the normal limit of 21 mm Hg (P value = 0.001); this is in accordance with study conducted by Holland EJ and his colleagues.

We measured flare in the anterior chamber on slit lamp biomicroscopy while in most international studies it was measured by fluorophotometry. This was due to non-availability of fluorophotometer in our hospital. Flach AJ and Kraff MC showed in their study that ketorolac tromethamine was more effective than dexamethasone in facilitating re-establishment of the blood aqueous barrier after surgery, as measured by fluorophotometry, and was equal to Dexamethasone solution as observed by slit lamp observations. In our study all the patients had uncomplicated surgery and majority of cases had moderate degree of post-operative inflammation. From our study we cannot conclude
clearly whether ketorolac tromethamine is equally effective to dexamethasone in controlling severe anterior chamber inflammation or in patients who have complicated cataract surgery. However literature is available which showed that Ketorolac tromethamine provides substantial anti-inflammatory activity in the treatment of moderate to severe anterior segment inflammation after cataract surgery.  

CONCLUSION

Ketorolac tromethamine is a safe alternative to dexamethasone for control of post-operative inflammation after uncomplicated phacoemulsiﬁcation and intra ocular lens implantation as it has same efficacy and is not associated with side effects that may occur with the use of dexamethasone. Further studies are recommended to compare other NSAIDs e.g. flurbiprofen and diclofenac sodium with other corticosteroids e.g. prednisolone acetate and rimexolone to find out most effective and a safe drug.

REFERENCES

Results and Complications of External Dacryocystorhinostomy at Tertiary Referral Centre

Suhail Mushtaq Boobak, FCPS, FRCS*

ABSTRACT
Purpose: To determine the surgical outcome and complications of external dacryocystorhinostomy at a teaching hospital in Sargodha.

Materials and Methods: The prospective hospital based study was conducted at Divisional Headquarters Teaching Hospital Sargodha/Sargodha Medical College. 15 cases were included who had obstruction at the level of lacrimal sac or below in the nasolacrimal duct. The patients between the age of 20-60 years without lacrimal sac fistula, nasal polyps and deflected nasal septum were included.
The external dacryocystorhinostomy (DCR) was performed both under local and general anaesthesia. Lacrimal sac intubation was also done in two cases. The postoperative follow up was scheduled for 6 months. The success of the procedure was evaluated by syringing the lacrimal drainage system, height of the tear meniscus < 2 mm and the resolution of the symptoms of the patients. The potential complications were also recorded during the follow up period.

Results: There were 9 (60%) female and 6 (40%) male patients. The range of the age was 20-60 years. 2 (13.33%) patients were operated under local anaesthesia and 13 (86.66%) patients were operated under general anaesthesia. 2 (13.33%) patients were intubated and the other 13 (86.66%) patients were operated without intubation. We adopted the external dacryocystorhinostomy surgical approach. The complications like; bleeding in 2 (13.33%) patients and the damage to the nasal mucosa in 1 (6.66%) patient occurred during surgery. During postoperative care, it was noticed periorbital ecchymosis in 1 (6.66%) case and mild hypertrophic scar of the skin at incision site in 1 (6.66%) case. The overall success rate was 86.66% and failure rate was 13.33%.

Conclusion: External dacryocystorhinostomy is cost effective and has higher postoperative success with a low complication rate procedure.

INTRODUCTION:
The obstructed nasolacrimal duct results in watering of the eye and sometimes pus discharge which is due to chronic dacryocystitis. The external dacryocystorhinostomy (DCR) is the gold standard to relieve the symptom of epiphora in the patients of chronic dacryocystitis. The procedure gained popularity because of its efficacy, low rate of complications and the learning curve is not steep. Toti was the first who described the technique of external DCR in 1904. Dupuy-Dutemps and Baerget further modified the technique by describing the modern external flap DCR technique. Since then DCR is considered a reliable operation for the obstruction beyond the common canalicular opening.

Numerous modifications in the original DCR procedure have been introduced over the years to have a better surgical outcome without the alteration of its basic concept. But the external DCR is an effective surgical treatment for nasolacrimal obstruction and have a success rate more than 90%.

MATERIALS AND METHODS:
This prospective hospital based study was conducted in the Department of Ophthalmology, Divisional Headquarters Teaching Hospital Sargodha from January 2008 to December 2009. This study included 15 patients complaining of epiphora that was due to obstruction of lacrimal sac or nasolacrimal duct. In this study, the results of external DCR were evaluated and probable complications of this procedure were also investigated. The inclusion criteria were, the obstruction at the level of lacrimal sac or below in the nasolacrimal duct and the patients between the age of 20-60 years. The exclusion criteria were, the patients below 20 or above 60 years of age, any case of chronic dacrocystitis with lacrimal sac fistula, the patients with nasal polyps and deflected nasal septum. The patients with cardiac disease were also excluded from the study.

The selected patients were examined thoroughly in the out patient department and regurgitation test was performed in each case. All the patients were prescribed topical antibiotic, ofloxacin 0.3%, one drop 4 times a
day for one week. Then the probing and syringing with normal saline was performed in each case to assure the level of obstruction of the lacrimal drainage system. The patients were operated both under local and hypotensive general anaesthesia. To constrict the blood vessels of nasal mucosa and anaesthetize it, 2% lignocaine with 1:100,000 adrenaline wetted ribbon gauze was used for ipsilateral nasal cavity packing. 2% lignocaine with 1:100,000 adrenaline was used for local anaesthesia to block the supratrochlear, infratrochlear and infraorbital nerve. The site of the skin incision was also infiltrated with the same concentration of the lignocaine and adrenaline to avoid the bleeding.

A curved 11mm skin incision was given 10 mm medial to the medial canthus, avoiding the angular vein. The blunt dissection was done to separate the orbicularis muscle and expose the periostium overlying the anterior lacrimal crest. Then the periostium was reflected from the lacrimal sac area. The hemostasis was assured throughout the procedure by applying wet field cautery and ribbon gauze soaked with 2% lignocaine and 1:100,000 adrenaline.

The lacrimal sac is reflected laterally from the lacrimal fossa. The 12x12mm osteotomy was created by removing the bone in lacrimal fossa and anterior lacrimal crest with the help of bone punch. A probe was passed in the lacrimal sac through the lower canaliculus and the sac was incised. Then the anterior and posterior flaps of lacrimal sac and exposed nasal mucosa in the middle meatus were created. The posterior flaps were trimmed and anterior flaps were sutured with 6-0 vicryl suture. Orbicularis muscle was approximated by interrupted 5-0 vicryl suture and the skin wound was closed with continuous 6-0 vicryl suture.

In the patients, where the nasal mucosa was grossly injured during creating osteotomy and sac was found fibrosed, the lacrimal silicone intubation was performed through the DCR site. The average operation time was 45 minutes. Postoperatively, each patient was given broad spectrum antibiotics and analgesics systemically for 10 days and topical steroid antibiotic combinations for 4 weeks. The patients without lacrimal silicone intubation were reviewed after 3 days of operation for syringing. The patients with lacrimal silicone intubation were followed up accordingly and the lacrimal tube was removed after the completion of 6th month of the surgery. We passed the silicone tube in 2 cases who were young in the age range of 20-30 years and the lacrimal sac was found fibrosed during surgery and the nasal mucosa was also injured during creating osteotomy. The follow up examination was scheduled on 1st, 3rd and 14th postoperative day and after 1,2 and 6 months from the date of the surgery. The patient’s age, gender, sex, success rate and potential complications were recorded. The criteria for the success was absence of epiphora and patency of lacrimal drainage passages on syringing.

RESULTS:

In this hospital-based prospective study, there were total 15 patients. Gender distribution (Fig.1) showed there were 9(60%) female and 6(40%) male patients.

The age wise distribution (Table 1) showed 8 (53.33%) patients were in age ranging from 41—50 years and the maximum cases fell in this age range. Mostly the cases were operated under general anaesthesia and only 2(13.33%) cases were operated under local anaesthesia (Table 2). We had also faced certain complications during surgery and postoperatively.

The main problem during surgery was bleeding (Table 3) but it was controlled by applying cotton swabs soaked with 2% lignocaine and 1:100,000 adrenaline mixture in the operation site and by cauterizing the bleeding points with wet-field cautery.

During postoperative visits, 1(6.66%) patient...
Table 3. Complications

<table>
<thead>
<tr>
<th>Complications</th>
<th>n</th>
<th>%</th>
<th>Complications</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleeding</td>
<td>2</td>
<td>13.33</td>
<td>Periorbital ecchymosis</td>
<td>1</td>
<td>6.66</td>
</tr>
<tr>
<td>Damage to nasal mucosa</td>
<td>1</td>
<td>6.66</td>
<td>Mild hyertrophic scar of skin</td>
<td>1</td>
<td>6.66</td>
</tr>
</tbody>
</table>

n = Number of cases  % = Percentage

showed periorbital ecchymosis that disappeared within one week of postoperative period. Mild hypertrophic scar developed in 1(6.66%) patient that remained throughout postoperative period and 1(6.66%) case had damage to the nasal mucosa (Table 3). For the success of the DCR, the height of the meniscus and patency of the lacrimal drainage system was evaluated. Amongst our cases, 2(13.33%) patients had ≥ 2 mm tear meniscus and 13 (86.66%) cases had < 2 mm tear meniscus (Table 4).

On doing syringing of the lacrimal drainage system on 3rd postoperative day, 13 (86.66%) patients showed patency and only in 2 (13.33%) cases there was no patency of the lacrimal drainage system (Table 5). So we had 86.66% success in our case series.

DISCUSSION:

External dacryocystorhinostomy (DCR) is highly successful procedure in managing epiphora due to obstruction at the level of lacrimal sac or below in the nasolacrimal duct. However it is not technically easy and requires considerable experience for mastering this procedure. The atraumatic handling of the soft tissue, careful dissection to expose the lacrimal sac, proper size and location of the osteotomy with smooth edges followed by nice suturing of the mucosal flaps are very important for the success of the surgery. The intraoperative complications like; haemorrhage, laceration of nasal mucosa and the postoperative complications like periorbital ecchymosis and mild hypertrophic scar were noted in our study. These complications were also noted in other studies. The surgical success is defined by patient’s the resolution of the symptoms with patency of lacrimal drainage system on irrigation. The external DCR is the gold standard to relieve the symptom of epiphora due to chronic dacryocystitis and nasolacrimal duct obstruction. The reported success rate in this procedure varies between 85% to 99%. We have achieved 86.66% success in our cases that is relatively low than other studies. In our cases, we got the non patency of the lacrimal drainage system in 2 (13.33%) cases. In these patients, we experienced more bleeding and damage to the nasal mucosa during surgery. In postoperative follow up, we have noticed the failure was due to fibrosis of the rhinostomy site. In some cases failure of this procedure was also documented by Konuk, Kurtulmusoglu, Knatra and Unal.

To improve the results there is need to do meticulous handling of the soft tissue, assuring the hemostasis, proper site and size of the osteotomy and at least suturing of the anterior flaps of the lacrimal sac and the nasal mucosa. We did all this to have the good results. Some surgeons only stitch the anterior mucosal flaps and trim the posterior flaps. But the others also suture the posterior mucosal flaps as well. A study conducted in Sydney Eye Hospital reveals that there was no statistically significant difference in outcome between patients who had both anterior and posterior flaps sutured, compared to those who had anterior flaps sutured only. A similar study was carried out in Turkey by Serin D and his colleagues but they had also the same opinion that double flap anastomosis had no advantage over DCR with anterior flaps sutured only.

The external DCR with large osteotomy achieved a success rate up to 94% in cases of posttraumatic dacrocystenosis. We have operated a case of chronic dacryocystitis preceded by trauma, and created the osteotomy relatively larger and got good results. In our study, we have found good results in two cases with silicone intubation. These cases were young and have chronic dacryocystitis with fibrosis of lacrimal sac. A study conducted by Kacaniku G and Spanhiu K at Kosovina also reveals higher success rate in DCR with silicone intubation. Sometimes the few complications like; prolapsed granuloma formation and lacrimal puncta adhesion may develop. We have not experienced any of these complications in our cases of intubation. But the success rate with external DCR associated with silicone intubation is higher.

The DCR operation can be performed both in general anaesthesia and local anaesthesia. We have
operated two patients in the age range of 51-60 years under local anaesthesia. We avoided to operate the young patients under local anaesthesia because they might experience pain during creating osteotomy. A study conducted in Serbia explains the unpleasant feeling of pain during creating osteotomy in DCR performing under local anaesthesia. But the DCR under local anaesthesia is minimal bleeding, which allows comfortable surgery. In our study, we have noticed bleeding in one case but that was operated under general anaesthesia. To reduce the bleeding during surgery, we have injected 2% lignocaine with 1:100,000 adrenaline in the operation site.

Endolaser DCR is another modality to deal with patients of chronic dacryocystitis and nasolacrimal duct obstruction. There are also additional adjuvants like; laser, use of mitomycin, fluorouracil or silicone intubation. The success of this procedure was defined as patent lacrimal drainage system on irrigation and absence of symptoms. We also have the same criteria as patent lacrimal drainage system on irrigation and absence of symptoms. We have intubated two cases in our series and remove the tubes for treating patients of chronic dacryocystitis. We have operated two patients in the age range of 51-60 years under local anaesthesia. We avoided to operate the young patients under local anaesthesia because they might experience pain during creating osteotomy. A study conducted in Serbia explains the unpleasant feeling of pain during creating osteotomy in DCR performing under local anaesthesia. But the DCR under local anaesthesia is minimal bleeding, which allows comfortable surgery. In our study, we have noticed bleeding in one case but that was operated under general anaesthesia. To reduce the bleeding during surgery, we have injected 2% lignocaine with 1:100,000 adrenaline in the operation site.

The success of the procedures, the external DCR and endolaser endoscopic DCR is compared in different studies. Some studies showed that the endonasal approach to DCR has benefits like; quicker than external DCR, preserving lacrimal pump system and leaving no surgical scar. In external DCR, scars are sometimes hypertrophic especially in young adults but scarring should not be main ground for deciding the approach to DCR surgery particularly in older patients. The scars become invisible or minimally visible after six months of surgery. The comparison of endolaser and external DCR is evaluated and it is concluded that the success rate of external DCR is higher. Even the external DCR without intubation is effective procedure for treating patients of chronic dacryocystitis. We have intubated two cases in our series and removed the tubes after six months of postoperative care and found successful surgical intervention.

The success of procedures, the external DCR and endolaser endoscopic DCR is evaluated and it is concluded that the success rate of external DCR is higher. The selective use of antibiotics, preoperatively and postoperatively, is very useful to prevent the soft tissue infection after DCR and ultimately the conjunctival flora normalize after few weeks of DCR surgery and as a result there is successful outcome of the surgery. Postoperatively, in all cases we prescribed the systemic antibiotics covering mostly Gram+ive and Gram-ive microorganisms for 10 days and advised topical and systemic antibiotics in selective cases preoperatively as well. The intention was to reduce the postoperative infection and inflammation to achieve the good results of external DCR.

CONCLUSION:

In experienced hands, external dacryocystorhinostomy is highly successful procedure with low complication rate for the treatment of obstruction at the level of lacrimal sac or below in the nasolacrimal duct.

REFERENCES:
Open Globe Eye Injuries in Blast Victims

Mumtaz Alam¹, Sher Akbar Khan² Akbar Khan³

ABSTRACT:
Objective: To assess the visual outcome of open globe eye injuries in blast victims.
Study design: Prospective study.
Place and duration of study: The study was conducted at the Department of Ophthalmology, Khyber Teaching Hospital and Iqbal Eye Clinic Peshawar, from March 2010 to July 2011.
Materials and methods: Detailed history was taken and ocular examination was done. Digital X-ray orbit and/or computed tomography (CT) were done to rule out intraocular foreign body (IOFB). Integrity of globe was restored, when needed. Evisceration was done when repair was not possible or the patient had endophthalmitis. Post-operatively complete ocular examination was done, including dilated fundus examination. Further treatment and follow up varied according to the type and extent of eye injury.
Results: Total number of patients was 53, including 52 males (98.11%) and 1 female (1.88%). Mean age of patients was 23.05 years. Ocular injury was unilateral in 39 patients (73.58%) and bilateral in 14 eyes (26.41%). 23 eyes (34.32%) had corneo-scleral perforation, 22 (32.83%) had corneal and 7 (10.44%) had scleral perforation; 15 eyes (22.38%) had sealed perforation. All the eye injuries were properly managed. Final best corrected visual acuity (BCVA) improved in 26 eyes (38.80%), remained unchanged in 38 eyes (56.71%) and worsened in 03 eyes (4.47%).
Conclusion: Visual prognosis of open globe injuries in blast victims is usually poor. The possible reasons for this are the severity of eye injuries and the delayed presentation to ophthalmologist
KEY WORDS: Ocular trauma, Bomb blast injury, Open globe injury.

INTRODUCTION:
Ocular injury is an important and potentially preventable cause of ocular morbidity.¹ Worldwide more than half a million blinding eye injuries occur every year. There are approximately 1.6 million people blinded from eye injuries, 2.3 million bilaterally visually impaired and 19 million with unilateral visual loss; thus ocular trauma is the commonest cause of unilateral blindness.²

Eye injuries can be broadly divided into two groups i.e. open globe (in which the eye wall has a full thickness wound) and closed globe (in which the eye wall does not have a full thickness wound). Open globe injuries are further divided into ruptured globe injuries (caused by a blunt object) and laceration (caused by a sharp object). Closed globe injuries are divided into contusion (in which there is no external wound) and lamellar laceration (in which there is partial thickness wound of eye wall).³ Etiologically ocular injuries can be classified into domestic, occupational, sports, road traffic accidents, iatrogenic, fights and assaults and war injuries.² However bomb blast and battlefield ocular injuries are becoming increasingly common in different parts of the world.⁵,⁶,⁷

Visual outcomes for patients with ocular trauma due to blast injuries vary, and prognosis depends upon the type of injury, mechanism and extent of damage sustained and the use of any protective devices. Open globe injuries have poor visual outcome as compared to closed globe injuries and usually requires urgent surgical intervention.⁸ The purpose of this study was to evaluate the visual outcome of open globe eye injuries in blast victims.

PATIENTS AND METHODS:
This was a prospective study conducted at Ophthalmology Department of Khyber Teaching Hospital and Iqbal Eye Clinic Peshawar, from March 2010 to July 2011. The study was done in collaboration with an organization which was working for people suffering from war injuries. All the patients had bomb blast or mine blast injuries. The patients were assessed by physician and surgeon and any serious injuries were properly managed. Patients were then referred to us for the management of ocular injuries. All eyes with open globe injuries (i.e. 67 eyes of 53 patients) were included in this study. Detailed history was taken and ocular examination was done. Injuries were divided into 3 groups i.e. zone I injuries (confined to the cornea), zone
II injuries (extending up to 5mm beyond the limbus) and zone III injuries (extending more than 5mm beyond the limbus). Digital X-ray orbit was done in all patients. In those with high suspicion of intraocular foreign body (IOFB), a CT orbit (2mm section) was done. Primary repair was done under general anesthesia (GA), in emergency, in those with corneal and/or scleral perforation. Evisceration was done in those with shattered globe (where repair was not possible) or if there was globe perforation with endophthalmitis. Post-operatively complete ocular examination was done, including dilated fundus examination. In those with poor or no view of fundus a B-scan was done. Subsequent management and follow up varied according to the type and extent of eye injury.

RESULTS:

Total number of patients was 53, including 52 males (98.11%) and 1 female (1.88%). Age was ranging from 5 to 60 years with a mean of 23.05 years. Ocular injury was unilateral in 39 patients (73.58%) and bilateral in 14 patients (26.41%). Of the 67 eyes, 25 (37.31%) had zone I injury, 6 (8.95%) had zone II injury and 36 (53.73%) had zone III injury. 52 eyes (77.61%) had globe perforation and 15 eyes (22.38%) had sealed perforation. The types of eye injuries noted in our patients are given in Table I. The treatment varied according to the type of injury. 08 eyes (11.94%) were treated medically and 59 eyes (88.05%) were treated surgically (Table II). Corneal/scleral repair was the most commonly performed surgery i.e. in 33 eyes (49.25%). Evisceration was done in 19 eyes (28.35%), in those with shattered globe (where repair was not possible) and with poor visual potential or if there was globe perforation with endophthalmitis. The type and number of surgeries are given in Table III. Vitreoretinal surgery was required in patients who had non-resolving vitreous hemorrhage, retinal detachment, posterior segment IOFB and in 2 eyes with endophthalmitis (Table IV). In addition, 360R argon laser was done in 14 eyes (20.89%), panretinal photocoagulation (PRP) was done in 1 eye (1.49%) and YAG laser capsulotomy was done in 2 eyes (2.98%). Final BCVA improved in 26 eyes (38.80%), remained unchanged in 38 eyes (56.71%) and worsened in 03 eyes (4.47%). The initial and final visual acuities are given in Table V.

DISCUSSION:

Trauma is a common cause of ocular morbidity. Ocular trauma can cause permanent visual or cosmetic defect in the affected individuals and is a major cause of monocular blindness and impaired vision throughout the world. In the developing countries like Pakistan, eye injuries are not only more common but also more severe in nature. Bomb blasts and mine blasts are becoming increasingly common causes of ocular injuries, especially in this part of the world. In blast victims, open globe injuries are more common. In the study of Mader TH et al 63.7% of all ocular injuries were open globe. These eyes usually require primary repair of the wound, which should be done as early as possible. Majority of blast-related eye injuries are associated with other life-threatening injuries that require immediate intervention. Surgical stabilization of any life-threatening injuries, and hemodynamic stability is required before initial ocular assessment. Therefore, initiation of emergent eye care often occurs hours after injury. In our study, most of the patients were from far flung areas of Afghanistan and from Federally Administered Tribal Areas (FATA); in addition, before being referred to us the patients were assessed by physician and surgeon and any serious systemic injuries were properly managed. Therefore the initial eye assessment was delayed for a few days and in some cases even for a few weeks.

Visual outcome of open globe injuries is variable. Factors that predict the final visual outcome after open

<table>
<thead>
<tr>
<th>Type of injury</th>
<th>No of eyes (%)</th>
<th>Type of injury</th>
<th>No of eyes (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Globe perforation</td>
<td>52 (77.61%)</td>
<td>Vitreous hemorrhage</td>
<td>29 (43.28%)</td>
</tr>
<tr>
<td>Corneal</td>
<td>22 (32.83%)</td>
<td>IOFB</td>
<td>22 (32.83%)</td>
</tr>
<tr>
<td>Scleral</td>
<td>07 (10.44%)</td>
<td>Retinal detachment</td>
<td>12 (17.91%)</td>
</tr>
<tr>
<td>Corneo-scleral</td>
<td>23 (34.32%)</td>
<td></td>
<td></td>
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<tr>
<td>Cataract</td>
<td>27 (40.29%)</td>
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<tr>
<td>Sealed perforation</td>
<td>15 (22.38%)</td>
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<td></td>
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<tr>
<td>Corneal</td>
<td>03 (4.47%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scleral</td>
<td>01 (1.49%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limbal</td>
<td>03 (4.47%)</td>
<td></td>
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<tr>
<td>Subconjunctival</td>
<td>12 (17.91%)</td>
<td>Corneal foreign bodies</td>
<td>09 (13.43%)</td>
</tr>
<tr>
<td>Hyphema</td>
<td>09 (13.43%)</td>
<td>Endophthalmitis</td>
<td>08 (11.94%)</td>
</tr>
<tr>
<td>Retinal hemorrhages</td>
<td>02 (2.98%)</td>
<td>Macular scarring</td>
<td>02 (2.98%)</td>
</tr>
</tbody>
</table>

Table 1: Type and number of eye injuries
globe injuries are initial visual acuity, presence of a relative afferent pupillary defect (RAPD), mechanism of injury, wound location, ocular adnexal trauma, lens damage, hyphaema, vitreous haemorrhage, and retinal detachment. In our study, poor initial visual acuity (no light perception or light perception), the presence of RAPD, central corneal opacity, retinal detachment and endophthalmitis were associated with poor final visual outcome. Final BCVA improved in 26 eyes (38.80%), remained unchanged in 38 eyes (56.71%) and worsened in 03 eyes (4.47%). In our study 12 eyes (17.91%) had final BCVA > 6/18, in 6 eyes (8.95%) the BCVA was ranging from 6/60 to 6/18 and in 49 eyes (73.13%) it was < 6/60. These results are similar to the study of Weichel ED et al. In their study 45.83% of all blast-related eye injuries were open globe injuries and 75% of open globe injuries had final BCVA < 6/60.

CONCLUSION:

The visual prognosis of open globe eye injuries in blast victims is usually poor. The possible reason for this may be the severity of eye injuries in blast victims and the delayed presentation to ophthalmologist. Early presentation to ophthalmologist and emergent eye care may improve the visual outcome of many patients.

REFERENCES:


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ABSTRACT
Objective: To determine the success rate of probing for congenital nasolacrimal duct obstruction in children older than 1 year of age.

MATERIAL & METHODS
Study design: Hospital based cross-sectional, observational study.
Setting: This study was conducted in the clinical wing of KIOMS, Hayatabad Medical Complex, Peshawar.
Duration of study: Six months.

DATA COLLECTION PROCEDURE
A retrospective study was done of consecutive children undergoing probing for congenital nasolacrimal duct obstruction. Those who had bilateral involvement, only one eye was included in the study. The children were divided into two groups, Group 1 (1-2 years) and Group 2 (>2 years). The study period was from 1st February 2010 to 31st January 2011.

Probing in all cases was done through the upper punctum under general anaesthesia. The probe was introduced into the canaliculus until the medial wall of the lacrimal fossa was felt; at this point it was turned and introduced into the nasolacrimal duct and gently advanced till resistance was felt. The breaking of the membrane as the probe advanced into the obstruction. The patency of the naso-lacrimal system was checked by obstruction of the upper punctum using a punctum dilator and irrigation with saline from the lower punctum. Each patient received Tobramycin eye drops four times daily for 3 weeks. Patients were seen in the clinic at one week, one month and then at three months after probing.

Success of the probing was the main outcome measured and was defined as complete remission of watering, discharge and reflux on contents of the lacrimal sac on pressure after one week of the procedure. Data was analyzed by using the software SPSS 10.0.

Results: A total of 56 children undergoing probing for congenital nasolacrimal duct obstruction. Right eye involvement was present in 22 (39.29%) cases and left eye in 34 (60.71%) cases. The children were divided into two groups, Group 1 (1-2 years) and Group 2 (>2 years). The mean age of children in Group I was 19.45±3.68 months and in Group II, 32.71±17.04 months. There were 42 male and 14 female children. The success rate in group I was 89.29% and in Group II, 78.57%. Failure was more in group II (21.43%) as compared to group I (10.71%).

Conclusion: Probing is highly successful in the older age group (78.57%) and should remain the first line of treatment in older children.

INTRODUCTION
Obstruction of the nasolacrimal drainage system is extremely common in the paediatric patients, occurring in as many as 20 - 30% of newborns. But only 1% to 6% of these children become symptomatic. Spontaneous resolution occurs in 80-95% of affected infants by one year of age. In patients in whom the condition persists, the common cause is failure of the nasolacrimal duct to canalize. The timing of probing for congenital nasolacrimal duct obstruction has been a matter of debate in recent years. When the condition persists beyond several months, early office probing gives good results. An equally effective approach is conservative management until 9-12 months of age awaiting spontaneous resolution, followed by hospital-based probing for persistent obstruction. A confounding question is whether probing is less successful when delayed, perhaps due to prolonged inflammation in the lacrimal duct system or could the apparent decline in success rate in older children is due to accumulation of more severe obstruction as less severe obstruction clears spontaneously. It has been reported that delay in probing beyond 12 months is associated with a lower rate of success and this worsens with increasing age. Conversely, there are studies which indicate that primary probing continues to be an effective treatment well beyond 2 years of age and that the cure rate does not vary markedly with age. There are thus no clear guidelines for management of congenital nasolacrimal
duct obstruction, especially for older children. This study was undertaken to evaluate the results of probing in children aged 12 months and above in Khyber Pakhtoonkhwa population. We conducted this study in the patients presenting to Khyber Institute of Ophthalmic and Medical Sciences (KIOMS), Peshawar.

MATERIALS AND METHODS:

A retrospective study was done of consecutive children undergoing probing for congenital nasolacrimal duct obstruction. Those who had bilateral involvement, only one eye was included in the study. The children were divided into two groups, Group 1 (1 to 2 years) and group 2 (>2 years). The study period was from 1st February 2010 to 31 January 2011. The initial examination included looking for the lacrimal puncta, assessing anomalies of the lids or face, ruling out conjunctivitis, allergic inflammation and other causes of epiphora in children. The diagnosis of congenital nasolacrimal duct obstruction was based on history of tearing and/or discharge and on clinical examination as evidenced by epiphora beginning during the first few weeks of life, recurrent mucopurulent discharge, and reflux of the contents of lacrimal sac on pressure. The procedure was performed under general anaesthesia. A probe was used in all cases. Probing in all cases was done through the upper puncta. The probe was introduced into the canaliculus until medial wall of the lacrimal fossa was felt; at this point it was turned and introduced into the nasolacrimal duct and gently advanced till resistance was felt. The breaking of the membrane was felt as the probe advanced into the obstruction. The patency of the nasolacrimal system was checked by obstruction of the upper puncta using a punctum dilator and irrigation with saline from the lower puncta. Each patient received Tobramycin 0.4% eye drops four times daily for three weeks. Patients were seen in the clinic at one week, one month, and then at three months after probing. Success of probing was the main outcome measure and was defined as complete remission of watering, discharge and reflux of contents of the lacrimal sac on pressure at one week of the procedure. Data was analyzed by using the software SPSS 10.0.

RESULTS

A retrospective study was done of 56 consecutive children undergoing probing for congenital nasolacrimal duct obstruction. Right eye was involvement was present in 22 (39.29%) cases and left eye in 34 (60.71%) cases. The children were divided into two groups, Group 1 (1-2 years) and group 2 (>2 years). The mean age of children in Group 1 was 19.45± 3.68 months and in group 2, 32.71± 17.04 months. There were 42 male and 14 female children. The results of probing are represented in the Table. The success rate in group 1 was 89.29% and in group 2, 78.57%. The success rate of the entire cohort was 83.93%. Failure was more in group 2 (21.43%) as compared to group 1 (10.71%).

The failed cases underwent second probing or dacrocystorhinostomy. The oldest child in this study was 5 years old and probing was successful in him. The results in children older than 24 months were very encouraging. None of the patients had any surgery or anaesthesia related complication.

DISCUSSION:

Probing of the NLD is a standard therapeutic procedure in the management of the CNLDO. Controversy, however, exists regarding the outcome of probing in children older than 1 year.

The lacrimal drainage system begins forming at approximately 6 weeks of gestational age as a depression, known as the lacrimal groove and is usually completed at or near the time of birth. The lower part of the nasolacrimal duct is formed by valve of Hasner which is the last portion to open.2 Atresia of the nasolacrimal duct or dacryostenosis is the most common cause of epiphora in pediatric population. It is thought to result from failure of the canalization of the column of epithelial cells that finally form the nasolacrimal duct. Probing has been a time tested treatment for congenital nasolacrimal duct obstruction. But controversy exists regarding the timing of probing and its outcome in older children.2-10 According to the Cha DS et al study, The success rates of probing were 82% for the 6 to 12 months age group, 79% for the 13 to 18 months age group, and 78% for the individuals greater than 19 months in age12. Katowitz and Welsh reported a probing success rate of 98.2% in subjects aged 0 to 6 months, 95.9% in subjects aged 7 to 12 months, 76.8% in subjects aged 13 to 18 months, and 54.1% in subjects aged 19 to 24 months13. While in our study the success rate of probing in children between 1-2 years of age is 89.29% and above 2 years it is 78.57%. This is almost similar to the other studies.

Sturrock and colleagues reported a success rate of 72% in the second year and 42% in children more than 2 years of age14. Young and associates stated a cure rate of

<table>
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<tr>
<th>Group</th>
<th>Total</th>
<th>Age in Years</th>
<th>Male</th>
<th>Female</th>
<th>Success</th>
<th>Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>28</td>
<td>1-2</td>
<td>20</td>
<td>8</td>
<td>89.29%</td>
<td>10.71%</td>
</tr>
<tr>
<td>2</td>
<td>28</td>
<td>&gt; 2</td>
<td>22</td>
<td>6</td>
<td>78.57%</td>
<td>21.43%</td>
</tr>
</tbody>
</table>

Table: Probing results n=56
54% in children probed after 2 years of age\textsuperscript{15}. MacEven and associates found a cure rate of 85% in a combined probing and nasal endoscopy among 40 children 10–89 months of age\textsuperscript{16}. Mannor and colleagues found a negative correlation between the age and the success of probing\textsuperscript{17}. El-Mansoury and colleagues found more than 90% success rate in late and very late probing for CNLDO\textsuperscript{18}.

There were two schools of thoughts about the probing of CNLDO in children. Those who advocates of early probing suggest that early correction avoids duration of morbidity due to epiphora and chronic dacryocystitis. They also suggest that postponement of the procedure may result in decreased success with simple probing because of chronic inflammation and secondary fibrosis.\textsuperscript{9,10} Early probing can be done without anesthesia as it is easier to restrain the infant.

Those who are in the favor of late probing say that spontaneous resolution occurs and there is no need of probing at first place.\textsuperscript{6,11,12} Kashkouli et al\textsuperscript{19} showed that congenital nasolacrimal duct obstruction can be either membranous or complex. They suggested that older children with membranous or simple obstruction will have a good success rate for probing irrespective of the age at probing. The complex obstruction (firm, nonmenbranous, or complicated) have been identified as a major risk for the probing failure. It seems possible that the success of probing is dictated not by the age at probing, but by the cause of obstruction. The simple or membranous obstruction is cured by simple probing while complex or more severe obstructions might not open by simple probing and may require further surgical intervention at a later age.

**CONCLUSION:**

Probing is highly successful in the older age group (78.57%) and should remain the first line of treatment in older children.

**REFERENCES**

ABSTRACT
Objective: There are many ways of performing endoscopic Dacryocystorhinostomy (DCR). In this technique silicone tube is passed through the blocked Naso-Lacrimal Duct (NLD), the ostium as is identified by ENT surgeon using FESS fibro-optic light & instruments. The objective of this study is to ascertain the efficacy of this novel technique.
Material & Method: This study is being carried out at His Highness Sheikh Khalifa Bin Zayed (HHSKBZ)/Combined Military Hospital (CMH), Muzaffarabad (AJK) from November 2010 to May 2011. 25 patients with history of purulent discharge from the eye were selected for the study till now. Acute stage was treated with broad spectrum antibiotics and the sac was washed to make sure that the canalicular passage was patent. Those patients with blockage of NLD only were selected for the procedure. Probe was passed through the puncta, canaliculi, NLD till it emerged through the NLD ostium. With the help of ENT Surgeon the stent was passed through the passage and tied in the nasal cavity. Surgical outcome was evaluated postoperatively by subjective improvement of epiphora and purulent discharge.
Results: Out of 25 patients, GA was given to 23 (92%). In all patients ostium of NLD was identified. In 20 patients (80%) the probe was passed through the opening of NLD into the nasal cavity and in 05 patients (20%) the probe could not open the osteum and came out into the nasal cavity around the osteum of NLD. Silicone tube was passed through the upper and lower canaliculi and tied in the nasal cavity. Patients were followed for six months now. In all patients (100%) there was no episode of acute dacryocystitis. Symptoms of epiphora had disappeared in 23 (92%) patients. In 2 patients (08%) there was regression of symptoms and patients were not fully satisfied. It was planned to keep the tube for one year.
Conclusion: This is a simple procedure. Efforts are made to open the normal drainage system. All patients had improvement in their complaint of epiphora. In 20% patients in whom an aberrant opening was created they also had remarkable improvement in their complaints of epiphora and did not develop acute episodes of dacryocystitis. The study is still going on as more patients will be selected and the result of removal of tube after one year would also be documented.
Keywords: Lacrimal sac, Lacrimal duct obstruction, Epiphora, Dacryocystorhinostomy (DCR)

INTRODUCTION
Obstruction of lacrimal drainage system can be acquired and congenital. Congenital obstruction is seen in young children and neonates. Acquired lacrimal drainage system obstruction is a common ophthalmic problem and accounts for 3% of ambulatory clinic visits. Since its first description by McDonough and Meiring 20 years ago, endoscopic dacryocystorhinostomy (DCR) has been gaining popularity due to technological advances in endoscopes and other modern instruments of rhinologic surgery. According to the definition of success in previous studies, the success rate of endoscopic DCR ranged from 70% to 95%. Many factors influence the outcome of endoscopic DCR, and one of the most important prognostic factors determining success rate is the obstruction level in the lacrimal drainage system. In this study patients with NLD block were selected and their diagnosis was confirmed by probing and sac syringing. The aim of this study is to determine the functional efficacy of endonasal endoscopic DCR by opening the normal osteum of NLD and keeping the DCR tube in the passage for one year.

MATERIALS AND METHODS
This study is being carried out at His Highness Sheikh Khalifa Bin Zayed (HHSKBZ)/Combined Military Hospital (CMH), Muzaffarabad (AJK) from November 2010 to May 2011. 25 patients with history of purulent discharge from the eye were selected for the study till now. Acute stage was treated with broad spectrum antibiotics and the sac was washed to make sure that the canalicular passage is patent. Those patients with blockage of NLD only were selected for the procedure.

All patients were evaluated and the Performa was filled. Patients with blocked punctum or canalculus were excluded from the study. Canalicular patency was confirmed by probing and sac syringing (P&SS). Patients who had improvement in their complaints after P&SS...
were excluded from the study. Patients with previous history of DCR and nasal surgery were also not included in the study. Informed consent was taken from all patients, as they were prepared for GA.

The patients were placed in supine position with the head elevated 15 degrees. After shrinkage of the nasal mucosa with packing gauze soaked in a mixture of 1:200,000 epinephrine and 2% lidocaine, the mucosa surrounding the lacrimal sac is infiltrated with the same solution. A zero degree nasal endoscope of Karl Stores FESS equipment. Punctum is dilated with nettleship punctum dilator. Lacrimal probe is passed through both upper and lower puncta till it reaches the lacrimal sac, hard stop. Endoscope is placed in its position by ENT Surgeon and NLD ostium identified. Lacrimal probe diverted towards the NLD osteum. While the probe, passed through the inferior punctum, is in the lacrimal sac it is rotated 90 degrees, pushed downwards & a little out wards. An obstruction is usually encountered. It is pierced by force. At this stage a bulge is seen at the level of NLD ostium. Probe is forced forwards till it emerges through the osteum. If an aberrant opening is created, the procedure is retried. Then the probe is passed through the upper punctum, canaliculus till it appears through the same osteum in the nasal cavity. DCR tube is passed through the upper and lower canaliculi and tied in the nasal cavity. There is minimum bleeding in the nasal cavity, it can be stopped by adrenaline soaked gauge. Patients are warned about the post-operative bleeding and care of DCR tube. Each patient is postoperatively prescribed oral antibiotics, nasal steroid spray and ophthalmic drops with regular follow-up as advised.

RESULTS

Patients’ ages ranged from 25 to 50 years. Among the 25 patients, 06 patients (24%) had bilateral disease, 10 patients (40%) had a right-sided obstruction, and 09 patients (36%) had a left-sided obstruction. 15 patients (60%) were females. Of 25 patients GA was given in 23 (92%). In all patients osteum of NLD was identified. In 20 patients (80%) the probe was passed through the opening of NLD into the nasal cavity and in 05 patients
Fig. 5. Probe passed through the NLD ostium, appearing in the nasal cavity

Fig. 6. Tube tied in the nasal cavity

Fig. 7. Post-op small nasal dried blood, bleeding is usually minimal

Fig. 8. Post-op DCR tube in place

(20%) the probe could not open the osteum and came out into the nasal cavity around the osteum of NLD. Silicone tube was passed through the upper and lower canaliculi and tied in the nasal cavity. Patients are being followed for six months. In all patients (100%) there were no episodes of acute dacryocystitis. Symptoms of epiphora also disappeared in 23 (92%) patients. In 2 patients (08%) there was regression of symptoms but patients were not fully satisfied. Plan is to keep the tube for one year.

**DISCUSSION**

Acquired lacrimal drainage system obstruction is a common ophthalmic problem and accounts for 3% of ambulatory clinic visits. It is caused by recurrent inflammation/infection, facial trauma, tumor, etc. There are many clinical tests to evaluate the lacrimal drainage system, but it is difficult to identify the exact level of the obstruction. Dacryocystography (DCG) can be used to determine the level of obstruction of the lacrimal passage. In External Dacryocystorhinostomy an opening is created between the lacrimal sac and nose by nibbling the lacrimal bone. The bone is approached through the skin, and skin scar is the end result. In Endoscopic Dacryocystorhinostomy an endoscope is passed through the nose. Such an approach is referred to as an “Endoscopic DCR” or “Endo DCR”. The use of an endoscope is preferable for many patients, particularly younger patients, as it avoids the need for a skin incision and therefore does not leave a visible scar. The success rate of the surgery in the hands of suitably trained and experienced Ophthalmic and ENT surgeon is approximately 80-95%. In the event of a failure Laser assisted/ endonasal endoscopic DCR or external DCR is still an option.

Endoscopic DCR is an accepted technique for the management of lacrimal drainage system obstruction. A satisfactory procedure is defined as freedom from
epiphora at three months after surgery and a healed patent neo-ostium with a free flow of tears from conjunctiva to the nose.

Many factors influence the outcome of endoscopic DCR. One of the most important prognostic factors is the obstruction level in the lacrimal drainage system. Grover et al. reported the operation to be 68% successful in patients with obstruction of common canaliculus using the modified canaliculo-DCR technique. Duct-sac junction obstruction and NLD obstruction showed good surgical outcomes (100% and 90% respectively) and that common canaliculus obstruction was more difficult cure success rate (78.6%).

The success rate of external DCR has been reported at between 80% to 99%, depending upon the surgeon’s experience. Various other methods to relieve the obstruction of nasolacrimal duct have been adopted excluding external DCR. These include endoscopic DCR, endoscopic laser nasal DCR, dacryocystoplasty, endo-sopic radio frequency assisted DCR.

There are many ways to perform endoscopic DCR. Rhinostomy patency is a problem in all forms of dacryocystorhinostomy. Laser-assisted procedures are potentially fast and result in excellent haemostasis. However, they may induce more fibroblastic activity, resulting in excessive scarring and stenosis of the rhinostomy, compared with non-laser dissection. In surgery, the lining of the lacrimal sac is attached to the inner lining of the nose (the nasal mucosa) to create a new passage way for the tears. A fine silicone tube (a stent) is usually placed at surgery to maintain an opening in the tear drainage system. This is removed after a few weeks using an endoscope in the clinic. This is quick and simple to perform. In this study a novel approach was tried. Aim of the surgery was to open the closed NLD/ ostium in the nasal cavity. This however was not possible in few cases. In those circumstances a new ostium around the original opening was created. A stent is passed in the passage and kept there for one year.

This operation is usually performed under general anesthesia although it can be performed under local anesthesia with intravenous sedation by an anesthetist (“twilight anesthesia”) for patients unfit for general anesthesia. It can be performed either as a day case procedure or with an overnight stay in hospital.

CONCLUSION:

Number of patients included in this study were small and the study is still continued. More patients are being selected and the result of removal of stent after one year are still to be seen. This small series of study is reported to encourage other centers to start this modern technique. This procedure has not been documented in literature. Since it is a simple procedure, efforts are being made to open the normal drainage system. All patients had improvement in their complaint of epiphora. In 20% patients in whom an aberrant opening was created they also had remarkable improvement in their complaints of epiphora and did not develop acute episodes of dacryocystitis. No major intra-operative or post-operative complications were seen in our study. Small bleeding from nasal mucosa occurred and it was controlled by nasal packing only. The quality of the technique is that the naso-lacrimal anatomy is preserved.

REFERENCES

External Ocular Myiasis

Obaid Majid MS(Ophth)1, Snober Zahoor MBBS2, Prof. Manzoor Keng3

ABSTRACT
Two cases of external ophthalmomyiasis are reported here. The larvae were identified to be Oestrus ovis. The patients were immunocompetent, both the patients were house working females in their late 20ís to 30ís yrs;

Key words: Cochliomyia hominivorax, oestrus ovis, ophthalmomyiasis

INTRODUCTION
Myiasis is defined as the invasion of living and/ or dead animal tissue by dipterous fly larvae (maggots) and is common throughout the tropics.1 Occurrence and site of invasion of myiasis vary with the sanitary conditions, environmental factors, and presence of devitalised tissue that results from traumatic injury, erosive, ulcerative or haemorrhagic lesions.1

Ocular involvement or ophthalmomyiasis is seen to occur in about 5% of all cases of myiasis.2 Larvae, most commonly, attack the external surface of the eyes or ocular adnexia, e.g. the lids, conjunctiva or lacrimal ducts (external ophthalmomyiasis, EOM). In uncommon instances they may penetrate into the eyeball itself (internal ophthalmomyiasis, IOM) or may involve the orbit (orbital myiasis). EOM can usually be remedied without complications; however, IOM is very serious and often results in serious damage including blindness.

Many dipterous flies of the genera Chrysomia (old world screwworm), Cochliomyia (New world screwworm), Oestrus (sheep botfly) and Hypoderma (cattle botfly) have been reported to cause myiasis in human and / or domestic animals.1,2,3 EOM caused by dipterous fly larvae has been reported from India.4,5,6,7,8 Most of these cases have been due to Oestrus ovis, and a few (mostly of orbital disease) due to Chrysomia.3 We describe two cases of EOM caused by Oestrus ovis (Cases 1 and 2) who reported to our hospital during the last two years.

CASE REPORTS
Case 1
A 30-year-old female resident of Srinagar, J&K presented to eye OPD in 2008, complaining watering and foreign body sensation in right eye for the last two days. The patient belonged to middle socio-economic strata and had good personal hygiene. Visual acuity was 6/6 in both eyes, and mild conjunctivitis of the right eye was noted. On examination, two live larvae were recovered from the conjunctival sac (Fig 1) and sent to the department of Parasitology for identification. Both the larvae measured 2 X 0.5 mm with characteristic sharp, dark brown oral hooks. Posterior spiracular plates were not seen as the larvae were probably immature. However, the body was divided into 11 segments, each being covered by tufts of numerous brown hooks with spinose tips on the anterior margin. The eleventh segment was bilobed, each lobe decorated with 12 hooklets, larvae were thus identified as Oestrus ovis.

Both the maggots were removed after applying topical anaesthetics and eye was washed with sterile normal saline. Topical antibiotic drops (ciprofloxacin) and steroid ointment were prescribed for daily use, and the patient asked to follow up regularly. When the patient returned the following day, the eye was clear of maggots. The patient was followed up for three weeks and no complication was recorded.

Case 2
A 27-year-old female presented to the Ophthalmology OPD in year 2009 with a history of

Fig 1. Maggot on conjunctiva
watering of eyes and foreign body sensation in right eye for three hours. She resided in an area in Kashmir, where the rearing of sheep and goat is a common practice. She gave a history of some insect forcibly striking her eye. She called her sister for help who immediately noticed small insects crawling on the bulbar conjunctiva. The patient’s sister even managed to extract two of these insects.

The girl attended the ophthalmology outpatient clinic, where conjunctival sacs of the right eye were seen to be full of insects (numbering more than 15). Some of them were crawling around freely while a few were embedded in the conjunctiva. Four of the maggots were stationed at the upper fornix, while the rest were seen in the lower cul-de-sac. Punctate scarring was seen in the conjunctiva. Visual acuity was 6/9 in the affected eye. The other eye was completely normal with vision of 6/6. After applying a topical anaesthetic drop, we removed the ‘larvae’ until none were seen under the slit lamp. Direct and indirect ophthalmoscopy showed no evidence of intraocular organisms or inflammation. The maggots were collected in normal saline and formalin and sent to the department of Parasitology for further identification. The specimens were those of a fly larva measuring 1-2 mm X 0.3-0.5 mm and identified as larva of the fly Oestrus ovis, already described previously in Case 1.

After removal of all the maggots, the eye was washed with sterile normal saline followed by application of topical antibiotic drops (Tobramycin and Moxifloxacin) and steroid ointment. When the patient returned the following day, the eye was clear of maggots, and visual acuity was 6/6. The patient was followed up for further two weeks, and no complication was noted.

DISCUSSION

Flies causing myiasis can be classified as either obligate or facultative. Obligate-myiasis producing species can complete their development only by parasitizing live hosts, whereas facultative species can develop on both living and dead organic matter. Primary facultative species initiate myiasis, whereas secondary species invade the host after primary or obligate species. Blowflies (Lucilia), screwworm (Chrysomiabeziana, Cochliomyia hominivorax) and flesh flies (Wohlfahrtia) cause obligate and/or facultative (e.g. Calliphoridae) myiasis of relatively short duration. Larvae mature within four to seven days, usually in wounds or body orifices. Bot flies (Oestridae or Oestrids) are obligate parasites that are harboured within a host for several weeks to months. Today, even in the developing world, cases of human myiasis are relatively uncommon. In the West, such infections are a novelty, mostly occurring only in tourists returning from the tropics - predominantly Central, South America, and Africa.

The classical classification describes the myiasis by the infected area of the host. For example: dermal, sub-dermal, cutaneous, nasopharyngeal, ocular, intestinal/enteric or urogenital. Another classification is based on the relationship between the host and the parasite and provides insight into the biology of the fly species causing the myiasis and its likely effect. Thus the myiasis is described as either obligatory, facultative or accidental. There are three main fly families causing important myiasis in livestock and also, occasionally, in humans i.e., Oestroidea (botflies) Calliphoridae (blowflies) Sarcophagidae (fleshflies) The adult flies are not parasitic, however when they lay their eggs in open wounds and these hatch into their larval stage (maggots or grubs), the larvae feed on live and/or necrotic tissue causing myiasis to develop. Although Oestrus ovis is by far the most common cause of EOM in man,1,3 flies of genera Calliphora, Lucilla, Sarcophaga, Gastrophilus, Hypoderma, Musca, Callitroga, Cuterebra Dermatobia, Chrysomyia, Wohlfahrtia, Oedemagena, and Cochliomyia are known to cause ophthalmodomyiasis in humans.1,2,3 Sheep are the natural hosts for Oestrus ovis, and the fly is found in geographical areas where sheep are reared.2 As such Oestrus ovis ophthalmodomyiasis is worldwide in distribution;2 however, in contrast, C. hominivorax ophthalmodomyiasis was limited in distribution to America. Recently the agent is being reported more commonly East of the Atlantic.9

Apart from location, exposure by way of occupation is also a risk factor. Shepherds are at greatest risk for Oestrus ovis infections and horse groomers are at risk for Gastrophilus spp. infection.2 Poor living and hygiene conditions of patients may also contribute as a
risk factor. Patients with necrotising lesions in a setting of inadequate hygiene are susceptible to infestation by maggots. The compromising of periorbital tissues by surgery, malignancy, ischemia, or infection predisposes the patient to myiasis. An interesting feature of Oestrus ovis is that it can deposit larvae while still in flight. The fly darts close to the eyes or nostrils and ejects a stream of larvae into the target area. Three species of screwworms, Cochliomyia hominivorax (new world screwworm), Chrysomya bezziana (old world screw worm), and Wohlfahrtia magnifica (spotted flesh fly), cause overwhelming tissue destruction.

In the following discussion we try to explain EOM, based on our findings and reportings of others in the literature. EOM is characterised by a condition similar to viral or allergic conjunctivitis, marked by pain, burning, itching, redness, and watering in the affected eyes. Often these symptoms are accompanied by the sensation of a foreign body moving in the eye. Many patients report having had an insect buzzing around their face or striking them in the eye immediately prior to the onset of symptoms. The clinical features of OM are determined by the tissue invaded by the parasite. In EOM, maggots mainly infiltrate the conjunctiva and cornea causing conjunctivitis, and conjunctival haemorrhage. Conjunctivitis is characterized by irritation, lacrimation, pain, inflammation, and acute mucopurulent conjunctivitis from secondary bacterial infection. Many fly larvae are armed with oral hooks, inter-segmental and caudal spines and a multi-layered spiny thoracic complex, which may cause direct mechanical damage and lead to haemorrhage, ulceration or even potential invasion, especially in neglected cases.

Myiasis of the orbit is often associated with nose and sinus involvement. Severe tissue destruction is the rule. The most common invaders are Hypoderma bovis and Dermatobia hominis. A serosanguinous discharge often exudes from infested wounds, and a distinct odour may be detected.

Larvae that produce EOM can often be removed with forceps. Mostly, the larvae are readily visible on examining the eye. In some cases they can be seen travelling over the cornea. But sometimes, the diagnosis may require careful search; double eversion of the eyelid is often necessary to find maggots in the fornices. However, maggots are equipped with intersegmental spines and mouth claws that cling to tissue. For specific identification eggs, larvae, or flies should be placed in 70% alcohol and sent to a diagnostic laboratory equipped with personnel trained in entomological identification. In the laboratory, the larvae are fixed in hot formalin, dehydrated in ascending grades of alcohol, cleared in xylene and mounted in DPX to examine under high power for details which help in identification. Because screwworm larvae penetrate deep into a wound, and other facultative larvae may exist more superficially in the same wound, specimens of larvae for laboratory diagnosis should be collected from the deepest part of the wound.

Early growth stage larvae can often be carefully extracted from the eye with fine forceps. Care must be taken to prevent laceration of the larva; any portion of the larva remaining in the tissue cavity will produce an undesirable inflammatory response, or bacterial infection. Anaesthetic drops may be useful to immobilize the larvae during removal. Antibiotic ointments have also been used to help suffocate the larvae, thereby facilitating removal. Local antibiotics and topical corticosteroids further prevent secondary bacterial infection and reduce inflammation. Follow-up examinations are advisable to rule out complications or the existence of additional larvae.

REFERENCES

Profile

DR. MUNIRA SHAKIR

(An Ophthalmologist par excellence)

Dr. Munira, MBBS., MCPS., FCPS., FRCS., a pragmatic personality endowed with a life of research and scholarship, has achieved an academic eminence in the field of ophthalmology through hard work and sheer devotion in a very short span of her professional life. She is basically a paediatric ophthalmologist, currently serving as consultant ophthalmologist and Head of Paediatric Ophthalmology at LRBT Free Eye Base Hospital, Karachi.

Being a group leader of young ophthalmologists at LRBT she is involved in conducting research in the field of Paediatric ophthalmology, Amniotic membrane transplantation, Diode laser cycloablation for uncontrolled glaucoma, Combined trabeculotomy & trabeculectomy in congenital glaucoma, Penetrating Keratoplasty in children, Lasik & PRK surgeries with innovative approaches to the surgery of Ptosis. She has produced innumerable research articles on these subjects and delivered them on many ophthalmic conferences. Her approach to the subjects was much extolled which made her an impeccable eye surgeon of the ophthalmic community. She has also been awarded gold medals for her outstanding contributions in her professional work.

Born at Karachi, she graduated MBBS from Dow Medical College in 1996, and completed her basic training in Ophthalmology at Civil Hospital. She joined LRBT Eye Hospital as Consultant Ophthalmologist in 2002. and Liaquat National Hospital, Karachi during 1996ñ2001. She feels proud for having worked under the guidance of renowned eye surgeons like Dr. M. Mukhtar Ahmed, Dr. Imran Ghayoor and Dr. Syed Fawwad Rizvi. She underwent specialized courses through Fellowship in Paediatric Ophthalmology at Al-Shifa as well as Alder Hay Children Hospital, Liverpool, UK., and received commendations in Refractive Surgery for Laser Sight from USA in 2003.

As far as her postgraduate qualification is concerned, she did MCPS in 2001, FCPS in 2002, Fellowship of the International Council of Ophthalmology (FICO) in 2007 and FRCS in 2010. It is highly creditable of her to have passed all the examinations in first attempt and with flying colours. It speaks volumes of her unwavering determination, transcending an arduous journey towards perfection which is the ultimate aim and a mission for every minute of her life. Significantly, College of Physicians & Surgeons, Pakistan has approved her as supervisor for imparting training to MCPS/FCPS examinations.

It is lamenting to note that the medical sciences in Pakistan lack the research initiatives. Nevertheless, we are confident that young and exuberant academicians like Dr. Munira Shakir will certainly fill the gap through capacity building and professional development. She appears to be committed to further her research work in the emerging fields of Ophthalmology in order to ameliorate the sufferings of visually handicapped. In fact she aims for strong professional empowerment and better management of patients through humanistic values of self-sacrifice and human dignity. She aims to cross many more milestones under her humble qualities of head and heart.

Happily married to an ophthalmologist, who is a vitre-retinal surgeon, she is permanently settled in Karachi. May Allah bless her enough strength and vigour to continue serving the ailing humanity and the profession to her best, Amin!

Chief Editor
Dietary Therapy in Hypertension*

Prof. Frank M. Sacks, M.D1 & Dr. Hannia Campos, Ph.D2

Edited by: Dr. Misbah Durrani, FCPS

INTRODUCTION

Hypertension is defined as a systolic blood pressure of 140 mm Hg or higher or a diastolic blood pressure of 90 mm Hg or higher. However, morbidity increases among persons whose blood pressure is above 115/75 mm Hg. High blood pressure is associated with an increased risk of stroke, myocardial infarction, heart failure, renal failure, and cognitive impairment. Systolic blood pressure above 115 mm Hg is the most important determinant of the risk of death worldwide, being responsible for 7.6 million cardiovascular deaths annually. In the United States it rises from about 10% in persons 30 years of age to 50% in those 60 years of age. However, some persons, including strict vegetarians, with low sodium intake, have virtually no increase in hypertension with age.

Pathophysiology and Effect of Therapy

The pathophysiology of essential hypertension is complex. A healthful dietary pattern, reduced sodium intake, and reduced body fat — influence the pathophysiology of hypertension at many of its points of control.

High sodium intake is strongly correlated with the development of hypertension. It initiates an auto-regulatory sequence that leads to increased intravascular fluid volume, cardiac output and peripheral resistance. The elevation in blood pressure results in a phenomenon called ‘pressure natriuresis,’ in which increased renal perfusion pressure leads to increased excretion of fluid and sodium. In essential hypertension, however, sodium excretion is impaired. It is hypothesized that in most cases essential hypertension is a genetic disorder involving many individual genes, each of which influences the body’s handling of sodium to varying degrees and becomes expressed in the context of an unhealthful dietary environment, particularly one characterized by excessive intake of salt.

Numerous other factors contribute to the pathophysiology of hypertension. Especially in the elderly, large conduit arteries such as the aorta and carotid arteries become stiff and less compliant, increasing systolic blood pressure. Proliferation of smooth-muscle cells and endothelial dysfunction occur in resistance vessels, including small arteries and arterioles, causing vasoconstriction and increasing peripheral vascular resistance.

Although the systemic renin–angiotensin–aldosterone axis is often suppressed in the presence of elevated blood pressure, angiotensin II activity is increased locally in various tissues, including the kidneys, vascular endothelium, and adrenal glands. Increased activity in the sympathetic nervous system may also be a factor. Both aging and obesity contribute to the pathogenesis of hypertension through several mechanisms.

Two effective interventions for lowering blood pressure in patients with hypertension are reducing sodium intake and reducing weight. Reductions in dietary salt lessen the amount of sodium the kidney has to excrete to restore normal blood volume. Compliance in the aorta and carotid artery in older patients with hypertension is improved when sodium intake is reduced. It also improves arterial vasodilatation. Weight loss moderates activation of the renin–angiotensin–aldosterone axis and the sympathetic nervous system and diminishes sodium retention. Decreases in abdominal visceral fat also improve the functioning of both conduit and resistance vessels.

Several other dietary modifications that are collectively termed “a healthful dietary pattern” have been shown to reduce blood pressure. Although the mechanisms of these diets have not been fully clarified;
adherence to these diets has been found to reset the pressure–natriuresis curve so that a lower pressure suffices to excrete sodium and reduce blood volume, reduce aortic stiffness, and improve vasodilatation in small resistance vessels. Dietary patterns that have been proved to lower blood pressure emphasize fruits, vegetables, and low-fat dairy products; include whole grains, poultry, fish, and nuts; make use of unsaturated vegetable oils; and contain smaller amounts of red meat, sweets, and sugar-containing beverages. Clinical trials of such diets have not usually emphasized the identification of specific nutrients or single foods that lower blood pressure but rather have used epidemiologic data to define dietary patterns, such as Mediterranean-style diets and vegetarian diets.

Clinical Evidence
The most carefully studied and established healthful dietary patterns are the Dietary Approaches to Stop Hypertension (DASH) diet, and variations of the Mediterranean diet. In the original DASH trial, 459 adults whose systolic blood pressure was less than 160 mm Hg and whose diastolic blood pressure was 80 to 95 mm Hg, 133 of whom had hypertension, were randomly assigned to a control diet rich in fruits and vegetables, or a combination diet rich in fruits, vegetables, and low-fat dairy products and relatively low in saturated and total fat. Sodium intake and body weight were maintained at constant levels. After 8 weeks, among the participants with hypertension, the diet rich in fruits and vegetables reduced systolic and diastolic blood pressure by 7.2 and 2.8 mm Hg more. The combination diet resulted in greater reductions (11.4 and 5.5 mm Hg, respectively, as compared with the control diet; P<0.001 for each). The effects were less pronounced among participants who did not have hypertension at baseline. In a subsequent trial, the effect of various levels of sodium intake was studied. Participants were then given a diet with high, intermediate, and low levels of sodium (3.5, 2.3, and 1.2 g per day, respectively) for 30 days each in random order. Body weight was held constant by adjusting total caloric intake. Reducing sodium intake resulted in a significant incremental reduction in both systolic and diastolic blood pressure.

In a secondary analysis from the sodium trial, the blood-pressure–lowering effects were each accentuated as age increased. Systolic blood pressure was 12 mm Hg higher among participants between 55 and 76 years of age than among those between 21 and 41 years of age when they were given diet that was high in sodium. This finding suggests that the typical rise in blood pressure that occurs with age during adult life may be prevented or reversed if the low-sodium diet is followed. Black women and those with the metabolic syndrome have a mildly enhanced reduction in blood pressure in response to a low-sodium diet.

In controlled trials involving patients with the metabolic syndrome or type 2 diabetes, a reduced-carbohydrate diet lowered blood pressure and improved serum lipid levels more than a low-fat diet. Epidemiologic studies generally support evidence from clinical trials on the effects of dietary management, as do community-based and clinic-based intervention programs.

Clinical Use
Dietary management is appropriate for all patients with hypertension. In addition, patients with prehypertension (systolic blood pressure between 120 and 139 mm Hg or diastolic blood pressure between 80 and 89 mm Hg) should adopt the same dietary changes, given the benefit of dietary therapy at these blood-pressure levels.

Drug therapy plays an essential role in treating hypertension. The seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of high blood pressure emphasizes that in patients for whom lifestyle modification (including dietary therapy, physical activity, and moderation of alcohol consumption) does not reduce blood pressure below 140/90 mm Hg (or 130/80 mm Hg for patients with diabetes or chronic renal disease), drug therapy should be implemented and modified over time given a patient’s response. However, medication should not supplant dietary management; rather, the two forms of treatment should be considered complementary. The controlled diet is effective in combination with angiotensin-receptor blockers. Sodium reduction is highly effective in older patients with hypertension who are taking antihypertensive medicines and in those with resistant hypertension taking several antihypertensive agents.

We guide patients in adopting a healthful diet. In simple terms, we encourage patients to eat poultry, fish, nuts, and legumes instead of:
(i) red meat, low-fat and nonfat dairy products
(ii) instead of full-fat dairy products; vegetables and fruit
(iii) instead of snacks and desserts high in sugars; breads and pastas made from whole grain
(iv) instead of white flour, fruit itself rather than fruit juice and polyunsaturated and monounsaturated cooking oils such as olive, canola, soybean, peanut, corn, sunflower, or safflower rather than butter, coconut oil, or palm-kernel oil.

Adopting a healthful dietary approach means making the correct choices at the market so that the most healthful foods will be available at home. Use of canned and processed foods should be limited, unless their salt content has been reduced or virtually eliminated. For
convenience, low-sodium, frozen, or canned vegetables can be substituted for fresh ones. Sweetened beverages, candies, and cookies should be avoided entirely.

Sodium restriction is central to the dietary management of hypertension. Patients should become familiar with reading the food labels that specify the sodium content of packaged and processed foods. Processed foods are often high in sodium. A low sodium diet is sometimes less palatable for patients who are accustomed to a high-sodium diet; however, tastes adapt quickly, and studies have shown that low-sodium diets can be as acceptable to patients as higher-sodium diets. Herbs, spices, and citrus fruit (juice or peel) and other acidic ingredients such as vinegar can be added to dishes to compensate for low sodium content and may even be preferred over foods with higher amounts of sodium.

Patients should not skip meals, should consume one third of their daily food intake at breakfast, and should limit eating in restaurants to no more than once weekly. Eating in many restaurants subverts the goal of a low-sodium diet, since one serving of some soups, sandwiches, fried chicken, or pizza can far exceed the total recommended daily amount of sodium. Compliance with dietary therapy is better, and success rates in achieving blood-pressure control are higher, when accompanied by active guidance or counseling of the patient by clinicians with expertise in dietary management. This is especially important when weight loss is needed.

CONCLUSIONS AND RECOMMENDATIONS

It is therefore reasonable to assume that dietary change could normalize the blood pressure. The patient should be given instructions on how to adopt a healthy diet such as reduced-carbohydrate diet. The instructions should include ways to substantially reduce sodium intake. We also recommend a small consistent daily reduction in caloric intake of 200 to 300 cal. per day, coupled with an increase in physical activity. The patient should monitor his blood pressure at home, with an automated machine, at least once a month, preferably more frequently. A trial of intensive dietary treatment is warranted for 6 months to try to achieve the targeted goal for blood pressure (systolic blood pressure <140 mm Hg, diastolic blood pressure <90 mm Hg) before medication is introduced.

REFERENCES


Snapshots down the memory lane

My Dear Prof. Durrani,

When I saw the first issue of Ophthalmology update, my eyes stuck on your name and it triggered a series of snapshots down the memory lane.

It was early 60s, we were rehearsing annual drama on the sets of college, the cast was tired and relaxing for a while. In walked a bespectacled fair coloured young boy with a radiant smile and in no time he filled the air with his witty and humorous jokes. He lifted up every body’s sagging spirit. His name was Yasin Durrani.

It was early 70s. In the corridor of Central Govt. Hospital, my eyes caught the sparkle behind the glasses and that familiar smile. Back from England, qualified and trained, ophthalmoscope in hand, rushing to see a patient. This was Dr. Yasin Durrani.

This was early 80s, I was fast asleep in Dublin. The phone rang. A pleasant voice from the other end asked,” Jahangir! Have you got your Fellowship”, Yes, I said. Then ‘fly home I will get you a job’, the voice jingles. This was Prof. Yasin Durrani.

It was the mid 80s, I was sitting in my new office at Rawalpindi General Hospital with the appointment letter in my hand. I was called by the boss. As I entered, a kind and compassionate smile reached out to receive me. This was Prof. Yasin Durrani, Head of the Eye Department.

I am still holding the few pages of the first issue. My mind goes fast forward and I see a full-fledged Ophthalmology journal approved by PMDC. I was right because I knew you so well. Congratulations boss.

Yours sincerely,

Prof. Emeritus.
Dr. Jahangir Akhtar FRCS

2nd July 2011
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