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The Management of Ophthalmology Update wishes its readers a Happy New Year
A Comprehensive Guide for Parents and Students joining Medical College for MBBS/BDS degrees

WHY SHOULD I BECOME A DOCTOR?
(First Edition)

by

Prof. Dr. M. Yasin Khan Durrani
MBBS., DO., MD., FRCOphth (Lond)
Former: Prof. of Ophthalmology and Consultant Eye Surgeon
Rawalpindi Medical College & Islamic Int’l Medical College, Rawalpindi,
Honorary Prof. of Ophthalmology, First National University, Tianjin, China
Recipient of Presidential award, Government of Pakistan &
Pride of Karachi University Award

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Vernal keratoconjunctivitis\(^1\) is an acute-on-chronic inflammatory disease of conjunctiva and cornea, encountered in children with its onset usually in the first decade of life. Mild cases of VKC tend to remit with nonspecific and supportive therapy. But severe cases are more protracted, with frequent remissions and relapses; if not treated properly, it can result in sight-threatening complications\(^2\) over a period of time. It is mainly a Type I (immediate) hypersensitivity reaction—which occurs when a sensitized individual comes in contact with a specific antigen. However recent findings implicate more a complex pathogenesis with the involvement of T lymphocytes as well.\(^1,2\)

These patients already exhibit large amounts of circulating Immunoglobulin E (IgE) which has a strong affinity for mast cells; the cross-linking of 2 adjacent IgE molecules by the antigen triggers mast cell degranulation. This releases various preformed mediators of the inflammatory cascade like histamine, tryptase, chymase, heparin, chondroitin sulfate, prostaglandins, thromboxanes, and leukotrienes. These mediators result in an increase in vascular permeability and migration of eosinophils, neutrophils, T and B lymphocytes with proliferation of fibroblasts, and laying down exuberant amounts of collagen fibers in the conjunctival tissue. Hence the following changes are observed:

- Hyperplasia of conjunctival epithelium
- Adenoid layer shows marked cellular infiltration by eosinophils, lymphocytes, plasma cells and histiocytes. Conjunctival vessels also show proliferation, increased permeability and vasodilatation.
- The Tarsal changes are typically seen in the upper tarsus and involve proliferation of fibrous layer of conjunctiva which later undergoes hyalinization resulting in the formation of giant papilla, typically greater than 0.3 mm in diameter, giving the classic ‘cobble-stone’ appearance. In severe cases, these papillae may undergo hypertrophy to produce cauliflower-like excrescences of ‘giant papillae’ which may cause mechanical ptosis.
- The limbal form comprises of papillae which have a thick gelatinous appearance along with multiple white spots which are collections of degenerated epithelial cells and eosinophils called Horner-Trantas dots. They undergo rapid dissolution and do not last longer than a week from their initial presentation.
- The cornea may be affected in a variety of ways. Punctate epithelial keratopathy (PEK) results from the toxic effect of inflammatory mediators released from the conjunctiva. PEK can coalesce, resulting in frank epithelial erosions which coalesce to form a shield ulcer, which is typically shallow with white irregular epithelial borders. The major contributing factor in its development is chronic mechanical irritation from the giant tarsal papillae. Vernal pseudogerontoxon may be seen which is a degenerative lesion in the peripheral cornea resembling corneal arcus. Keratoconus is a frequent complication in chronic cases, associated with chronic eye rubbing and superimposed corneal thinning by injudicious use of topical steroids. Corneal vascularization may be seen rarely.
- Symptoms of intense burning and itching, accentuated when patient comes in a warm humid atmosphere, are due to histamine and other inflammatory mediators. Associated symptoms include mild photophobia, lacrimation, stringy discharge and heaviness of eyelids due to the tarsal involvement.

**Differential Diagnosis**

VKC has to be differentiated from the seasonal Allergic Conjunctivitis which is an acute Type 1 hypersensitivity reaction involving only the conjunctiva. There is marked chemosis and injection of the conjunc-

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**Editorial**

**Current Concepts in the Management of VKC**

tiva along with eyelid edema which is usually not seen in VKC. Edema is the direct result of increased vascular permeability caused by the release of histamine from conjunctival mast cells.

**Treatment**

1) Topical antihistamines competitively and reversibly block histamine receptors and relieve itching, constant eye lid rubbing, conjunctival edema and redness. Their affect is temporary and symptomatic as they do not affect other pro-inflammatory mediators like prostaglandins and leukotrienes.

2) Mast cell stabilizers are used on a prophylactic basis to prevent mast cell degranulation on subsequent exposure to the allergen, on a long term basis. They include cromolyn sodium and lodoxamide (Alomide). However, drugs with both mast cell stabilizing ability and anti-histaminic property are the mainstay of therapy for mild forms of VKC like Alcaftadine, olopatadine, nedocromil and ketotifen.

3) Mucolytics: Acetyl cysteine (0.5%) for mucous plaque formation. This is not available as an ophthalmic preparation but it can be prepared by dissolving 1mg powder from acetyl cysteine sachets (Mucolyte) in 10 cc distilled water.

4) Artificial tears: They help to dilute various allergens and inflammatory mediators that are present on the ocular surface and help flushing them. They also provide a barrier function and improve the first-line defense at the level of conjunctival mucosa. Hence eye drops during the day and eye ointment during the night is very helpful.

5) NSAIDs: They act on the cyclo-oxygenase metabolic pathway to inhibited the production of prostaglandins and thromboxanes which results in vasconstriction, decrease in vascular permeability, leukocytosis, and a decrease on intraocular pressure e.g. ketorolac tromethamine.

6) Vasoconstrictors: they provide short-term relief of vascular injection and redness and cause rebound conjunctival injection and inflammation. Hence they are of limited use or should not be used at all. They are available either alone or in conjunction with antihistamines; examples are naphazoline, phenylephrine, oxymetazoline, and tetrahydrozoline.

7) Corticosteroids: They are the most potent and popular pharmacologic agents used in the treatment of chronic ocular allergy. They act at the first step of the arachidonic acid pathway and block phospholipase which prevents converting membrane phospholipid into arachidonic acid. Hence, by preventing the formation of arachidonic acid, corticosteroids effectively block both cyclo-oxygenase and lipoxygenase pathways, in contrast to NSAIDs, which act only on the cyclo-oxygenase pathway. However, their prolonged and injudicious use results in a number of ocular adverse effects, such as delayed wound healing and resultant corneal thinning, secondary infections (viral, fungal), elevated intraocular pressure and formation of cataract. In addition, the anti-inflammatory and immunosuppressive affects are nonspecific. As a rule, topical steroids should be prescribed for severe cases not responding to conventional therapy and only for a short period of time. Corticosteroids exist in various forms and potencies. Loteprednol etabonate is rapidly metabolized once it enters the anterior chamber of the eye. Therefore, it is extremely useful in treating ocular surface and superficial corneal inflammations. Relatively weak steroids like medrysone and fluorometholone have a less potency in the eye and fewer ocular adverse effects. In contrast, prednisolone acetate is more potent with a higher incidence of adverse effects.

8) Steroid-Sparing Drugs: In view of the numerous adverse affects of steroids, newer Immune Modulatory Drugs, CYCLOSPORIN-A and TACROLIMUS have been added to the armamentarium of therapeutic options available for severe form of VKC; they are known to have minimal side-effects even after prolonged usage. Marked subjective and objective improvement is noted within one month of therapy even in severe cases with marked corneal involvement.

(i) Tacrolimus (fujimycin): This is an immunosuppressive drug, a macrolide, discovered in 1984 from the bacteria Strep- tomyces tsukubaensis. It is similar in action to cyclosporine-A but with a much higher potency (up to 100 times). It suppresses the activation, proliferation of B & T lymphocytes and formation of cytokines, especially interleukin-2. It was first approved by the Food and Drug Administration (FDA) in 1994 for use in liver transplantation. In ophthalmology, Tacrolimus has mainly been used to suppress immune reactions in corneal transplantations, uveitis, and allergic eye disease. Topical Tacrolimus with concentrations of 0.02-0.1% in ointment form has successfully been used for treatment of atopic keratoconjunctivitis (AKC), giant papillary conjunctivitis, and VKC. It is available as a topical preparation for the treat-
ment of atopic dermatitis (eczema), vitiligo as 1.0% and 0.03% skin cream. It suppresses inflammation in a similar way to steroids, and is equally as effective as a mid-potency steroid. It has the important advantage over steroids for not cause skin thinning (atrophy) in addition to other steroid related side-effects. The only known side effects are burning or itching sensation on initial applications, with increased sensitivity to sunlight and heat. Patients should minimize or avoid natural or artificial sunlight exposure. Skin infections should be cleared prior to application as there may be an increased risk of their activation.

(ii) Cyclosporin-A eye drops: Cyclosporin\textsuperscript{10,12} has the same mechanism of action as Tacrolimus. It has been used affectively for the treatment of VKC, Dry Eye Syndrome, Mooran’s Ulcer, Corneal Melting, Scleritis. It is available as an ophthalmic preparation, Reastasis which are preservative free minims. However it can be prepared from Cyclosporin capsules which contain a water miscible gel. For VKC, a concentration of 1% is quite effective prepared by taking gel from 2 capsules and mixing it with 4.5 cc distilled water. They only cause a stinging sensation on instillation, apart from this, there are no known side effects upon prolonged usage.

9) Treatment of large papillae: previously, Cryo application and surgical excision was performed but supratarsal injection of long-acting steroids along with immunomodulatory drugs are very affective.

10) General Measures: Maintenance of an air-conditioned environment and control of dust particles at home and work may also be beneficial. Local measures, such as cold compresses, wearing dark goggles to prevent photophobia. Desensitization has also been tried without much rewarding results.

CONCLUSION

VKC is a chronic, sight-threatening condition in children; if not treated appropriately, the vision is seriously and permanently affected either by the disease process itself like corneal opacities, keratoconus, corneal vascularization or due to injudicious use of steroids resulting in intractable glaucoma and corneal thinning promoting the keratoconus.

Unfortunately, topical steroids still remain a popular choice of first line therapy amongst our ophthalmic fraternity. This article highlights new, safer and as potent drugs (Cyclosporin and Tacrolimus) as steroids but without any proven side effects after long term usage. This is because of the poor absorption of these drugs through cornea; they concentrate on the ocular surface and their affect is enhanced by prolonged use.

Hence in mild cases, antihistamine, a mast cell stabiliser and lubricant drops during the day and ointment at night suffices. In moderate to severe cases, addition of immune-modulatory drug for at least 4-6 months is mandatory.

REFERENCES


Dr. Sameera Irfan, FRCS
Consultant Oculoplastic Surgeon & Strabismologist
Mughal Eye Trust Hospital, Lahore.
Website: www.sameeraifan.com
E-Mail: sam.irfan48@gmail.com
INTRODUCTION

The epiphora affects approximately 5-20% of neonates. The rate of spontaneous regression is estimated to be 90% within first 3 months of life. It is perhaps better termed as delayed canalization of the nasolacrimal duct, since it resolves spontaneously. The lower end of nasolacrimal duct (at valve of Hasner) is last portion of lacrimal drainage system to canalize. The complete canalization usually occur soon after birth. The epiphora is due to congenital obstruction of the nasolacrimal duct system. The blockage occurs most frequently at the valve of Hasner at the distal end of the duct. The general stenosis of duct, congenital proximal outflow and proximal out dysgenesis may be contributing factor of obstruction. This obstruction requires surgical intervention, probing of the nasolacrimal duct is highly effective in relieving epiphora & discharge in those patients who do not clear spontaneously with massage and medical treatment. The continued tearing and discharging is a potential source of ocular infection and also is a constant anxiety for parents. The optimum time to intervene has long been a topic of controversy. Therefore, we probe & irrigate those patients which were not cured with medical treatment, massage and their age was above six months.

Aims & Objectives: To evaluate the result of management of nasolacrimal duct impatency in infants and children, to compare results of conservative therapy and surgical probing and irrigation.

Patients & Methods: All the patients were enrolled from the out patients department of Pediatric Ophthalmology, Bolan Medical College Quetta. A Total of 5110 patients were examined during the period from January 2013 to June 2014. Out of these, 97 patients (1.9%) were found to be suffering from congenital nasolacrimal duct obstruction, of these 76 patients (78%) had unilateral obstruction, while 21 patients (22%) had bilateral obstruction. On first visit these patients were kept on conservative treatments (topical antibiotics) and their parents were instructed about the hydrostatic massage at the lacrimal sac area. These patients were re-examined after two to three weeks, if there was no improvement, the patient was either treated surgically, when more than six months of age or the medical treatment was continued when the patient was under the age of six months.

In infants older than six months who did not respond to conservative treatment, the probing and syringing were performed. This procedure was performed using a halothane general anesthesia. The lower punctum was dilated with punctum dilator then the passages were irrigated with saline to wash out any debris, using the 23 gauge lacrimal cannula on a syringe. The lacrimal probe size 0 or 1 was used (depending on the age of patients). The lacrimal probe was lubricated with antibiotic ointment. The probe was initially passed vertically, then horizontally and finally downwards and slightly posteriorly. The obstruction was usually felt when 3/4th of probe was inside the passage. It was then taken out and syringing repeated. Topical antibiotics were instilled. The patients were advised to continue treatment for another two weeks, then the patient were re-examined to re-evaluate the results of the surgical procedure after two weeks.

Results: 63 patients (65%) had spontaneous relief from tearing and discharge with medical treatment and massage. These include 47 patients (75%) among the 0-6 months age group, 13 patients (20%) among the 7-12 months age group and 5 patients (5%) among the above one year age group (Table-1). 34 patients (35%) required probing. No patient was probed before 6 months of age. Probing cured tearing and discharged in 27 patients (79%) while 7 patients (21%) required repeat probing. Second probing relieved 5 patients (14%) of epiphora & discharge. 2 patients who were older than 1 year remained symptomatic even after 3rd repeat probing (Table-2).

Conclusion: All the patients with congenital nasolacrimal duct obstruction should be conservatively treated with antibiotics and hydrostatic massage up to the age of six months. If not relieved with above measures, careful probing may be performed before the infant is one year of the age to achieve excellent results.

ABSTRACT

Purpose: To evaluate the results of management of nasolacrimal duct impatency in infants and children to compare results of conservative therapy and surgical probing.

Material & Methods: All the patients were enrolled from the out patients department of Pediatric Ophthalmology, Bolan Medical College Quetta. A Total of 5110 patients were examined during the period from January 2013 to June 2014. Out of these, 97 patients (1.9%) were found to be suffering from congenital nasolacrimal duct obstruction, of these 76 patients (78%) had unilateral obstruction, while 21 patients (22%) had bilateral obstruction. On first visit these patients were kept on conservative treatments (topical antibiotics) and their parents were instructed about the hydrostatic massage at the lacrimal sac area. These patients were re-examined after two to three weeks, if there was no improvement, the patient was either treated surgically, when more than six months of age or the medical treatment was continued when the patient was under the age of six months.

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METHODS

On first visit these patients were kept on conservative treatments (topical antibiotics) and their parents were instructed about the hydrostatic massage at the lacrimal sac area. These patients were re-examined after two to three weeks, if there was no improvement, the patient was either treated surgically, when more than six months of age or the medical treatment was continued when the patient was under the age of six months.

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RESULTS

63 patients (65%) had spontaneous relief from tearing and discharge with medical treatment and massage. These include 47 patients (75%) among the 0-6 months age group, 13 patients (20%) among the 7-12 months age group and 5 patients (5%) among the above one year age group (Table-1).

34 patients (35%) required probing. No patient was probed before 6 months of age. These includes 12 patients (35%) among 0-6 months age group, 19 patients (56%) among the 7-12 months age group and 3 patients (9%) among above one year age group (Table-2).

The blockage of nasolacrimal duct is a common anomaly and it is due to delay in the normal development of system where it enters the nose, resulting in a persistent membrane obstruction at the value of Has ner. It is present in 2-4% of all infants at birth. The mechanism of congenital obstruction can be explained by various ways. Anomalous canalization or failure of fusion between ocular and nasal cords is very important explanation. The abnormal folds in the mucosa & the abnormal cartilaginous or bony development is also suggested by various clinicians. Most of the cases of Congenital Nasolacrimal duct obstruction resolve spontaneously or with conservative treatment and massage. Only 1-2% of cases requires surgical intervention in the form of probing and syringing.

Some times in neonatal period there is lacrimal sac distention resulting in congenital dacrocystitis and congenital mucocele, it is probably the only indication of immediate duct probing in neonatal period. The probing of Nasolacrimal duct is very effective method for relieving congenital dacrocystenosis in those patients who fail to clear spontaneously, but there is controversy concerning the age at which initial probing should be performed.

Some authors advocate probing as early as 4 months of age after a trial of topical antibiotics and massage have failed. Others recommend wait & see if there is spontaneous clearance of obstruction, if the blockage does not clear up to age to 12-14 months probing should be performed.

Our therapeutic strategy is to probe and irrigate any time after six months, but preferably before 14 months of age. We adopt this for following reasons. The rate of spontaneous recovery is high before six months of age as evident in our study (Table-1).
The parents are very concerned & it’s a constant source of anxiety.

Constant tearing and discharge is unpleasant to the patients along with suitable source of secondary infection. Early probing may reduce the likely hood of secondary cellulitis which also contributes to failure of subsequent probing.

In our series of 97 patients, 63 patients (65%) had spontaneous recovery with conservative treatment with antibiotics & massage. The spontaneous recovery was very higher among 0-6 months of age groups (75%), while it dropped to 5% in the age group of above 1 year (Table-1). The 34 patients (35%) required probing and irrigation. Initial probing cleared the epiphora and discharge in 27 patients (79%) and 7 patients (21%) required repeated probing. Second probing relieved 5 patients (14%) of epiphora & discharged while two patients out of these (7%) did not respond to even 3rd probing(Table-2).

In Philadelphia same study was carried out on 572 eyes at Children Hospital Philadelphia. In 572 eyes the success rate of initial probing was found to be 97% under 13 months of age. Robb and others co-workers have achieved 90% cure on initial probing, rising to 96% on repeat probing. According to Zia et al, initial probing and irrigation cured 75% of patients while cure rate rises to 97% on second repeat probing. Our findings are thus substantiate the results of above mentioned workers. Katowitz JA et al also mention in their study that earlier probing has high success rate.

Mac Evan & Young studied 4792 children. They revealed 96% success rate was achieved in the first six months and success rate was fallen to 53% after one year. The mean success rate in this study in first twelve months was 69.3%.

Mittelman achieved success rate of 87%. He recommends probing for Congenital Nasolacrimal duct obstruction before 11 months of age. According to him the success rate is higher in those below 1 year of the age, (95%) as compared to those above one year of age (73%).

Zia et al also of the opinion that age at time of probing is an important factor in determining the final outcome. Our clinical impression is that age of patients at time of probing is a very important factor which determines the final outcome. In our 2 patients who could not relieved epiphora, their age was 3 years. It seems that the persistent infection in nasolacrimal duct consequent to untreated obstruction results in fibrosis that leads to worsening of obstruction.

However according to Robb the success rate is not related to age at the time of probing. He attributes failure to anatomical changes in Nasolacrimal duct & believes that first procedure to be tried for the persistent nasolacrimal duct obstruction in the first 5 years of life should be simple probing.

CONCLUSION

All the patients with congenital nasolacrimal duct obstruction should be conservatively treated with antibiotics and hydrostatic massage up to the age of six months. If not relieved with above measures, careful probing may be performed before the infant is one year of the age to achieve excellent results.

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INTRODUCTION

Glaucoma is an optic neuropathy in which there is optic nerve damage along with visual fields loss which may or may not be associated with raised intraocular pressure. Glaucoma is a chronic, progressive and most often asymptomatic disease and is the leading cause of irreversible blindness worldwide. According to WHO statistics glaucoma is now the second leading cause of blindness globally after cataract. Glaucoma, however, presents an even greater public health challenge than cataract, because the blindness it causes is irreversible. It is responsible for approximately 15% of blindness worldwide. It has been estimated that 73 million people are affected by glaucoma and 6.7 million are thought to be blind due to this disease. The projections for 2020 are that almost 80 million people will be affected by glaucoma.

Compliance is a measure of the degree to which patient follows prescribed instruction during a defined time period. Topical treatments have been reported to delay the onset and worsening of glaucoma, but they must be instilled for life or until a curative treatment becomes available. When the intraocular pressure is poorly controlled, sufferers may eventually notice a severe restriction of visual fields or even a loss of central vision. There are many causes of blindness from glaucoma but non-compliance to medication is the main reason especially in developing country like Pakistan. The leading cause for non-compliance is forgetfulness followed by side effects, lack of proper counseling of the patient by physician, non-awareness about alternate or new available medications and cost of the drug. Despite of the availability of effective pharmacologic therapies, non-compliance in patients with glaucoma has been reported to vary from 24 to 59%. Non-compliance with topical therapy may result in unnecessary switching to other drugs or surgical procedure, with additional risks and costs.

The purpose of the study was to determine the rate and causes of non-compliance in patients with glaucoma presenting to the Out Patient Department of Khyber Teaching Hospital, Peshawar.

Study design: Retrospective cohorts study

MATERIAL AND METHODS

The study was conducted from 1st September to 30th November 2011 in the Out Patient Department of Khyber Teaching Hospital, Peshawar. The inclusion criteria were diagnosed cases of glaucoma that were on anti-glaucoma therapy. All patients underwent comprehensive general and ophthalmic evaluation including medical and ophthalmic history, best corrected visual acuity, slit lamp examination, IOP measurement and Humphrey visual field test. Detailed history was taken about previous consultations, prescribed medications, doses and timing of drugs. Patients were specially inquired about the reasons for not using the prescribed medications. All these information were recorded in a proforma.

RESULTS

A 3 months survey was conducted in which a to-
tal of 200 patients were examined as cases of glaucoma and their compliance to drugs was checked. Patients age ranged was from 42-85 years with a mean age of 62.7 ± 12.5 years. Surprisingly in about 65.5% (131) patients there was poor compliance to medications. Out of 65.5% patients, 12.2% (16) patients reported no improvement in vision which resulted in discontinuation of medications. 9.92% (13) patients stopped their medicines due to side effects of drugs. 16.03% (21) patients were using medications but not on proper timing as were advised by the doctor. 9 (6.87%) patients confused the drugs with other non-glaucoma medicines due to poly pharmacy. Most of the patients 32 (24.4%) used medicine on and off and not on regular basis. 12 (9.16%) patients stopped medicine because they were thinking that their intraocular pressure was under control and had not been advised that these medicines have to be used lifelong. 8 (6.10%) patients were non-compliant to medication because of their dependency on others for drops instillation due physical disability.

<table>
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<th>Percentage</th>
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<td>Improper timing of dose</td>
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DISCUSSION

The purpose of our study was to investigate the causes of non-compliance in patients with glaucoma presenting to Khyber Teaching Hospital. Many studies have shown that the major contributor to loss of vision in glaucoma patients is non-compliance. But the results of our study were astonishing as in 65.5% of patients presenting to our hospital were having poor compliance to medications. In a study compiled by Weintraub M also mentioned that approximately 35% of the glaucoma patients comply almost 100% with therapy. The main reason for non-compliance was poor education about glaucoma disease and most of the patients were not well aware about the nature and seriousness of glaucoma and the importance of compliance. So most of these patients take this disease lightly, use glaucoma medicine on and off and strict adherence to drugs was not followed. The major contributor (24.3%) to non-compliance was on and off use of medications (32 patients). Almost similar results to our study were reported by Rotchford AP and Murphy KM in their study that about 24% of patients are omitting their glaucoma medications either frequently or occasionally.

Another factor which was also strongly related to patient education about glaucoma disease was that 15.27% patient stopped their medicine as they were told that their pressure is under control and were not advised that they have to continue with medications for life long, so they themselves stopped medicines, which resulted in further decrease in visual acuity and progression of glaucoma. 16.03% patients were using glaucoma drops but on improper timings. Every drug is having its anti-glaucoma effect for a specific period of time, like 12 hourly drops has its effect for that period of time and after that another drop should be instilled at proper time to prevent increase in IOP as highlighted in a study done by Granstrom PA. 16 (12.21%) stopped their medications because they did not notice any improvement in their vision after using these drugs for a period of time as mentioned in a study done by Ashburn FS. So it is very important to counsel the patient about the effect of glaucoma drugs that they will not cause a significant improvement in their vision but will prevent further deterioration of vision. In our study out of 131 patients 13 (9.92%) patients discarded the medicine because of the adverse effects associated with these medications and 12 patients stopped drugs due to non-affordability. Other causes for discontinuation of these medications were confusion of drugs with other drops (6.87%) and because of physical disability (6.10%). The use of different sizes or shapes of medications and their containers will help patients to discriminate between different treatments. These two factors also contribute to non-compliance as mentioned in study done by Winfield AJ and his colleagues.
CONCLUSION

There are a number of reasons for poor compliance with glaucoma medications, including lack of understanding of the disease, no obvious symptoms, complicated or too frequent drug schedules, lack of improvement in visual acuity, side effects, physical difficulty in administering eye drops and cost. All patients diagnosed as glaucoma must be well informed about the nature and seriousness of disease and must be counseled about the proper timing, side effects of drugs and the effects of treatment on the outcome of the disease.

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A patient with cellulitis, chemosis, proptosis, and an ulcerated cornea, developed after head injury was diagnosed as carotid cavernous fistula confirmed after angiography. Endovascular coiling was undertaken and the patient recovered.

**Differential Diagnosis:** Acute angle-closure glaucoma, Ocular lymphoma Periorbital cellulitis, Thyroid ophthalmopathy

*Newsnet Online*
INTRODUCTION

Cataract is the leading cause of blindness worldwide. Approximately 17.6 million people, accounting for 39% of all the causes of blindness, are blind as a result of bilateral cataract globally. In Pakistan cataract accounts for 51.5% of the avoidable causes of blindness. Approximately 570,000 adults are estimated to be blind and 3,560,000 have visual impairment as a result of cataract. Phacoemulsification, a standard technique for cataract surgery in developed countries as a routine, and it is not routinely practiced in developing countries including Pakistan due to its early wound stability, minimally induced astigmatism, low complication rate and cost-effectiveness.

Postoperative refractive error has been identified to be one of the most common risk factors for poor visual and functional outcome of cataract surgery in Pakistan. Prediction of postoperative refraction depends on several factors including axial length, corneal refractive power, corneal diameter and anterior chamber depth. Several formulas have been developed for calculating IOL power and improvements have been made to an accurate measurement of biometric values to enhance the accuracy of the postoperative predicted refraction.

In the current study we have determined postoperative refractive error after MSICS in patients having cataract. Patients undergoing cataract surgery for age related cataract have big expectations in terms of good refractive outcome and there was no local study available regarding refractive outcome after MSICS in our local population. The results of this study will be quite useful in allowing ophthalmologists in making crucial modifications in the procedure for MSICS especially considering the exact measurement of preoperative

ABSTRACT

Objective: To determine postoperative refractive outcome after manual small incision cataract surgery among patients with cataract.

Materials & Methods: It was a descriptive cross sectional study done in Khyber Institute of Ophthalmic Medical Sciences (KIOMS), Hayatabad Medical Complex (HMC), Peshawar from September, 2011 till April 2012 on 185 patients. All enrolled patients in our study were through Out Patient Department. After informed consent detailed history was recorded on pre-designed proforma. Axial length was measured in millimeters with Optikon Hiscan AB-scan through contact A-scan biometry and corneal power measured in diopters (D) with Topcon OM-4 Ophthalmometer. Intraocular lens (IOL) power and target postoperative refraction aimed for emmetropia were calculated using SRK II formula while the ‘A’ constant used was that provided by IOL manufacturer. All the patients were operated by a single surgeon using standard manual small incision cataract surgery (MSICS) technique and implanting same type of IOL in all patients.

All the patients were followed at 2 weeks postoperatively and subjective refraction was done. Spherical Equivalent (SE) refractive error was determined and recorded on pre-designed proforma. Data was analyzed using SPSS version 17.

Results: One hundred and eighty five eyes of 185 patients above 40 years of age with age related cataract were included in this study. Sixty nine (37.3%) patients presented in the age group of 51-60 years and ninety nine (56.5%) patients entering the study were male. Spherical equivalent postoperative refractive error was within ± 1.00D of the predicted refraction, which in this study was emmetropia, in 146 (78.9%) of eyes and beyond ± 1.00D in 39 (21.1%) eyes. Out of these 39 eyes 27 (14.6%) eyes had hypermetropic (> +1.00D) and 12 (6.5%) eyes had myopic (< - 1.00D) postoperative refractive error.

Conclusion: Postoperative refractive outcome in this study is acceptable and is comparable to other international studies. However the results can be improved further with the use of more advanced equipment, newer IOL formulas and personalization of surgeon’s “A” constant for determining the predicted postoperative refraction.

Key Words: Manual Small Incision Cataract Surgery; Cataract refractive outcome; Spherical Equivalent postoperative refractive error.
IOL power calculations. Predicted postoperative refractive status, aimed for emmetropia, and the IOL power was calculated using SRK II formula. The results of the study provided a local reference and also acted as an audit for the accuracy of the predicted refraction in our settings. Based on this observation further studies may also be carried out to identify and improve sources of error in calculating IOL power or the predicted postoperative refraction if appropriate.

**MATERIAL AND METHODS**

This descriptive cross sectional study was conducted at Khyber Institute of Ophthalmic Medical Sciences, Postgraduate Medical Institute, Hayatabad Medical Complex, Peshawar. The duration of the study was eight months and was carried out after the approval of synopsis from 1st September 2011 to 30th April 2012. 185 eyes were our sample size, keeping 7.7% proportion of myopic refractive error of more than 1.00D after MSICS, 95% confidence interval and 3.85% margin of error under WHO sample size calculations. The sampling technique was non-probability consecutive sampling.

**Inclusion criteria:**
- All patients presenting with age related cataract were included.
- Age group above 40 years were included
- Either gender was included.

**Exclusion criteria:**
- Patients with an axial length of less than 22.00mm and more than 24.4mm were excluded from the study through biometry.
- Any patient with sublaxated, traumatic or complicated cataract was excluded through history and slit lamp examination.
- Patients with co-existing glaucoma, corneal pathology, uveitis, pseudoexfoliation, diabetic retinopathy, age related macular degeneration and retinal detachment were also excluded from the study through slit lamp examination, applanation tonometry, dilated fundus examination and B-Scan if required.
- Patients in whom IOL could not be implanted in the capsular bag were also excluded from the study.

The above mentioned conditions act as confounders and if included might have introduced error in the study results.

Ethical approval was obtained from the hospital ethical committee. All the patients meeting the inclusion criteria (i.e.; presenting with cataract diagnosed on slit lamp examination) were admitted in eye ward through the out-patient department. Informed written consent was taken from all the patients. The patient’s history and visual acuity (VA) were recorded at presentation using standard retro illuminated Snellen chart. All patients had thorough preoperative examination by the consultant ophthalmologist including best corrected visual acuity (BCVA), slit lamp evaluation of the anterior segment, and dilated fundus examination using 78D lens and intraocular pressure measurement using Goldmann applanation tonometer.

A contact method A-scan biometry, Optikon Hiscan AB-Scan, was used to measure axial length of eyeball in millimeter (mm) and an average of 5 readings was recorded as final reading by a single trained ophthalmic technician. The Topcon OM-4 Ophthalmometer was used to measure the corneal power in diopters (D) by the same ophthalmic technician. The A constant used was that provided by the manufacturer of the IOL. The IOL power and the target postoperative refraction aimed for emmetropia were calculated using SRK II formula.

Routine investigations were performed for all the study patients on the day of admission. The patients were operated on the next OT list. Manual Small Incision Cataract Surgery was performed by a single consultant ophthalmologist, and same IOL was implanted in the capsular bag in all patients. After being operated, all the patients were followed at 2 weeks post-operatively and the VA was recorded and subjective refraction was done by a single experienced optometrist to detect the refractive outcome (plano, myopia and hypermetropia). All the follow-up assessments were done under the supervision of same ophthalmologist. All the above mentioned information including the patient’s name, age, sex and address were recorded in a pro forma. Strict exclusion criteria were followed to control confounders and bias in the study results. The data was analyzed by means of SPSS software (version 17). Mean ± Standard Deviation (SD) was calculated for numerical variables like age. Frequency and percentages (% ages) were calculated for categorical variables like gender and refractive outcome (plano, myopia and hypermetropia). Refractive outcome was stratified among age and gender to see the effect modifications. All the results were presented in the form of tables and graphs.

**RESULTS**

One hundred and eighty five eyes of 185 patients above 40 years of age diagnosed as having cataract and fulfilling the inclusion criteria were included in this study. All the study patients were evaluated at 2 week.

The minimum age at which the patient presented...
was 43 years while the oldest patient was 91 years of age with a mean of 59.64 years and SD ±10.34. Sixty nine (37.3%) patients presented in the age group of 51-60 years, making it the most common decade of presentation for patients with age related cataract. Details regarding age of our study population are given in Table I. Male gender was observed to be slightly dominant as compared to the female gender in the patients included in the study (Figure 1). The male to female ratio was almost 1.2:1

Out of the total 185 patients, 39 patients (21.1%) had spherical equivalent (SE) refractive error of more than 1.00D as compared to the target refraction, which in our study was emmetropia. Out of these 12 patients (6.5%) had myopic (myopia exceeding 1.00D) postoperative refractive error, 27 patients (14.6%) had hypermetropic (> +1.00D) postoperative refractive error while rest of the 146 patients (78.9%) had SE postoperative refractive error within ±1.00D of the target refraction (Plano) (Table II).

Spherical equivalent refractive error was observed more frequently in the age groups 51-60 years (n=17; 9.2%) as compared to the other age groups (Table III). Spherical equivalent refractive error of more than 1.00D was observed more frequently in the male gender as compared to the female gender (Table IV). No postoperative complications such as hyphema, corneal decompensation, endophthalmitis or IOL malpositioning, which might have interfered with the study results, were observed in any of the patients included in the study.

### Table I: Age distribution of the study population

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>41-50</td>
<td>51</td>
<td>27.6</td>
</tr>
<tr>
<td>51-60</td>
<td>69</td>
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<td>61-70</td>
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<td>71-80</td>
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<td>81-90</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>91-100</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>185</td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

*% = percentage; n = number*

### Table II: Frequency of SE postoperative refractive error

<table>
<thead>
<tr>
<th>SE Refractive Error</th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plano</td>
<td>146</td>
<td>78.98</td>
</tr>
<tr>
<td>Myopia</td>
<td>12</td>
<td>6.5</td>
</tr>
<tr>
<td>Hypermetropia</td>
<td>27</td>
<td>14.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>185</td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

*SE = spherical equivalent; Plano = refractive error ≥ -1.00D & ≤ +1.00D; Myopia = refractive error < -1.00 D; Hypermetropia = refractive error > +1.00D. n = number; % = percentage*

### DISCUSSION

Modern cataract surgery is no longer considered as a simple procedure for removal of physical barrier to vision, the procedure is largely intended to achieve a desired postoperative refractive outcome. Postoperative refractive error, resulting from inaccurate IOL selection and aphakia, has been reported as leading risk factors in several studies. The refractive outcome of cataract surgery can be monitored by auditing data in relation to spherical targeting, correction of astigmatism or maintaining astigmatism neutrality and provision of near vision. Biometry performed for calculating an appropriate power of IOL targets spherical equivalent refraction. Thus determination of spherical equivalent refraction after cataract surgery and its difference with the predicted postoperative refraction.
provides a very useful tool for auditing accuracy of biometry techniques, appropriateness of the formula(s) used for calculating IOL power and the surgeon’s “A” constant if it has been personalized by the surgeon.15

The current study was intended to determine the predictability of the target postoperative refraction after MSICS. The target refraction in our study was aimed for emmetropia. Postoperative spherical equivalent refractive error of all the patients included in the study was determined subjectively 2 weeks after surgery. Postoperative refractive error in our study was within ± 1.00D of the target refraction in 78.9% of cases and beyond this range in 21.1% of cases. 14.6% of the cases had SE refractive error of more than +1.00D while it was less than -1.00D in 6.5% of the cases. Complications like corneal decompensating, hyphema, endophthalmitis or IOL malpositioning, which might have interfered with the outcome of study, were not seen in any of the study cases.

Our results are comparable to other studies. Zhou et al reported SE refractive error of ± 1.00D in 73.2% of patients after MSICS, refractive error was less than -1.00D in 7.7% of cases and more than +1.00D in 19.1% of cases.17 Our results are comparable and better than their study and the possible reason for this may be that they did not follow any strict exclusion criteria and all the patients undergoing cataract surgery with IOL and then were available for follow up during the study period were included in the study.

Nazzi G et al found 77% of cases with SE refractive error within ± 1.00D of the target refraction18. Gouzovsky M et al reported SE refractive error of -1.00D to +1.00D in 74% of cases19 and Murphy C et al in 72.3% of cases.20 Zaidi FH et al observed similar results in 80% of cases in a consecutive series of 1000 patients undergoing cataract surgery.21 Rajan MS et al22 and Lundstrom M23 observed similar results in 83.5% and 79.3% of cases respectively. RP Gale et al suggested a benchmark standard of 85% of cases within ± 1.00D of the target refraction after cataract surgery.24 Percialc et al reported as many as 97% of cases with SE refractive error of -1.00D to +1.00D.25

Based on these studies, the accepted range for the percentage of cases with SE postoperative refractive error of -1.00D to +1.00D as compared to the predicted refractive state after cataract surgery with IOL implantation is 72% - 97%, the average being 84.5%. Our results are well within this range. Over the recent decades the difference between the achieved refraction and the target refraction has been improved by several factors including advances in IOL manufacture, instrumentation for biometry measurement, IOL power formula and personalization of “A” constant.26 Although results of our study are satisfactory but they can further be improved with the use of advanced equipment for biometry measurements such as immersion A-scan ultrasound biometry and optical biometry which measure the axial length, an important variable in calculating IOL power, with much precision unlike the contact A-scan ultrasound biometry which we have used in the current study.8

CONCLUSION

As patient’s expectations for precise refractive outcomes increase, even incremental improvement in predicting postoperative refractions becomes useful. Although results of our study are acceptable as compared to other studies but they can further be improved by enhancing IOL biometry accuracy by using immersion or optical biometry rather than the contact biometry, using one of the newer IOL power calculation formulas, personalizing the lens “A” constant and periodic tracking of postoperative refractive outcomes.

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An outbreak of Ebola virus disease (EVD) has jolted West Africa, claiming thousands of lives in West Africa (Guinea, Liberia, Nigeria, and Sierra Leone), since the virus emerged in Guinea in early 2014 in West Africa, it has captivated the world's attention and concern, health professionals and the general public are struggling to comprehend these unfolding dynamics and to separate misinformation and speculation from truth.

EVD, originally identified in 1976 in Yambuku, Zaire (now Congo), and Nzara, South Sudan, is caused by an RNA virus in the filovirus family. “Ebola” (named after a river in Zaire) encompasses five separate species — Zaire ebolavirus, Bundibugyoebolavirus, Tai Forest ebolavirus, Sudan ebolavirus, and Reston ebolavirus. Reston ebolavirus is not known to cause disease in humans, but the fatality rates in outbreaks of the other four species have ranged from 25 to 90%. The strain currently circulating in West Africa bears 97% homology to Zaire ebolavirus. This strain has historically resulted in the highest mortality (90%), although the estimated case fatality rate in the current outbreak is less than 60%.

Outbreaks, most likely reservoir appears to be a fruit bat, although that linkage has not been confirmed. Transmission to humans may have occurred through direct contact with tissue or bodily fluids from an infected animal. Notably, Ebola virus is a zoonotic pathogen, and its circulation among humans is uncommon, which explains the intermittent and unpredictable nature of outbreaks. In fact, although the virus has caused more than 20 outbreaks since its identification in 1976. Traditional practices, such as bathing of corpses before burial, have facilitated transmission. Numerous studies indicate that direct contact with infected bodily fluids — usually feces, vomit, or blood — is necessary for transmission and that the virus is not transmitted from person to person through the air or by casual contact.

Typical symptoms include fever, profound weakness, and diarrhea. A maculopapular rash has been described, and laboratory abnormalities including elevated aminotransferase levels, marked lymphocytopenia, and thrombocytopenia. Hemorrhagic complications occur in fewer than half of infected persons, and gross bleeding is relatively rare.
INTRODUCTION
A pterygium is a wing shaped sheet of fibro vascular structure which arises from conjunctiva and invades the cornea. It is usually more prevalent in residents of hot, temperate climate and represents response to chronic dryness and chronic exposure to sun rays\(^1\) (Fig 1). Ultraviolet B is thought to be the major risk factor which causes the elastic degenerative damage to the limbal stem cells barrier with resultant conjunctivalization of the cornea.\(^2\) \(^3\) \(^4\) The common indications for the surgical intervention include cosmetic appearance, visual deterioration, ocular motility restriction and chronic congestion.

The basic histopathological change in primary pterygium is elastotic degeneration of conjunctiva. It is caused by degeneration of sub-epithelial collagen and replacement with abnormal material that stains for elastin. There is dissolution of Bowmann’s membrane of cornea and dyskeratotic change in epithelial cells lying over the tissue.\(^3\) \(^4\) Pterygium is usually classified into different grades according to the extent of corneal involvement. Grade 1 pterygium extends less than 2 mm on to the cornea. Grade 2 the pterygium involves up to 4 mm of the cornea. Grade 3 is the pterygium encroaching more than 4 mm on to the cornea and usually involve the visual axis.\(^4\) \(^5\)

Different surgical and non surgical treatment modalities were adopted to prevent the recurrence of pterygium after surgery. Initially surgical excision with bare sclera technique was done. It was associated with a recurrence rate ranging from 30 to 70%.\(^6\) Later, in addition to surgical excision, different chemical substances were used to prevent the recurrence. These included alum powder, silver nitrate. Beta radiations has also been used to and it reduces the recurrence rate up to 5-13%; however, due to severe complications like cataract, keratoconjunctivitis sicca, corneal ulcerations, ptosis, scleral necrosis this mode of treatment lost its popularity.\(^7\)

Thiotepa an alkyl ting agent was thought to interfere with mitosis in fibroblasts cells in the pterygium. Due to various complications like allergic reactions, conjunctival pigment depositions and scleral ulcerations its use has declined.\(^8\)

Mitomycin C is an antibiotic anti metabolite properties by inhibiting DNA replication and is commonly used either intra operatively or post operatively. Various studies have shown recurrence using intra operative Mitomycin C comparable to those using postoperative Mitomycin C drops were less than 10% for the primary cases and less than 20% for the recurrent cases.\(^9\) \(^10\)

ABSTRACT
Purpose: The purpose of this study was to evaluate the efficacy, safety and recurrence rate by using superotemporal conjuntivo-limbal auto graft transplantation technique in the surgical management of pterygium in a population in which pterygia are more prevalent with maximum sun exposure.

Material & Methods: A total of 74 patients with primary and recurrent pterygium was surgically treated by the technique of excision and covering with free conjuntivo –limbal autograft between June 2010 and May 2013 at Ch Rehmat Memorial Hospital/Continental Medical College Lahore. All surgeries were performed under local anesthesia by using limbal conjunctival stem cell graft from the ipsilateral eye and stitched by using 10/0 nylon on to the bare area. During follow-up examination, the best corrected visual acuity, slit lamp examination and complication, recurrence rate were recorded.

Results: Recurrence was seen in 4(5.4%) cases, graft disinsertion 2(2.70%) cases, pygonic granuloma 1(1.5%) case, these were dealt with minor surgical revision. Uncorrected visual acuity improved after surgery in 62(83.8%) cases.

Conclusion: Conjuntivo-limbal autografting is a simple, safe and minimally invasive technique and it is recommended for the management of both primary and recurrent ptergia in Pakistani population

Keywords: Pterygium, Stem Cell Limbo-Conjunctival Graft, Recurrent Pterygium
Amniotic membrane transplantation has also been used as it possesses the anti-inflammatory and anti-fibroblast activity; however, a study by Prabhasawat et al reported a recurrence rate of 10.95% in primary while 37.5% in recurrent cases. Other studies have reported the recurrence rate ranging from 3.8% to 15.4% for the primary pterygia.

The pioneer work of replacing the damaged limbal stem cells was done by Kenyon et al in 1985. In his study total no was 57; out of these 16 eyes had primary pterygia while 41 eyes had recurrent ones. After a follow up of two years he reported recurrence rate of 3 (5.3%) cases. However other authors have failed to achieve the same success rate similarly Koch JM and Guler M have described the inclusion of limbal tissues in the graft with low recurrence rate. The importance of limbal tissues use has also been suggested by Figueriredo et al. We conducted this study to see outcome of pterygium surgery using limbal stem cell graft in our population from Lahore and surrounding cities of Pakistan.

MATERIALS & METHODS

This prospective study includes 74 patients with primary and recurrent pterygium who were visiting the outpatient department of Ch Rehmat Memorial Hospital/Continental Medical College Lahore from June 2010 to May 2013. All the entries were made in computerized proforma which included complete ocular and medical history, grading of pterygium, visual acuity before/after surgery, surgical technique, complications, and finally recurrence.

These cases were treated by the excision of pterygium and covering the bare limbo-scleral area with stem cell conjunctivo-limbal autograft. In this study 16 eyes had mild pterygium, 37 moderate, while 19 eyes had marked pterygium. Seventy eyes had primary pterygium while only 4 eyes had recurrent pterygium. All patients were followed for at least a period of six months.

Surgical Technique:

A standard surgical technique was used by all the surgeons in the study. Initially topical anesthetic drops pro-paracaine hydrochloride 0.5% (Alcaine, Alcon, Inc.) eye drop were used to anesthetize the ocular surface. Xylocaine hydrochloride 2% was injected subconjunctivally with a 27 G needle above the body of pterygium. A nick incision was made in the conjunctiva close to the head of pterygium and dissection was continued posteriorly using Wana’s scissors. The pterygium was separated from the underlying scleral tissue by blunt dissection. The head of pterygium remained attached at the cornea. A mosquito artery forceps was placed under the body of pterygium near to its scleral attachment and it was fixed for couple of minutes to achieve the haemostasis. The clamps were released and body along with head of pterygium was separated from cornea by using corneal scissors. It was assured that no damage should be done to medial rectus muscle during the process of dissection. Partial keratectomy was done at the nasal limbus by using no 15 Bard-Parker knife. The area was cleaned by using ringer lactate solution. The haemostasis was secured by pressure application. Bipolar cautery was used when needed.

Fig-1

Graph-1

Graph-2
The length and width of the bare area was measured and a 2 mm strip of stem cell conjunctivo limbal autograft with variable length according to wound gap was taken from the limbus to superior fornix in the supro-temporal quadrant of the conjunctiva of ipsilateral eye. Using 27 G needle nearly 0.5 ml of xylocaine 2% was injected to raise the balloon of conjunctiva containing the stem cells. The pre marked area of the conjunctiva was incised by using non toothed conjunctival forceps and fine corneal scissors to avoid the button holing of the conjunctiva. By gentle dissection the graft was dissected up to the limbus and is excised up to 2 mm into the cornea to include the limbal stem cells. The excised conjunctival strip containing the stem cell was slide over to the nasal limbus. The Limbus to limbus orientation was ensured. The graft was anchored with 10/0 nylon sutures. The conjunctiva was thoroughly washed with ringer lactate solution. Antibiotic steroid drops were put and eye pad was placed for at least 72 hours to provide anchorage to the episcleral and limbal tissues. After the removal of bandage topical antibiotic and steroid drops with lubricants were used in every case. Regular follow up was done at one week, two week, one month and six month and finally one year. The signs of infection at the wound and graft rejection were thoroughly assessed. The sutures were removed after 15 to 21 days after the surgery (Fig 2).

RESULTS

A total number of 74 patients with primary and recurrent pterygium were included. There were 50 male and 24 female (graph 1). The range of the age was from 30 years to 70 years. The mean age of the study group was 38.70 ± 7.60. The percentage of the patients in the range of 41-50 years was 43.24%, whereas 18.9% patients belonged to group with an age 20- 40 years, 29.72% patients were in the age group 51-60 years and patients belonged to group with an age 20-40 years, in the range of 41-50 years was 43.24%, whereas 18.9% group was 38.70 ± 7.60. The percentage of the patients from 30 years to 70 years. The mean age of the study was 38.70 years. Sadiq et al reported similar patients had moderate disease, while 18 had mild degree of pterygium and 19 patients had severe pterygium (Table 1). 70 eyes had primary, while only 4 eyes had recurrent pterygium.

<table>
<thead>
<tr>
<th>Degree of Pterygium</th>
<th></th>
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<tbody>
<tr>
<td>Mild</td>
<td>18</td>
</tr>
<tr>
<td>Moderate</td>
<td>37</td>
</tr>
<tr>
<td>Marked</td>
<td>19</td>
</tr>
</tbody>
</table>

Preoperative visual acuity (BCVA) was noted in 6/12-6/18 in 35 eyes and 6/24-6/36 in 27 eyes. It improved to 6/6 to 6/9 in 47 eyes and 6/12 to 6/18 in 12 eyes on post operative follow up visits. At the first follow up visit after one week all the grafts were intact with the complaints of watering and foreign sensations which were attributed to the stitches at the area of wound which were reduced with lubricants. At the second follow up after two weeks the stitches were removed. It was noted that the sub-conjunctival edema containing yellow colored fluid had resolved and the color of the graft was showing pinkish hue. After one month all the subjective complaints were resolved and the graft had structural uniformity with the surrounding conjunctiva and no sub conjunctival scarring was seen.

At the final visit, six month post operatively, 70 eyes (94.6%) had no signs of recurrence whereas 4 eyes (5.4%) had recurrence of pterygium, graft dis-insertion occurred in 2 (2.7%) of cases, pyogenic granuloma in 1 (1.5%). All these complications were dealt with minor surgical revisions. Uncorrected visual acuity improved after surgery in 62 (83.8%) cases.

DISCUSSION

In the present study, out of seventy four patients 50 were male, 24 female and mean age group in this study was 38.70 years. Sadiq et al reported similar pattern i.e. 51 female, 21 male and the mean age group in their study was 41.42 years. At six months follow up 70 (94.6%) eyes had no signs of recurrence whereas only 4 eyes (5.4%) had recurrence of pterygium. In study by Mahdy recurrence rate was 4.75% due to modified surgical technique, although they studied the younger age groups living in the windy, sandy with prolonged exposure to ultra violet radiations while working in the Arabian Gulf region.

Another study by Narsani et al compared the recurrence of pterygium conjunctival autografting with Mitomycin C. Out of total 112, 70 eyes received the conjunctival graft whereas 42 eyes received preoperatively Mitomycin C. They reported a recurrence of 5.7% in conjunctival auto graft group compared to 8 (19%) in Mitomycin C group.

Other complications related to the limbal conjunctival auto grafting like 2(2.7%)cases had graft disinsertion and one case (1.5%) had pyogenic granuloma. However more serious complications like graft necrosis, corneal dellen or iatrogenic conjunctival cysts were not seen. Similarly Sadiq and Mahdy did not report severe sight threatening complications.

Visual acuity improved in our study after surgery in 62 (83.7%) cases due to reduction in post operative astigmatism. Similarly Rao reported visual acuity improvement or stabilization at preoperative level in 51 eyes (96.2%) with a mean follow up of 12 months. We
conclude that the recurrence rates for pterygium excision and limbal conjunctival auto graft in our study is 5.4% which is comparable with other studies Kenyon12 (5.3%), Mahdy19 (4.75%) and Narsani20 (5.7%).

CONCLUSION

In our study, we meticulously dissected the stem cell ultra thin graft devoid of any Tenon’s fasica. The technique is easy to craft and conjunctival limbal stem cell graft is very much near to the normal anatomy and morphology of the limbus. So we recommend limbal conjunctival auto grafting as a procedure of first choice for the surgical management of primary and recurrent pterygia in Pakistani population.

REFERENCES


A 7 year old girl complained of decreased vision, 20/40 in the right eye and normal in the left eye. Examination revealed Y-shaped lenticular opacities diagnostic of a sutural cataract. The opacities followed the anterior and posterior Y sutures of the lens, with the anterior suture having the shape of an upright Y and the posterior suture having the shape of an inverted Y. Sutural cataracts are congenital lens opacities that affect the Y sutures of the nucleus of the fetal lens. The sutural cataracts do not progress. Since the effects on vision are minimal. Eyeglasses were prescribed for such patients, with marginal improvement of the vision.

Newsnet Online
Outcome and Complications after Pan-Retinal Laser Photocoagulation for Proliferative Diabetic Retinopathy: An Experience at CMC Hospital Larkana

Muhammad Amin Shaikh DOMS, MSc, MS1, Prof. Syed Imtiaz Ali Shah, FCPS2
Altaf Hussain Sheikh DLO, MS3, Khalid Rasul Shaikh MBBS4, Amanullah Shaikh MBBS, DCH5

ABSTRACT
Objective: In this observational study we document the outcomes and complications of pan retinal photocoagulation in diabetic patients having proliferative diabetic retinopathy.

Material and Methods: This observational study was conducted at Department of Ophthalmology, Chandka Medical College SMBBMU Larkana from March 2011 to February 2013. Three hundred and sixty one eyes of two hundred thirty two patients were treated in three sessions. Follow up was planned at one week, one month and three months and then yearly for two years and all the complications were documented. Visual acuity and retinal examination was performed at each follow up and any complication was documented. Data was entered on SPSS version 16 for windows and analyzed.

Results: Three hundred and sixty one eyes of two hundred and thirty two patients under went pan-retinal photocoagulation. There were 126 (54.4%) females and 106 (45.6) males with a mean age of 62.07 years (SD=8.15). Mean laser shots applied were 3200 with a minimum of 2700 to a maximum of 3800 and an average power of 360 mv (SD=55.63) intra-operative complications occurred in 183 patients. Long term complications included, progression of diabetic retinopathy after a period of complete resolution of new vessels, vitreous hemorrhage, Tractional retinal detachment, progression of cataract, macular edema. Pre-macular fibrosis and macular hemorrhage. At last follow up visual acuity improved in 143 eyes, deteriorated in 183 and remained unchanged in 35 eyes.

Conclusion: Pan retinal photocoagulation is a safe and effective procedure. A close follow up is needed after this procedure to avoid long term complications and to treat them as soon as possible.

Key word: Laser, pan-retinal photocoagulation, diabetic retinopathy.

INTRODUCTION
Diabetes mellitus is a global epidemic and has crisis proportion in Pakistan.12 The international diabetes federation (IDF) estimated in 2011 that 366 million adults, aged 20-79 years, of the worlds 7 billion population have diabetes.3 A recent survey shows that about 8.8 million people are suffering from diabetes in Pakistan and this number is estimated to be doubled in the year 2025.4 Studies performed by Afgani5 and Kayani et al.6 suggest the prevalence of diabetes retinopathy between 22.29% and 33.3 % in Pakistani diabetics. According to the us census bureau, international data base 2004 the extrapolated incidence (The number of new cases diagnosed each year) of diabetic retinopathy in Pakistan in 38,043.7 Proliferative diabetic retinopathy is the leading cause of blindness among diabetic population and in Pakistan ranked sixth position among treatable causes of blindness8 There are different treatment modalities to deal with proliferative diabetic retinopathy. Early treatment diabetes retinopathy study group recommends pan retinal photocoagulation. In this observational study we document the outcomes and complications of pan retinal photocoagulation (PRP) diabetic patients having proliferative diabetic retinopathy (PRP).

PATIENTS AND METHODS
This observational study was conducted at Department of Ophthalmology Chandka Medical College SMBBMU Larkana From March 2011 to February 2013. Three hundred and sixty one eyes of two hundred thirty two patients fulfilled the inclusion and exclusion criteria. Which included proliferative diabetic retinopathy, visual acuity 6/12 or better, age over 30 years and below 90 years. Clear media without clinically significant macular edema or other posterior segment pathologies and no history of previous photocoagulation or uncontrollable glaucoma. All the patients signed an informed consent written in local language.

Socio-demographic data: It was entered on the prescribed form including age, gender, address, contact number, occupation and level of education. Prior to treatment each patient underwent a full ophthalmic assessment which included slit-lamp Biomicroscopy and binocular indirect Ophthalmoscopy. Selected patients were subjected to fluorescien angiography and fundus color photography prior to laser treatment.

The patients were treated through a maximally dilated pupil with a PRP lens. The Goldmann three
mirror lens was also used if only partial treatment was obtained with a PRP lens. The patients were treated in three treatment sessions at an interval on one week with topical anesthesia (proparacaine). Two thousand and five hundred burns were applied to each eye, of spot size 500 micron and duration 0.1 second. The power was adjusted to produce just noticeable immediate blanching of the retinal pigment epithelium. No additional laser treatment was given during the six weeks period. Additional laser burns were considered after six weeks period if the treatment seemed insufficient. After completion of pan-retinal photocoagulation. Follow up was planned at one week, one month, three months and then yearly for two years. Visual acuity and retinal examination was performed at each follow up and any complication was documented. Data was entered on SPSS version 16 for windows.

All categorical variables were presented as frequencies and percentages in the form of frequency tables, mean, standard deviation and range was measured for all continuous variables.

RESULT

Three hundred and sixty one eyes of two hundred thirty two patients underwent pan retinal photocoagulation from March 2011 to February 2013 at Department of Ophthalmology Chandka Medical College SMBBMU Larkana. Three hundred and sixty one eyes of two hundred thirty two patients are present for analysis. These patients had a follow up of at least two years after which they were censored from the study.

There were 126 (54.4%) females and 106 (45.6%) males with a mean age of 62.07 years (SD=8.15). Duration of diabetes mellitus ranged from 11 years to 35 years. NVD (new vessels on the disc) were found in 245 eyes. NVE (new vessels elsewhere) in 61 eyes and both in 55 eyes. Visual acuity range was 6/12 in 124 patients 6/9 in 86 and 6/12 in 151 patients.

Mean laser shots applied were 3200 with a minimum of 2700 to a maximum of 3800 and an average power of 360 MV (SD=55.63) intra-operative complications occurred in 183 patients that include server pain requiring retro bulbar anesthesia in 12 patients and vitreous hemorrhage in 03 patients. Post laser complications with in first four weeks occurred in 179 patients that included in table no. 1 no regression of new blood vessels was observed in 16 cases for which additional burns were applied. Long term complications included. Progression of diabetic retinopathy after a period of complete resolution of new vessel. Vitreous hemorrhage, tractional retinal detachment, progression of cataract, macular edema, pre macular fibrosis and macular hemorrhage (Table II) at last follow up visual acuity improved in 147 eyes deteriorated in 183 and was unchanged in 31 eyes.

<table>
<thead>
<tr>
<th>Complications</th>
<th>Frequency</th>
<th>Percent</th>
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<tr>
<td>1. Blurred vision</td>
<td>24</td>
<td>6.6</td>
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<tr>
<td>2. Punctate corneal erosion</td>
<td>14</td>
<td>3.9</td>
</tr>
<tr>
<td>3. Clinically significant macular edema</td>
<td>57</td>
<td>15.8</td>
</tr>
<tr>
<td>4. Defective night vision</td>
<td>84</td>
<td>23.2</td>
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</table>

<table>
<thead>
<tr>
<th>Complications</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Recurrence or persistence of proliferative diabetic retinopathy</td>
<td>43</td>
<td>11.7</td>
</tr>
<tr>
<td>2. Vitreous hemorrhage</td>
<td>12</td>
<td>3.2</td>
</tr>
<tr>
<td>3. Progression of macular edema</td>
<td>08</td>
<td>2.2</td>
</tr>
<tr>
<td>4. Progression of cataract</td>
<td>64</td>
<td>17.5</td>
</tr>
<tr>
<td>5. Macular edema</td>
<td>38</td>
<td>10.4</td>
</tr>
<tr>
<td>6. Pre-macular fibrosis</td>
<td>21</td>
<td>5.7</td>
</tr>
<tr>
<td>7. Macular hemorrhage</td>
<td>07</td>
<td>1.9</td>
</tr>
</tbody>
</table>

DISCUSSION

In this 232 patients, complications after PRP are documented. We will discuss only the long term complications by Dubey et al10 1380 eyes were treated for proliferative diabetic retinopathy and followed for 4 years long term complications requiring surgical interventions developed in 23% cases.

This might be due to the fact that we performed PRP in three sessions and our follow up is shorter. In a recent study by Aimee et al10 Recurrence or persistence of new vessels was observed in 34% cases after a follow up of six months. Macular edema after PRP has an incidence of 34% in patients with prior normal macula.

When documented by OCT.11 But clinically significant macular edema in our series was present in only in 15.8 percent eyes. Another study by MC Donald and Schatz reported macular edema in 43 percent eye as evidenced by Fluorescein angiography.12 A recent study shows that macular edema did not develop in any eye after pan retinal photocoagulation. In this study author performed pan retinal photocoagulation in four session and patients included in the study were free of macular edema before photocoagulation.13 In our study macular edema, after pan retinal photocoagulation developed only in 15.8 percent eyes. It might be due to the fact that we have performed the procedure in three session and the patients included in the study had no or minimal macular edema before photocoagulation. The incidence of vitreous hemorrhage after PRP as reported by Kaiser et al is in 37 percent eyes14 In our study vitreous hemorrhage occurred only in 3.2 percent eye after a period
of quiescent stage. This lower incidence was due to the fact that we included in our study only those patients who had no previous vitreous hemorrhage and were in an initial stage of diabetic retinopathy. Additionally, we performed a complete PRP with a larger number of laser shots. Retinal detachment as reported by Kaiser14 is in 4 percent cases while in our study it is 2.2 percent this might be due to the facts already described.

CONCLUSION
Pan retinal photocoagulation is a safe and effective procedure. A close follow up is needed after this procedure to avoid long term complications and to treat them as soon as possible.

REFERENCE

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**Tinea Circinata**

Curtesy: Kimberly A. Rovansek, M.D. Anthony Papadopolous, M.D.

A 46-year-old woman with a history of (HIV) infection had a painful rash on the pre-tibial surface of the leg. The patient reported having been scratched by a cat in the same area three weeks earlier. A violaceous plaque that measured 9 cm by 9 cm and consisted of four concentric rings with intervening areas of normal skin with numerous yellow-white pustules at the periphery of the rings and there was fine scaling of the skin. The CD4 cell count was 365 per cmm, the HIV load was undetectable. The patient had not received any antiretroviral therapy and was treated with oral amoxicillin–500 mg twice daily for 14 days with no noticeable improvement. A skin-scraping specimen prepared with potassium hydroxide was evaluated microscopically and found to contain multiple hyphae. A diagnosis of tinea circinata was made. Tinea circinata, is an uncommon morphologic variant of tinea corporis, is caused by the dermatophyte Trichophyton tonsurans.

*Newsnet Online*
General Impact of Ocular Antiangiogenic Therapy

Prof. Marianne Shahsuvaryan, D.Sc, Ph.D
Prof. of Ophthalmology, Yerevan State Medical University, 7 Ap, 26 Sayat-Nova Avenu Yerevan, 0001, Republic of Armenia

ABSTRACT

**Background:** Vascular endothelial growth factor (VEGF) plays an important role in the pathophysiology of several sight-threatening retinal disorders such as age-related macular degeneration, retinal vein occlusion, diabetic macular edema and proliferative diabetic retinopathy. The discovery of anti-VEGF agents has revolutionized the treatment of these conditions. There are 4 antiangiogenics that are either approved or in common use in ophthalmology, namely pegaptanib (Macugen, Pfizer), ranibizumab (Lucentis, Novartis), aflibercept or VEGF Trap-Eye (EYLEA, Bayer) and bevacizumab (Avastin, Roche). Ophthalmology has witnessed an explosion in the number of intravitreal injections delivered to patients over the past 10 years, driven in large part by the introduction and rapid incorporation of therapy with anti-VEGF agents. However, there is some evidence that intravitreal antiangiogenic injections may result in systemic absorption, with the potential for injury in organs that are reliant on VEGF. In this review an attempt is made to explain currently available data of the clinical trials based on their general impact and systemic safety concerns.

**Keywords:** antiangiogenic agents, pegaptanib sodium, ranibizumab, aflibercept intravitreal injections, general impact

INTRODUCTION

Vascular endothelial growth factor (VEGF) plays an important role in the pathophysiology of several sight-threatening retinal disorders such as age-related macular degeneration, retinal vein occlusion, diabetic macular edema and proliferative diabetic retinopathy. The discovery of anti-VEGF agents has revolutionized the treatment of these conditions.

The term anti-angiogenic therapy was born more than 35 years ago by J. Folkman, who hypothesized that cancer may be treated by abolishing the nutrients and oxygen-providing blood vessels by agents that could block the angiogenic cascade. Monoclonal antibodies against Vascular Endothelial Growth Factor (VEGF) were first developed as an intravenous treatment for metastatic colorectal cancer.

Consequently, several antiangiogenics have been developed for the treatment of sight-threatening retinal diseases, including neovascular age-related macular degeneration, retinal vein occlusions and diabetic macular edema in diabetic retinopathy and ophthalmology. Ophthalmology has witnessed an explosion in the number of intravitreal injections delivered to patients over the past 10 years, driven in large part by the introduction and rapid incorporation of therapy with anti-VEGF agents.

Taking into consideration that these patients may present with a different spectrum of underlying diseases and potentially higher risk profiles, systemic safety data across multiple anti-angiogenic agents should be analyzed critically. The rising popularity of anti-VEGF drugs came along with concerns about its safety in clinical use. Anti-VEGF agents given intraocularly spread into the systemic circulation and have the potential to cause systemic adverse effects. The objective of this review is to evaluate the general impact of ocular pharmacotherapy by vascular endothelial growth factor inhibitors in retinal disorders based on currently available data of the clinical trials.

There are 4 anti-VEGF agents that are either approved or in common use in ophthalmology, namely Pegaptanib (Macugen, Pfizer), Ranibizumab (Lucentis, Novartis), Aflibercept or VEGF Trap-Eye (Eylea, Bayer) and Bevacizumab (Avastin, Roche).

**Pegaptanib** is a selective VEGF inhibitor, targeting only one isoform of the VEGF molecule, leaving other isoforms unaffected. In 2004, pegaptanib (Macugen (Pfizer and OSI/Eyetech Pharmaceuticals, Inc.) was the first anti-VEGF agent to receive FDA approval for the treatment of neovascular age-related macular degeneration (AMD). The use of pegaptanib has declined with the release of newer anti-VEGF agents, such as ranibizumab (Lucentis, Genentech, Inc., South San Francisco, CA, and Novartis Pharma AG, Basel, Switzerland), aflibercept (VEGF-trap eye, Eylea, Regeneron Pharmaceuticals, Inc., and Bayer Pharma AG, Berlin, Germany) and bevocizumab (Avastin, Genentech, Inc., South San Francisco, CA, and Roche, Basel, Switzerland).

**Ranibizumab** (Lucentis; Genentech, South San Francisco, CA, USA) is a humanised antigen binding fragment of a murine full length monoclonal antibody directed against human vascular endothelial growth factor - VEGF A. Ranibizumab binds all active isoforms...
of VEGF-A and is thus considered a non-selective VEGF-A inhibitor.5

**Aflibercept** or **Bevacizumab** (Avastin, Roche), is a humanized monoclonal antibody directed against all the biologically active isoforms of vascular endothelial growth factor (VEGF)-A. Bevacizumab binds to the receptor-binding domain of all VEGF-A isoforms.7 Bevacizumab is FDA-approved for the treatment of colorectal cancer. However, because the agent costs substantially less per dose than ranibizumab, it has been widely used off-label since 2004 to treat several retinal diseases.

**Systemic Effects of Antiangiogenic Therapy:** Intravitreal injections of anti-angiogenic agents could cause the cardiovascular effects (thrombosis, hemorrhage, hypertension, proteinuria), as well as the less frequent cerebrovascular accidents, myocardial infarction, transient ischemic attacks, deep vein thrombosis, pulmonary embolism, thrombophlebitis.8,9 Singerman et al.10 in two double-masked randomized studies evaluated the safety of up to 3 years of pegaptanib sodium therapy in the treatment of neovascular AMD and concluded that serious adverse events were rare. The authors found no findings in relation to vital signs or electrocardiogram results suggesting a relationship to pegaptanib treatment. Results of other randomized trials10 of pegaptanib sodium for macular edema secondary to branch retinal vein occlusion (BRVO) revealed a trend towards a higher risk of stroke among patients with a history of heart disease.

**Pegaptanib** (Macugen) is associated with a lower risk of stroke than either Lucentis or Avastin.11 The most probable reason for this finding relates to selective binding just one strain of VEGF. Campbell et al.12 assessing the risk of systemic adverse events associated with intravitreal injections of vascular endothelial growth factor inhibiting drugs in the nested case-control study have found that intravitreal injections of bevacizumab and ranibizumab were not associated with significant risks of ischemic stroke, acute myocardial infarction, congestive heart failure, or venous thromboembolism.

The International Intravitreal Bevacizumab Safety Survey gathered adverse events from doctors around the world via the internet13 and showed all ocular and systemic side effects to be under 0.21% including different ocular abnormalities and also blood pressure elevation, transient ischemic attack, cerebrovascular accident and death. Fung et al.14 concluded that self-reporting of adverse events after intravitreal bevacizumab injections did not show an increased rate of potential drug-related ocular or systemic events and these short-term results suggest that intravitreal bevacizumab seems to be safe.

The reliance on self reported information on bevacizumab use represents a potential limitation of this study. On the other hand, findings reviewed in 2006 were insufficient to evaluate the systemic safety of bevacizumab. More data are becoming available on this agent. It is recognized that the widespread off-label use of bevacizumab, because of its relative inexpensiveness compared to ranibizumab, raises concerns, particularly when systematic reviews of clinical trials comparing the clinical effectiveness of the two drugs15 suggesting increased frequency of systemic serious adverse events (SAE)16 and representing a disadvantage of bevacizumab. The results from pooled analysis of two large comparative effectiveness trials for neovascular age-related macular degeneration17-20 suggest that systemic serious side effects (SAEs) were more common in the bevacizumab-treated patients, despite the fact that the risk of death or arteriothrombolic events (ATEs) was similar between the drugs.

Few studies are focused on safety profiles of ranibizumab in retinal vein occlusion. Clinical evaluation of ranibizumab based on two double-blind randomised trials comparing ranibizumab versus placebo in a total of 795 patients revealed that the incidence of heart failure and transient ischemic attacks was higher during the second year of ranibizumab therapy than during the first year of treatment.21 For central retinal vein occlusion – CRUISE study22 it has been demonstrated that death from unknown cause was found in 0.8%, myocardial infarction 0.8%, cerebrovascular events in the 2.4% in ranibizumab group. An incidence of non-ocular serious adverse events for patients suffered from branch retinal vein occlusion and treated by ranibizumab – BRAVO study23 was equal to 9.1%, non-ocular hemorrhage was reported in 2.3%. Fielen et al.24 conducted a systematic review on this matter and concluded that in general, the incidence of systemic adverse events and rates of death (0-3%) were low and did not significantly differ between treatment groups in the multicenter trials.22,23,25,26 In authors’ opinion25 it is likely that information on ocular and systemic adverse events varied between trials due to very detailed reporting within most multicenter trials (including additional information available as online supplements) and, on the other hand, the overall notification of “no ocular and system-
ic adverse events” in a single-center trial. Individuals presenting with considerable systemic diseases in their recent past medical history are most often excluded. Certainly, in all trials numbers of participants are still too low to be calculated to detect small differences in rare systemic events. Dubey et al.27 proved that non-ocular adverse event profile of ranibizumab in patients with diabetic macular edema (DME) is similar to that observed in patients with neovascular age-related macular degeneration or retinal vein occlusion.

There is some evidence that intraocular anti-VEGF injections due to systemic absorption may result in injury in organs that are reliant on VEGF, such as the kidney. Pellé et al.28 reported the first case of a patient who developed an acute decrease in kidney function, non-immune microangiopathic hemolytic anemia with schistocytes, and thrombocytopenia after 4 intravitreal injections of ranibizumab. Light microscopy of a kidney biopsy specimen showed segmental duplications of glomerular basement membranes with endothelial swelling and several recanalized arteriolar thrombi. Early detection is crucial so that intravitreal injections can be stopped before severe kidney disease occurs. In Sorenson and Sheibani29 opinion perhaps baseline and renal function during treatment (serum creatinine and urinary protein levels, blood pressure) should be carefully monitored to ensure that the improved visual acuity is not at the expense of renal function. A recent meta-analysis asseccing the non-ocular serious adverse events potentially related to anti-VEGF agents in retinal vein occlusion indicated rare the Antiplatelet Trialists’ Collaboration Arterial Thrombo-embolic Events (APTC ATEs) including myocardial infarction, ischemic stroke, vascular deaths.30 Avery31 evidenced that analysis of large populations will be critical to identify if there is a systemic risk to intravitreal agents, as individual trials are not powered to detect differences in uncommon events. There may be subsets of patients, such as patients with diabetes, the elderly or those with recent ATEs such as stroke, who may be at increased risk after intraocular anti-VEGF injection.

The latest approved agent is aflibercept. Its greater VEGF binding affinity (140 times that of ranibizumab) coupled with larger molecular size (twice that of ranibizumab) and a longer duration of action may allow for a less-frequent dosing schedule than with either bevacizumab or ranibizumab with good efficacy.27,32 Concerns have also arisen regarding the safety of aflibercept. It could cause non-ocular haemorrhages and arterial thromboembolic events.33,34 Only recently, aflibercept has been investigated in patients with CRVO in the COPERNICUS (Controlled Phase 3 Evaluation of Repeated Intravitreal Administration of VEGF Trap-Eye in Central Retinal Vein Occlusion: Utility and Safety) trial.27 According to the results of this trial no deaths were reported in the aflibercept 2 mg group during the first 12 months. However, 2 deaths (2.7%) occurred in the sham/aflibercept group. Both deaths had a vascular cause (myocardial infarction and cardiac arrhythmia). Non-lethal myocardial infarction was documented in 1 patient of each group (0.9% and 1.7%).

The results from the most recent trial on aflibercept in age-related macular degeneration35 suggest that although adverse events were carefully noted, there is always a possibility that some systemic effect may not have been captured in this retrospective study. Further clinical trials and comparative studies with aflibercept are needed to establish the systemic safety profile of this agent. Dr. Chakravarthy presented her approach for treating patients with a history of stroke, the patients with diabetes at the annual meeting of the American Academy of Ophthalmology.36 In these cases she would treat with ranibizumab, although she has reservations about long-term therapy in this population due to additional potential systemic risk factors and comorbidities. The latest available data still left the unanswered questions is whether or not there is a difference in the safety profile among the drugs, and how a long-term regimen may impact that profile.36

In summary, almost uniformly all trial evaluating systemic safety of anti-angiogenic agents reveal the serious side effects including cardiovascular events, despite the fact that the incidence is low. The most probable reason for incidence rate relates to the absence of stratified analysis by age myocardial infarction, stroke risk. Systemic safety concern in intraocular pharmacotherapy by anti-angiogenic agents has a strong body of clinical evidence, resulting in plenty of peer reviewed clinical articles.

CONCLUSION

Several anti-angiogenic agents are being widely used for the treatment of eye diseases like neovascular macular degeneration, retinal vein occlusion and diabetic macular edema. Taking into consideration that these patients may present with a different spectrum of underlying diseases and potentially higher risk profiles, systemic safety data across multiple anti-angiogenic agents have analyzed critically.

Currently available findings obviate the need to raise awareness about cardiovascular risk profile in patients with eye diseases treated by anti-VEGF. Early detection is crucial so that intraocular injections can be stopped before severe accident occurs.

REFERENCES:


Incidence of Achilles Tenotomy in Management of Congenital Equino Varus (Ctev) by Ponseti Casting Technique in Neonates

Syed Dil Bagh Ali Shah MRCS (UK), FCPS Ortho, Adnan Khan MBBS
Syeda Umm-e-Habiba Gillani, Prof. Zaffar Durrani FRCS Ortho

ABSTRACT

Objective: The purpose of this study is to evaluate the incidence of surgery i.e. tenotomy in Ponseti technique in the management of congenital Talipes Equino Varus (CTEV).

Methods: It is a prospective observational study, conducted during the period of Feb., 2014 to Sept., 2014 at the Department of Orthopedic Surgery Khyber Teaching Hospital, Peshawar. All the neonates with CTEV were treated with Ponseti casting technique. Neonates with other congenital deformities, arthrogryposis and myelomeningocele were excluded.

Results: Total 37 CTEV feet of 17 neonates were treated. Seventeen were males and four female. Seventeen patients had bilateral and 4 had unilateral involvement. Mean number of plaster casts required per CTEV was 6.50 (range: 6-7). 21/37 (60%) feet required percutaneous tenotomy of Achilles tendon.

Conclusion: The Ponseti technique is an excellent, simple, effective, minimally invasive, and inexpensive procedure for the treatment of CTEV deformity. Ideally it can be performed as a day case procedure without general anesthesia even in neonatal period. Percutaneous tenotomy of Achilles tendon is usually needed in the patients who need more number of plasters to correct the initial deformity.

Keywords: Congenital Talipes Equino-varus, Ponseti technique.

INTRODUCTION

The club foot or congenital talipes equinovarus (CTEV) is a complex foot deformity comprises of forefoot adduction, midfoot cavus and hind foot equinus. It is one of the complex and most common congenital deformities. Its incidence is about 1 to 2 per 1,000 live births. The objective of the treatment is to achieve a pain free, pliable, plantigrade, functionally and cosmetically acceptable foot within the minimum time duration with the least interruption of the socioeconomic life of the parent and child.

The initial treatment of the clubfoot should be non-operative regardless of the severity of the deformity. If there is no improvement, then postero-medial release (PMR) of the soft tissues is indicated. However, disadvantages of PMR are high complication and recurrence (13-50%) rate and the difficulty of treating recurrences. But extensive surgery is not the right approach to the management of CTEV. Over the last two decades, Ponseti casting technique has become a gold standard worldwide for the correction of CTEV. It includes serial corrective manipulations, serial application of plaster casts supported by limited operative intervention (percutaneous Achilles tenotomy). Success rate of Ponseti method approaches to 90-96% in short, mid and long-term results.

The Ponseti technique of CTEV management is effective, produces better results and fewer complications than traditional surgical methods. Ponseti casting technique has shown promising results and most of the club feet can be treated with it rather than surgery. This technique is particularly important in countries, where operative facilities are not available or very limited in the remote areas. The physicians and technicians trained in this technique can manage the cases effectively with the cast treatment only. The purpose of this study was to know the frequency of tenotomies in club feet treated by ponseti technique.

MATERIALS AND METHODS

This is a prospective observational study, conducted at the Khyber Teaching Hospital Peshawar. The study period was from February 2014 to September 2014. All the neonates with CTEV presented to the orthopedic department were treated according to the Ponseti casting technique. Neonates with non-idiopathic clubfeet i.e. CTEV associated with meningocele, meningo(myelo)cele, arthrogryposis multiplex congenita and other neuromuscular causes were excluded. An informed consent was taken from all parents. All relevant data were collected from each participant using proforma that included patient’s demography, physical examination, management, Pirani severity scoring score (for initial assessment of the severity, and for
evaluation of the feet after each component of the treatment and ultimate final outcome), total number of the casts applied before tenotomy, pre and post procedure complications, like plaster sore, skin excoriation, blister formation, excessive bleeding following tenotomy or any other complication.

Treatment protocol and follow up: This treatment included gentle manipulation of the foot and the serial application of above knee plaster casts at weekly interval without anesthesia, as described by Ponseti [1]. The foot was markedly abducted up to 70 degrees without pronation in the last cast, which is very important for complete correction and it prevents early recurrence. Indication of a simple percutaneous Achilles tenotomy was when heel had been corrected and residual equinus was observed after the abduction of the foot then a simple percutaneous Achilles tenotomy was performed under anesthesia. After the tenotomy, an additional above knee cast with knee flexed in 90 degrees was applied and left in place for three weeks to allow for healing of the tendon. No window was made in the cast because the tenotomy wound was very minimal. After removal of the cast, a Denis-Browne bar and boots (D-B splint) was used to prevent relapse of the deformity. For the first 3 months D-B splint was worn full time (day and night) or at least 23 hours per day and then for 12 hours at night and 2 to 4 hours at day for a total of 14 to 16 hours during each 24 hour period. The protocol continues until the child is 3 to 4 years of age.

During the initial stages of treatment the patients were followed up on a weekly basis. After applying D-B splint, on a monthly basis for three months and then once every three months till the patients is three years of age. Then after three years of age, child is reviewed every six months to one year till age of 5 years and then after 1-2 years till skeletal maturity is achieved. Outcome measurement: Measured by Pirani score. This is the main variable of the study which can detect the degree of correction. There are 6 clinical signs: 3 for mid foot, 3 for hind foot. Three signs of mid foot score (MS) and hind foot score (HS) grading the amount of deformity between 0 and 3. The Pirani score 0 means normal foot, the Pirani score 3 means moderately abnormal foot, the Pirani score 6 means severely abnormal foot. The collected data was analyzed.

RESULTS

During the study period a total of 37 feet in 21 children 16 bilateral and 5 unilateral treated and followed up diligently. Age ranges was from 3 days to 2 ½ years but most of them were 2 to 6 months old. There were 17 boys and 4 girls with a male female ratio of approximately 4:1. 08 to 10 plasters were needed on average, though some of the children needed 15 to 16 but majority were corrected with 6 or 7 casts. 21 out of 37 feet needed Achilles tenotomy. Most of children were from poor to average socio-economic group. Mean number of plaster casts required per CTEV was higher for the rigid feet in comparison to non-rigid feet. A total of 21 (57%) feet required percutaneous tenotomy while remaining feet were improved by plaster cast alone. None of the children suffered from any significant complication, in form of skin excoriation or blister formation.

DISCUSSION

CTEV is a complex deformity which comprises of four components i.e. equinus, varus, adductus and cavus, which are quite challenging to correct. It requires meticulous technique and dedicated effort on the part of treating personnel (physician, technician) and parents for the correction of the deformity. The aim of management is to reduce or eliminate these deformities as much as possible so that patient has a pain free, plantigrade and functional foot with good mobility without calluses and does not need to wear special shoes.14 The Ponseti technique for the correction of CTEV deformity comprises of serial corrective casts with long term brace for maintenance of the correction. The treatment needs to be started soon after birth of the baby and then should be followed under close supervision [1,15]. The Ponseti CTEV corrective technique yields satisfactory anatomical and functional results with simple, effective, inexpensive, minimally invasive and ideally suited for all cultures and countries.1

The literature favors the fact that the results were better if this method of treatment is started soon after birth.8,13 CTEV results from a number of factors active from the 12th to 20th weeks of fetal life up to 3-5 years of age.15,16 Majority of the CTEV patients in our series presented in the first month of life (neonatal age). This has been the experience of other authors too15 which reflects the growing awareness of this condition in the parents nowadays. The mean number of plaster casts needed per foot in our series was 3.75, much less as compared to the other series.13,18 this is probably owing to the fact that we have analyzed only neonates in the present study. Pre-treatment mean Pirani score in our series is similar to those reported previously.19 Other available studies including this study have shown that rigid feet require more casts than non-rigid feet to correct the deformity.

In our study, about 60% of the feet required percutaneous tenotomy. On the other hand percutaneous tenotomy was needed in 95% of Gupta’s patients17 and 91% of Dobbs’ patients.20 All the studies reveal that tenotomy was required in those patients who initially
had severe deformity. Bor et al quotes, “A club foot that requires many casts for the initial correction is more likely to require future additional surgery in the form of tenotomy or other major surgeries.” As majority of patients in our study were neonates, and we started treatment early, so our patients needed tenotomy less frequently. Similarly, majority of pediatric orthopedic surgeons also think that success of Ponseti casting technique is dependent on whether casting begins within hours of birth.20

Maintenance of bracing protocol is the most difficult part of Ponseti casting technique.7 According to the parents in our study group, during the initial two or three days patients were restless and tried to remove the splint. But after that the patients were adjusted with splint. As correction of the foot also largely depends on the brace protocol21 which highlights the fact that parental compliance needs to be improved by educating the parents for the proper use of bracing and the hazards of insufficient or improper bracing.

Follow-up is another difficult part of the study. Serial casts with or without tenotomy is only a part of the total management. Parents misunderstand the fact that the initial correction of the foot with serial casts is the main and difficult part of the treatment and hence they do not come for follow up. So, we motivated the parents and their family members to solve this problem. Risk of further surgical treatment becomes very high in the patients who are dropped from follow up. Similar to other’s experience22 about ponseti’s technique; we found this treatment technique to be very cost-effective.

CONCLUSION

CTEV deformity can be effectively managed by Ponseti casting technique with excellent results and without significant morbidity. Tenotomy is usually required in those patients who initially have severe deformity.

REFERENCES

Current Concepts: Acute Pancreatitis, Aetiology, Management & Outcome

Aurangzeb Khan MBBS¹, Yousaf Jan FCPS², Ihsan Ulhaq MBBS³

ABSTRACT

Background: Acute pancreatitis is a common surgical emergency. Timely diagnosis and early proper management can reduce both morbidity and mortality.

Objective: To study the aetiology, management and outcome of acute pancreatitis at a tertiary care hospital.

Material and Methods: This prospective descriptive study was conducted in department of General surgery, Rehman Medical Institute (RMI) Peshawar from August 2012 to August 2013 after taking permission from local ethical and research committee. All adult patients (>12 years) presenting with acute pancreatitis at the surgical outdoor clinic and emergency department during the study period were included in the study. Patients with pancreatic malignancy and those initially managed elsewhere, later referred to RMI were excluded from the study.

Results: This study included 50 patients of acute pancreatitis admitted in ICU and Surgical Ward, 23 (46%) were males and 27 (54%) were females. The mean age of patients was 44.2 years. Five patients were initially managed in ICU. The commonest etiological factor responsible for acute pancreatitis was gall stone (n=26, 52%) followed by idiopathic pancreatitis (n=13, 26%) and alcoholism. The commonest symptom was the pain in the epigastrium followed by nausea and vomiting. Serum amylase and lipase helped in initial diagnosis. CT scan was the most sensitive modality confirming acute pancreatitis. The commonest complication of acute pancreatitis included paralytic ileus, electrolyte disturbances, acute respiratory distress syndrome (ARDS’s), renal failure, cardiovascular insufficiency, pancreatic pseudocysts and pulmonary infections. The average hospital stay for mild, moderate and severe pancreatitis was 5.2, 7.4 and 10.9 days respectively. All patients were put on injection Imipenem and metronidazole empirically. Morbidity in our study was 27 (54%). One patient (2%) died due to multi-organ failure.

Conclusion: Acute pancreatitis is a multisystem disease with high degree of mortality. It needs prompt investigations and very aggressive management to prevent the development of the complications.

Key words: Acute pancreatitis, Serum Amylase, Ranson’s criteria.

INTRODUCTION

Acute pancreatitis is a systemic disease due to reversible inflammation of the pancreas. It is a serious condition which carries substantial morbidity and mortality. The two commonest cause of the acute pancreatitis are gallstones and alcohol intake.¹ Other causes include abdominal trauma, trauma associated with ERCP, certain drugs, viral infections, biliary tract anomalies and different types of hyperlipidaemias; while in some cases no obvious cause is found and they are labelled as ‘idiopathic’.² The annual incidence of acute pancreatitis varies between 5 and 80 people per 100,000 of the population¹, depending on many factors. In USA and western hemisphere, the alcohol induced pancreatitis is more common than gallstone pancreatitis.³

The commonest symptom of acute pancreatitis is pain in epigastrium which radiates to back and improves with sitting upright and leaning forward. It may be associated with nausea and vomiting, and some-times associated with marked systemic involvement.³ Serum amylase is the most important laboratory test in diagnosing the acute pancreatitis. Others investigations include estimation of serum lipase, ultrasound and computed tomography (CT) scan of the abdomen.⁴ Atypical cases of acute pancreatitis may be misdiagnosed.

The severity of the acute pancreatitis varies from mild oedematous pancreatitis to severe necrotizing form.⁵ Mild oedematous pancreatitis mostly has an eventful recovery while severe necrotizing form is associated with significant morbidity and mortality. Various severity scoring systems are used for assessing the prognosis of acute pancreatitis. These include the clinical scoring scales as Ranson criteria, Glasgow scales, simplified acute physiology score (SAP), acute physiology and chronic health evaluation ii (APACHEii) score, and the CT severity index.⁶ The complications associated with acute pancreatitis may be local or systemic. The commonest local complication is pseudo-pancreatic cyst, which may require surgical intervention. On the other hand, ARDS is the systemic complication which significantly increases the morbidity and mortality of the acute pancreatitis.⁷

Management of the acute pancreatitis is primarily conservative with good nutritional support, and treat-
ment of complications when they develop. Antibiotics have very important role in conservative management and certain antibiotics (carbapenems, fluoroquinolones and cephalosporins) have been found to penetrate into pancreatic tissues. Surgery is only reserved for complications such as pancreatic necrosis, pseudo-pancreatic cyst or pancreatic abscess. Despite advances in understanding the management of acute pancreatitis, the overall mortality of acute pancreatitis is still around 10%. The current study was planned and conducted with an objective to have an idea about the aetiology and presentation of acute pancreatitis, trends in the management and evaluate the outcome of this agonising disease.

MATERIAL AND METHODS

This prospective descriptive study of 50 patients was conducted in department of General surgery, Rehman Medical Institute (RMI) Peshawar from August 2012 to August 2013 after taking permission from local ethical and research committee. All adult patients (> 12 years) presenting with acute pancreatitis at the surgical outdoor clinic and emergency department over the study period were included in the study. Patients with pancreatic malignancy and those initially managed elsewhere, later referred to RMI were excluded from the study.

The patients were collected from surgical outdoor clinic and emergency centre of RMI. All patients with diagnosis of acute pancreatitis above 12 years were admitted in General surgery ward or ICU depending on the severity of the condition. Data were collected on a specifically designed proforma. The Data was obtained from patient’s medical record as well as interviewing the patients. In case the patient was not able to give history, attendants were interviewed for the sake of data collection. It included findings of detailed history of the illness, thorough physical examination and results of relevant investigations. It also included the treatment given to the patients, the hospital stay (including that in general ward and in ICU), results of the treatment and development of any complication.

Patients were followed every two weeks for a period of 8 weeks after being discharged from the hospital. On each follow up visit, they were assessed for physical condition and any complications. The data was stored and analysed in SPSS 15. Frequencies and percentages for various parameters were calculated. The results are displayed in tabulated forms.

RESULTS

The study included 50 patients of acute pancreatitis. Out of them 23 (46%) were males and remaining 27 (54%) were females. The mean age of the patients in our study was 44.2 years (range 17 to 70 years). Majority of the patients (n=41, 82%) were in the 20 to 50 years age group (Table 1).

The gallstone was responsible for 26 (52%) cases of acute pancreatitis. Other causes include alcohol intake, trauma and viral infection (Table 2). In 13 (26%) patients no obvious cause was found, they were labelled as idiopathic pancreatitis (Table 2). Twelve (24%) patients were admitted through surgical outdoor clinic, 3(6%) were shifted from medical wards while 35 (70%) were admitted from emergency centre.

Pain in the epigastrium was found in all patients (100%), which radiates to the back in 26 (52%) patients and to the right hypochondrium in 13 (26%) patients. Nausea was present in 32 (64%) and vomiting in 28 (56%) patients (Table 3). Twenty four (48%) patients had fever (highest was 104 F°) and jaundice was present in 6 (12%) patients on arrival, which was obstructive in nature. About 5 (10%) patients had tachypnea (respiratory rate > 20/min) (Table 3). The commonest sign was epigastric tenderness (45, 90%), while 32 (64%) and 10 (20%) patients had tenderness in right hypochondrium and right iliac fossa respectively (Table 3). About 5 (10%) patients had tenderness on digital rectal examination. Cullen and Grey Turner sign was present in 3(6%) and 2 (4%) patients respectively (Table 3). Thirty two (64%) patients had pulse rate more than 100/min and five (10%) patients presented with shock (BP < 90/50) (Table 3).

Serum amylase was raised in 43 (86%) patients and serum lipase in 43 (86%) cases. Total leukocyte count (TLC) was raised to above 11,000/mm3 in 48 (96%) patients. Ultrasound was performed in all cases, detected pancreatitis in 5 (10%) patients and gallstones in 26 (52%) cases. Computed tomography was also done in all cases to establish the diagnosis and severity of the pancreatitis, confirmed pancreatitis in 47 (94%) cases respectively. According to Ranson’s criteria, 26 (52%) patients had mild acute pancreatitis, 19 (38%) had moderate pancreatitis and 5 (10%) patients had severe acute pancreatitis.

Forty three (86%) patients did not need any nutritional support. Seven (14%) patients required total parental nutrition, five due to delay in recovery from pancreatitis or due to associated complications, while two because of prolong paralytic ileus. All patients were put on prophylactic antibiotics; the regimen included injection Imipenem and Metronidazole on empirical basis. About 47 (94%) patients responded to this regimen. Among other 3 patients, one was put on Tygacilin and the other two on the Colistin, based on the culture and sensitivity report (wound discharge). These patients were later on switched to oral ciprofloxacin in...
45 (90%) patients and cefixime in 5 (10%) patients.

Out of 50 patients, 47 (94%) were managed conservatively and 3 (6%) underwent laparotomies. Two were operated because they had peritonitis, and pancreatitis were diagnosed after laparotomy, while one had laparotomy for pancreatic necrosectomy, peritoneal lavage and closed drainage due to extensive pancreatic necrosis.

The most frequent complications of acute pancreatitis were paralytic ileus (n=24, 48%), electrolyte disturbance (n=10, 20%), acute respiratory distress syndrome (ARDS) (n=8, 16%), renal failure (n=6, 12%), cardiovascular insufficiency (n=5, 10%), pancreatic pseudocyst (n=4, 8%) and pulmonary infection (n=4, 8%)(Table 4). So the overall morbidity in our study was 27 (54%), while one patient (2%) died due to multi-organ failure.

The average hospital stay was 7.5 days. The average hospital stay for mild, moderate and severe acute pancreatitis was 5.2 days, 7.4 days and 10.9 days respectively. The shortest hospital stay was 4 days and the longest hospital stay was 21 days. Five patients with severe pancreatitis were initially treated in ICU, while remaining 45 cases were managed in general surgical ward. Average stay of patients in ICU was 5.9 days.

<table>
<thead>
<tr>
<th>Table-1: Patients demographics</th>
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<tr>
<td>Items</td>
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<tr>
<td>Sex</td>
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<td>Male</td>
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<td>61-70</td>
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<th>Table-2: Frequency of the various causes of acute pancreatitis (n=50)</th>
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<tbody>
<tr>
<td>Causes</td>
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<tr>
<td>Gallstone</td>
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<tr>
<td>Alcohol</td>
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<td>Trauma</td>
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<td>Viral infection</td>
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<tr>
<td>Drug induced</td>
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<tr>
<td>Idiopathic</td>
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<td>Total</td>
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<th>Table-3: Frequencies of various symptoms and signs (n=50)</th>
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<tr>
<td>Variables</td>
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<td>Pain epigastrium</td>
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<tr>
<td>Nausea</td>
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<tr>
<td>Vomiting</td>
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<th>Table-4: Complications of acute pancreatitis</th>
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<td>Complications</td>
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<tr>
<td>Paralytic ileus</td>
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<tr>
<td>Electrolyte Disturbances</td>
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<tr>
<td>ARDS</td>
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<td>Renal failure</td>
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<td>Cardiac failure</td>
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<td>Pseudocyst</td>
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<td>Pulmonary infections</td>
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DISCUSSION

Acute pancreatitis is a non-bacterial inflammation of pancreas. It is one of the acute abdominal emergencies that need protracted hospital stay and intensive care. Pathologically, acute pancreatitis is a protean disease resulting from an auto-digestion of the pancreatic parenchyma capable of wide clinical variations. Therefore, it represents a spectrum of disease ranging from a mild, self-limited course to a rapidly progressive, severe illness. Severe acute pancreatitis (SAP) is a multi-system disease characterized in the first phase by multiple organ system failure consequent to a systemic inflammatory response, and in the second by local pancreatic complications such as necrosis, abscess or pseudocyst formation.

Acute pancreatitis accounts for more than 220,000 hospital admission in the United States each year, and the epidemiological studies indicate that this incidence is increasing along with documented increase in obesity. However, acute pancreatitis in our set up shows a lower incidence frequency when compared to the world literature. In a study of non-traumatic causes of acute abdomen from Larkana, acute pancreatitis was observed to be a rare cause of acute abdomen in this area (4 out of 586 cases of acute abdomen, representing an incidence of less than 1%). However incidence in other parts of countries is higher; and it has been observed that due to adaptation of western life style, the
incidence seems to be increasing. Therefore the prevalence has been reported high in urban populations as compared to rural one.

Acute pancreatitis is a major surgical challenge and the nature and purpose of this study was to assess the aetiological factors and mode of presentation of acute pancreatitis at a tertiary care hospital with different options of management and their outcomes.

In our study gallstones were the main cause of acute pancreatitis (52%), which is comparable with the findings of a study conducted by Slavin J. In most other studies, the two major aetiological factors, biliary disease and alcohol abuse account for more than 80% of the acute pancreatitis. Many authors have reported predominance of gallstone pancreatitis in their studies, including Xin MJ et al. This finding is also observed by Javed Qureshi et al from Jamshoro, Asifi M et al from Lahore and Shaukat Mirza et al from Lahore.

Many drugs are also responsible for the development for acute pancreatitis, including steroids, azathioprine, thiazide diuretics and sodium valproate. In our study one patient had thiazide induced pancreatitis and her symptoms were relieved after stopping the intake of drug.

No age or gender is immune to acute pancreatitis. As for the gallstone disease itself, gallstone pancreatitis was more common in females than males, which also compare with the study of Slavin J. In our study, the M:F ratio was observed to be 5:6. Similar results were reported by Tonsi et al from Italy. Many national studies support female preponderance observed in our study, including Shaukat Mirza et al from Lahore and Farooq Afzal et al from Lahore. In contrast Asifi M et al from Lahore and Nasim Tarar from Peshawar failed to observe female predominance and reported an almost equal incidence among the both genders. This observation could be due to strict inclusion criteria. In our study the mean age of patients was 44.2 years; the youngest patient was 17 years and the eldest was aged 70 years. This is in accordance with Faisal Bhopal et al, Javed Qureshi et al, Asifi M et al and Nasim Tarar.

In our study epigastric pain was the common presenting complaint in all the patients, followed by nausea and vomiting (Table 2). Mild to moderate fever was present was noted in half of the cases. These findings are in accordance with Javed Qureshi et al and Shaukat Mirza et al respectively. Although gallstone pancreatitis was the commonest entity in our series, obstructive jaundice was observed in six cases (12%) only.

Elevated serum amylase, serum lipase, ultrasound and CT scan were the main tools of diagnosis. Serum amylase level of 4 or 5 times normal serum level is usually diagnostic. In our study serum amylase as raised in 43 (86%) of our cases. Ultrasound abdomen for biliary tract was done in all cases and was found to be accurate in detecting gallstone related pancreatitis in almost all cases. CT scanning is the reliable and non-invasive imaging modality to visualizes the gland, the retro peritoneum and complications of acute pancreatitis. Leung TK et al have reported that the sensitivity of CT severity index is higher than Ranson score and APACHE II score, although they are also the predictors for complications, mortality and the length of acute pancreatitis course. CT scan was done in all of our cases after initial resuscitation where required.

The most frequent complications of acute pancreatitis in our study were adult respiratory distress syndrome, renal failure, cardiovascular insufficiency and pulmonary infection (Table 4). Similar results were shown by many other studies. Xin MJ et al and Moreau JA et al have shown that most frequent complications of acute pancreatitis were adult respiratory distress syndrome (ARDS) followed by multi-organ dysfunction syndrome (MODS), electrolyte disturbances, renal failure, pancreatic encephalopathy and shock.

The management of patients with acute pancreatitis is complicated by the ability to distinguish mild from severe disease during the early stages. In our setting, Ranson’s criteria is commonly used to predict the severity, and represents a reliable tool to predict severity in majority of the cases. In one study all patients labelled as severe on Ranson’s scoring criteria were dead within one month after diagnosis. Using Ranson’s criteria we had 26 cases of mild pancreatitis, 19 cases of moderate pancreatitis and 5 cases of severe acute pancreatitis. We managed majority of our patients (n=47, 94%) on conservative basis. Shaukat Mirza et al managed 64% of patients with conservative treatment. M Wariset al have recommended that conservative policy should be adapted for cases of pancreatitis with systemic complications, while local complications require surgical intervention. We had to operate on 3 of our cases. Pancreatic necrosectomy, peritoneal lavage and closed drainage was performed in one case only, while another two cases were operated on the suspicion of acute peritonitis and later found to have pancreatitis during surgery.

Four (8%) of our patients developed pseudocyst formation and presented after discharge over a period ranging from 2 to 3 months. One of them was managed conservatively, two required open cystogastrostomy and one was drained under ultrasound guidance with good result. Infectious complications are common problem in severe acute pancreatitis and the use of
prophylactic antibiotics in early management is advocated.\textsuperscript{30} We also used prophylactic antibiotics in all of our cases. All patients with gallstones (26, 52\%) subsequently underwent cholecystectomy, including 10 patients operated laparoscopically. All of them had an uneventful recovery.

The overall morbidity of acute pancreatitis in our study was 27 (54\%), while one of our patients died of his disease. He was a 70 years old male with severe acute pancreatitis, died because of multi-organ failure. Therefore, overall mortality of acute pancreatitis in our study was 2\%, while that for severe acute pancreatitis it was 20\% (one out of 5). Similar figures have been quoted by Rehana Zikri,\textsuperscript{11} Faisal Bhoale,\textsuperscript{12} Shaukat Mirza et al,\textsuperscript{19} M Waris et al\textsuperscript{26} and Azeem Taz et al\textsuperscript{26} respectively.

CONCLUSION

Acute pancreatitis is a multisystem disease with high degree of morbidity. It needs early clinical diagnosis, prompt investigations and very aggressive management to prevent the development of the complications. Due to increasing incidence of acute pancreatitis, guidelines need to be implemented after all patients are classified on Ranson’s scoring and referred to a specialised unit for managing pancreatitis or other complications requiring intensive care, radiological, endoscopic or surgical procedures in order to reduce the high mortality, which has been reduced over the years due to better understanding of pathophysiology of acute pancreatitis and improvement in adopting therapeutic strategies.

REFERENCES

INTRODUCTION

Among the entrapment neuropathies Carpal tunnel syndrome (CTS) is the most common. It accounts for 90% of all entrapment neuropathies. The American Academy of Orthopedic Surgeons (AAOS) Clinical Guidelines on the Diagnosis of CTS defines it as a symptomatic compression neuropathy of the median nerve at the level of the wrist.1,2

Prevalence of the neurophysiologically confirmed carpal tunnel syndrome in the adult general population in the Netherlands is 0.6% in men and 9.2% in women.3 Similarly, this syndrome affects an estimated 3% of adult Americans and is approximately three times more common in women than men.4

Classically carpal tunnel syndrome presents with pain, numbness, and tingling in the distribution of the median nerve. Although numbness in all fingers may be a more common presentation7 and a reduction in the strength of the grip and function of the affected hand These symptoms are usually worse at night and can awake patients from sleep. Patients often describe the special phenomenon termed the “flick sign”, in which shaking or flicking their wrists relieves symptoms.8 A systematic study conducted by Stevens et al., has confirmed that many patients present with the symptoms outside the distribution of median nerve.9

Most of the studies published in the past two decades concluded that forceful or repetitive hand use causes a variety of upper limb diseased conditions, such as tendinitis, tenosynovitis, and carpal tunnel syndrome (CTS). From the enormous experience with Carpal Tunnel Syndrome (CTS) Phalen concluded that occupation was seldom more than an aggravating factor. However, a survey conducted in 1989 reported that up to 47% of all cases of Carpal Tunnel Syndrome (CTS) were thought of to be due to workplace factors.10

Likewise, medical conditions such as diabetes mellitus, diseases of the thyroid, osteoarthritis of the wrist, and any form of inflammation which affects the wrist joints or tendon sheaths are said to be associated with CTS.11,12

DIAGNOSIS

Two papers by the Quality Standards Subcommittee of the American Academy of Neurology13 and American Association of Electrodiagnostic Medicine, American Academy of Neurology and American Academy of Physical Medicine and Rehabilitation define the guidelines for clinical and neurophysiologic diagnosis of CTS.14 These papers stress the importance of a thorough case history, which must focus on the nocturnal paraesthesias, hand positions and repeated move-
A systematic review evaluated the effectiveness of observed findings from the history and physical examination in predicting positive nerve conduction studies. The most highly predictive findings were location of the symptoms, hypalgesia and the weak abduction of the thumb. The consensus committees from the American Academy of Neurology, American Association of Electro Diagnostic Medicine, and American Academy of Physical Medicine and Rehabilitation, recognize nerve conduction studies as the diagnostic standard for carpal tunnel syndrome.

Different conservative measures used in the treatment of Carpal tunnel syndrome include wrist splinting, oral corticosteroid therapy and local corticosteroid injections. Nearly eighty per cent of patients with carpal tunnel syndrome respond to conservative treatment initially. However, in about eighty per cent of these patients symptoms recur after one year. Indications of carpal tunnel release surgery are:

(a) Patients with symptoms that do not respond to conservative measures,
(b) Patients with severe nerve entrapment as evidenced by nerve conduction studies
(c) Thenar atrophy
(d) Motor weakness

However, surgery may be effective even if a symptomatic patient has normal nerve conduction studies. Sectioning of transverse carpal ligament was recommended for the first time in 1913 in order to relieve pressure over median nerve and this cures symptoms of Carpal tunnel syndrome.

A number of tests have been advocated for diagnosis of carpal tunnel syndrome since that time. Among these a number of special tests so-called provocative tests are the most popular today. These tests are based on the fact that stress on a damaged median nerve increases the symptom of pain or paraesthesia, or both. The purpose of this study was to evaluate the effectiveness and validity of the Phalen, Tinel and Tourniquet tests in the diagnosis of carpal tunnel syndrome.

**METHODOLOGY**

Settings: This descriptive interventional study was conducted in the department of orthopaedic Rehman Medical Institute (R.M.I) Peshawar over a period of nine months from May, 2009 to January, 2010. A total of 50 Patients were enrolled in this study through convenient sampling.

Inclusion Criterion: All patients more than 20 Years and less than 70 years of age with carpal tunnel syndrome not responding to non-operative measures (analgesia, anti-inflammatory medications and night wrist splint) were included. Patients with pregnancy and patients operated in past for carpal tunnel syndrome were excluded.

Data Collection Procedure: All Patients with carpal tunnel syndrome fulfilling inclusion criteria were examined and investigated after taking a detailed history at orthopaedic outpatient dept., Rehman Medical Institute (R.M.I) Peshawar. Confounding factors were controlled by excluding patients with median nerve compression proximal to carpal tunnel.

**Pre-operative Evaluation:** Detailed patient history regarding demographic status, duration of carpal tunnel syndrome and medications used were recorded. All Patients under went following provocative diagnostic tests for carpal tunnel syndrome as follows:

(a) **Wrist-flexion (Phalen) test:** The patient actively placed the wrist of symptomatic hand in complete but unforced flexion for one minute (sixty seconds). The test result was labelled positive if numbness and tingling were produced or exaggerated in the hand in the distribution of median nerve.

(b) **Median-nerve percussion test**: The examiner gently tapped the area over the median nerve of the wrist. The test result was labelled positive if this produced tingling in the fingers over the distribution of the median nerve.

(c) **Tourniquet tests:** A Pneumatic blood pressure cuff, applied proximal to elbow, was inflated to a pressure higher than patient’s systolic blood pressure for a duration of one minute (sixty seconds). The result was labelled positive if the patient experienced paraesthesia or numbness in the thumb or in the index or middle finger.

The data of patients collected on proforma. The results of the provocative tests were compared with the results of electro diagnostic (Nerve Conduction Study) tests and per-operative findings. Most of the patients who were included in the study group had definite abnormalities of nerve-conduction velocity on Nerve Conduction Studies (N.C.S).

**Operative Technique and Per-Operative Findings:** Carpal tunnel release in all patients performed in minor operation theatre in Rehman Medical Institute (R.M.I), Peshawar under local anaesthesia and strict aseptic technique as follow:

After cleaning over the wrist 10ml of xylocaine diluted in 10 ml of N/Saline injected. Then tourniquet applied over the affected arm. Patient put in supine position and concord arm stretched over the side support and properly cleaned and draped. Following this, hand and wrist squeezed by the surgeon and the assistant while elevating the patient arm. Tourniquet inflated by the operation theatre technician to the level about
100 mmHg above systolic blood pressure of the patient. Then hand of patient was put on side support in supine position and skin incision given. Soft tissues dissected away and a small self-retainer applied. Transverse carpal ligament identified and incised with great care to release underneath median nerve. Skin approximated with non-absorbable interrupted stitches. Tightness of the carpal tunnel, swelling, bruising and contusion of the median nerve noted.

Post-Operative Follow up: Patients reviewed in outpatient department after two weeks to remove stitches, evaluate wound for any complications (infection, gapping). Improvement in the symptoms of median nerve compression noted.

Data analysis Procedure: Data was entered in software SPSS version 10.0. Descriptive statistics were used to calculate mean and standard deviation of age, gender and socio-economic status. Frequency and percentages were calculated for all categorical data.

RESULTS

Fifty (50) patients with carpal tunnel syndrome between ages 20-70 years were studied. All the patients were female. Majority belonged to average socio-economic group. Thirty five (70%) of the fifty hands that were tested had a positive wrist flexion test (Phalen). Twenty (40%) of the fifty hands had a positive median nerve percussion test (Tinnel), while only ten (20%) of the fifty hands had a positive tourniquet test. Our results are summarised in Table-1.

All the fifty patients with carpal tunnel syndrome underwent a surgical release of the median nerve. Tightness of the carpal tunnel, swelling, bruising, and contusion of the median nerve were taken as gold standard for carpal tunnel syndrome. All the patients achieved complete relief of symptoms of paraesthesia and numbness. When the results of each of the provocative tests were compared with the results (positive or negative) of each of electrophysiological test and per-operative findings, no statistically significant positive correlation were found within the study group. Therefore, none of the provocative tests would be a useful predictor of a positive or negative result of any of the other tests.

**Table-1: Overview of the provocative diagnostic tests in carpal tunnel syndrome.**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Test</th>
<th>No. of Patients with +ve tests</th>
<th>%age</th>
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<tr>
<td>1.</td>
<td>Phalen</td>
<td>35/50</td>
<td>70%</td>
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<tr>
<td>2.</td>
<td>Tinnel</td>
<td>20/50</td>
<td>40%</td>
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<tr>
<td>3.</td>
<td>Tourniquet</td>
<td>10/50</td>
<td>20%</td>
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</table>

DISCUSSION

A thorough medical history, physical examination, provocative diagnostic tests and electro diagnostic (nerve conduction studies) studies are needed to confirm the diagnosis of carpal tunnel syndrome. Provocative diagnostic tests (Phalen, Tinnel and Tourniquet) are simple to perform, less time consuming and free of cost but have good diagnostic outcome. While, electro-diagnostic tests are the most sensitive and specific for the diagnosis of compression of the median nerve in the carpal tunnel. First abnormality to be noted after onset of median nerve compression in carpal tunnel syndrome is the decrease in sensory amplitude.

However, there are studies which have shown that a small number of patients with carpal tunnel syndrome have shown negative electrophysiological studies. In a report by Gruenberg has shown an eight per cent false-negative rate with the use of electro-diagnostic studies in a group of thirty-two hands. It highlights the fact that it is important to evaluate other studies for their usefulness as adjuncts in the confirmation of carpal tunnel syndrome. The provocative tests for the diagnosis of carpal tunnel syndrome (CTS) under study have been advocated by many authors to substantiate the clinical diagnosis of carpal tunnel syndrome, and some have emphasised that these can be the substitute for electrophysiological diagnostic testing. The provocative tests, although not as much sensitive but were found to be very useful for diagnosing median nerve compression neuropathy. We found, as did Phalen, that the Phalen test is the most sensitive and useful of the three provocative tests. Our study shows 70 per cent positive phalen test results, compared with 80 per cent in the study by phalen in 1972. The specificity was 80 per cent, with 20 per cent false-positive test results. The Tinnel test was found sensitive in 40 per cent of patients so much less than Phalen test with regards to its sensitivity. However, the tourniquet test is found to be the least reliable among the provocative tests.

Both the Phalen and Tinnel tests are the most useful adjuncts in diagnosis of carpal tunnel syndrome. Though, a positive test result is a useful clinical indication that a patient has carpal tunnel syndrome but a negative test result cannot rule out the diagnosis. Similarly, role of tourniquet test as a screening tool for diagnosis of carpal tunnel syndrome is very limited.

Possible Limitations of this study: The limitations of this study are; the small number of the patients, per-operative findings and surgeon to surgeon variability. Therefore further trials are needed to confirm the authenticity of provocative diagnostic tests in the case of carpal tunnel syndrome.

CONCLUSION

This study shows the diagnostic role of provocative tests of Carpal Tunnel Syndrome. Amongst the well-known tests Phalen (wrist flexion) seems to be
To Evaluate the Diagnostic Efficacy of Provocative tests in Carpal Tunnel Syndrome

the most productive. However, combination of all the provocative tests can give a better outcome in order to reach the diagnosis of Carpal tunnel syndrome.

REFERENCES
To Evaluate the Elevations of Intraocular Pressure after Nd: Yag Laser Posterior Capsulotomy (500 Cases Report)

Muhammad Amin Shaikh DOMS, MSc, MS1, Prof. Syed Imtiaz Ali Shah, FCPS2
Manzoor Ali Kandhro DOMS, Khalid Rasul Shaikh MBBS3, Amanullah Shaikh MBBS, (DCH)4

ABSTRACT
Objective: To evaluate the elevations of intraocular pressure after Nd:YAG laser posterior capsulotomy in 500 cases.
Study Design: Prospective observational study; Place and Duration: Department of Ophthalmology Chandka Medical College & Civil Hospital Larkana from March 2010 to Sep 2010.
Patients and Methods: The study comprises 500 patients performed at department of Ophthalmology, Chandka Medical College Larkana from March 2010 to Sep 2010. The patients who had undergone extracapsular cataract extraction with posterior chamber intraocular lens implantation and had developed posterior capsular opacification were selected from the out patient department.
Results: We studied change of intraocular pressure after Nd: YAG laser posterior capsulotomy in 500 eyes of 500 patients. 260 (52%) were males and 240 (48%) females; all were pseudophakic having different age groups ranging from 10 to 80 years. Goldman applanation tonometer was used for IOP measurement before and after Nd: YAG laser application. Q-Switched Nd: YAG laser was used to perform posterior capsulotomy. Three hours after Nd: YAG laser posterior capsulotomy, IOP remained unchanged in 181 (36.2%) eyes, and in 274 (54.8%) eyes IOP raised upto 10mmHg. Out of these 243 (48.6%) eyes developed a rise of IOP upto 6mmHg and only 31 (6.2%) eyes had a rise more than 6mmHg but not over 10mmHg. 46(9%) eyes showed a rise of IOP more than 10mmHg. The mean pressure raised after 3 hours was 5.60mmHg and the mean IOP was 14.65mmHg. Antiglaucoma treatment was started in 50 (10%) eyes. Tab. Acetazolamide 250mg 2-Tablets state along with topical beta-blockers two times a day. Topical NSAID was given to all patients for decreasing intraocular inflammation. On following day i.e. 24 hours after laser treatment only 5 (1%) eyes had significant elevation of IOP of more than 10mmHg, 204 (40.8%) of eyes had insignificant rise of IOP and 291 (58.2%) of eyes had normal base line IOP.
Conclusion: This study confirms that IOP elevation is a frequent complication of Nd: YAG laser posterior capsulotomy. The pressure peak occurs within 3 hours post treatment. There was no correlation between the laser energy or the size of capsulotomy and the rise of IOP.
Key words: Intraocular pressure, Neodymium-yttrium aluminum garnet (Nd:YAG) laser, Posterior capsular opacification, and Extracapsular cataract extraction.

INTRODUCTION
Nd:Yag (Neodium: Yttrium-Aluminum Garnet) laser (light amplification by stimulated emission of radiation) was developed by Geusic, Marcos and Van Uitert in 1964 A.D is most widely used and commonest variety of solid state laser. The advent of Nd: Yag laser in ophthalmology has given the surgeon a greater therapeutic choice. Neodium Nd3+ is the laser active element hosted either in glass/crystal. Neodium laser is most efficiently incorporated in the Yttrium Aluminum-Garnet crystal (Y3AL5O2) and commonly termed as YAG, which emits at a wave length of 1064 n.m.

The posterior capsular opacification (PCO), continues to be the most frequent postoperative complication of extracapsular cataract extraction or phacoemulsification. Posterior capsular opacification stems from continued viability of lens epithelial cells remaining on anterior and posterior capsule, these cells migrate across the capsule in response to unknown stimuli, producing fibrous contraction leading to wrinkling and opacification of capsule.2,3 The incidence of opacification has been reported 10% per year. Half of patients undergoing cataract extraction with intact posterior capsule will require treatment for opacification, and the percentage is high for children and young adults.4

The management of postoperative capsule opacification consists of creating an opening in the opaque capsule in the axial area. There are different methods for this procedure. In the past, surgical posterior capsulotomy was considered to be the best.5 Now-a-days this method is being replaced by neodymium yttrium-aluminum garnet (Nd: YAG) laser capsulotomy, which is a non-invasive procedure.6 Although Nd: YAG laser capsulotomy is a safe procedure, it has its own complications. The most common is an acute rise of intraocular pressure following laser procedure. It is usually...
transient but may be vision threatening.7

PATIENTS AND METHODS

An observational prospective study conducted at the department of Ophthalmology Chandka Medical College and Civil Hospital Larkana after obtaining informed consent from all the participants between March 2010 to Sep 2010. Patients with visually significant posterior capsular opacification were selected from the outpatient department of Ophthalmology civil hospital Larkana. Patient were excluded from the study if there was a history of uncontrolled glaucoma, advanced glaucoma, hazy cornea, very dense posterior capsular opacification, any posterior segment pathology likely to cause decreased vision after treatment. Baseline data was obtained for each patient before initiation of treatment on a prescribed proforma of each patient underwent complete workup which included a full ocular and medical history, best corrected Snellen’s visual acuity, slit lamp biomicroscopy, Goldmann’s applanation tonometry, gonioscopy and fundoscopy. Pupils were dilated with Tropicamide 1% and Phenylephrine 10% eye drops. Immediately before the laser procedure. All the capsulotomies were performed by a qualified ophthalmologist.

Five hundred eyes of Five hundreds Patients underwent the procedure with a pulse duration of 4 nanosecond, a spot size of 8 micron, and pulse energies ranging from 0.5-2.0 mJ, coupled to a slit lamp delivery system with a 1064 nm Laser beam. With the patient seated at the slit lamp system, Abraham capsulotomy contact lens (Ocular instruments) was placed onto the eye. The aiming beam was focused on the superior capsule 1 mm inside the IOL edge. Nd: YAG laser was applied with a 8.0 micron spot size and a power of 0.5 to 2.0 mJ and pulse duration of 4.0 nanosecond, to create small openings in the capsule from 12 to 7 ‘o’clock position and then from 12 to 5 ‘o’clock position.

A stalk was created by applying few laser shots vertically downward from 5 and 7 ‘o’clock position. Patients were examined at 3 hour, 1 day, one week, two weeks, and 4 weeks after Nd; YAG laser posterior capsulotomy. Patients were advised to report any visual complaint to the principal investigator after the laser process. At each visit patients were invited to report any symptoms of ocular morbidity and an ophthalmic examination was performed, which included visual acuity measurement, slit lamp biomicroscopy and Goldman applanation tonometry. In addition gonioscopy and funduscopy were also performed. Short term complications were defined as intraoperative and during first week after treatment. Patients were also censored if a complication like retinal detachment took place. Statistical analysis was performed on SPSS version 15 for windows. Frequency distribution tables were used to present the data. Mean and standard deviation were used for continuous variables. Categorical variables were presented as proportions and percentages.

RESULTS

We studied change of intraocular pressure after Nd: YAG laser posterior capsulotomy in 500 eyes of 500 patients. 260 (52%) were males and 240 (48%) females; all were pseudophakic having different age groups ranging from 10 to 80 years. Goldman applanation tonometer was used for IOP measurement before and after Nd: YAG laser application. Q-Switched Nd: YAG laser was used to perform posterior capsulotomy.

Three hours after Nd: YAG laser posterior capsulotomy. IOP remained unchanged in 181 (36.2%) eyes, and in 274 (54.8%) eyes IOP raised up to 10mmHg. Out of these 243 (48.6%) eyes developed a rise of IOP up to 6mmHg and only 31 (6.2%) eyes had a rise more than 6mmHg but not over 10mmHg. 45 (9%) eyes showed a rise of IOP more than 10mmHg. The mean pressure raised after 3 hours was 5.60mmHg and the mean IOP was 14.65mmHg. Anti-glaucoma treatment was started in 45 (9%). Tab. Acetazolamide 250mg 2-tablets state along with topical beta-blockers two times a day. Topical NSAID was given to all patients for decreasing intraocular inflammation.

On following day 291 (58.2%) eyes had normal baseline IOP while 204 (40.8%) eyes had an IOP elevation of up to 10mmHg. Out of these 189 (37.8%) eyes had an IOP elevation up to 6mmHg, only 15 (3%) had an IOP elevations of more than 6 to 10mmHg. 5 (1%) eye had IOP of more than 10mmHg. So 40.8% eyes had insignificant elevation of IOP, while only 1% eyes had significant elevation of IOP. Mean IOP rise was 4.05mmHg and mean IOP was 12.26mmHg.

One week after capsulotomy 370 (74%) eyes had normal baseline IOP while 120 (24%) eyes had rise up to 6mmHg, only 5 (1%) eyes had rise up to 10mmHg and 5 (1%) eyes had rise of more than 10mmHg. So practically 370 (74%) eyes were now towards the normal IOP and only 5 (1%) eyes had very significant rise in IOP. Mean IOP was 11.62mmHg, mean pressure rise was 4mmHg.

Two weeks after posterior capsulotomy 402 (80.4%) eyes had normal base line IOP. 98 (19.6%) eyes had rise of IOP up to 6mm Hg the mean pressure rise after 2 weeks was 4mmHg and mean IOP was 11.27mmHg. So 2 weeks after capsulotomy 80.4% eyes were with normal base line IOP and 19.6% eyes had insignificant rise of IOP. Four weeks after posterior capsulotomy 446
To Evaluate the Elevations of Intraocular Pressure after Nd: Yag Laser Posterior Capsulotomy

(89.2%) eyes had rise of IOP upto 6mmHg and no patient had IOP rise more than 6mmHg. The mean pressure after 4 weeks was 11.05mmHg and mean IOP rise was 3.38mmHg.

So after 4 weeks of Nd: Yag laser posterior capsulotomy, 89.2% eyes had normal base line IOP and 10.8% eyes had insignificant rise of IOP.

Comparison of mean and standard deviation of pre and post laser IOP

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DISCUSSION

The elevation in intraocular pressure generally starts, immediately after Nd: YAG capsulotomy. It reaches to its peak at 1 - 4 hours and return to base line level within a week, mostly within first 24 hours.\(^8\) Besides elevating IOP other complications such as, damage to IOL, rupture of anterior hyaloid face, iris bleeding, cystoid macular oedema, corneal damage and retinal detachment etc may occur.\(^9,10\)

The main objective of our study was to observe the effect of Nd: YAG laser posterior capsulotomy on intraocular pressure and to prevent the sight threatening complication of raised IOP\(^11\) by controlling unintended rise of IOP with the use of medicine.\(^12\) The criteria used to administer the drug were either a rise of IOP of 25mmHg or 10mmHg more above the baseline value.\(^13\)

The drugs used were tab. Acetazolamide 250mg, 2 tablet stat along with topical beta blocker.\(^14\)

In our study intraocular pressure was checked pri-
or to laser application and than three hours, 24 hours 1 week, 2 weeks and 4 weeks after the procedure. Any significant rise in IOP was treated accordingly. In our study of 500 cases, Three Hundred Nineteen (63.8%) eyes showed an elevation of IOP after 3 hours of capsulotomy. Out of these 243 (48.6%) eyes showed an elevation of up to 6mmHg, 31 (6.2%) eyes showed elevation of up to 9mmHg, and 45 (9%) eyes showed elevation of IOP 10mmHg and more.

Study by Ejaz Latif Muhamad et al, on IOP changes after Nd: Yag laser posterior capsulotomy, noticed a mean IOP elevation of less than 5mmHg from baseline in 7(9.3%) cases in placebo group. 32% eyes of placebo group had in intraocular pressure elevation of 5-10mmHg from base line as compared to 2 (2.6%) of the apraclonidine - treated group. 10.7% patients of placebo group develop a IOP rise of greater than 10 mmHg.14 A study by Sohail Siddiqui Butt in 1998 observed a post laser capsulotomy elevation of IOP within 3 Hours in 51 (79.7%) eyes with a rise of 10 mmHg or more in 15 (23.5%) eyes.15

Antiglaucoma treatment started in 50 (10%) eyes was. Tab. Acetazolamide 250mg, 2 tablets stat, along with topical beta-blockers one drop twice a day. Non-steroidal anti-inflammatory drugs were topically given with topical beta-blockers one drop twice a day. Non-

To Evaluate the Elevations of Intraocular Pressure after Nd: Yag Laser Posterior Capsulotomy

...sure is insignificant and IOP comes to base line value or near normal within 24 hours. A few cases may develop markedly high IOP during this period and therefore all the cases should be observed very closely during early 24 hours especially within 3 hours. Post-operatively, and immediate measures should be taken to lower the IOP, as to avoid permanent damage to the optic nerve and the vision.

REFERENCES

Physicists are using the special properties of graphene to produce key elements of an artificial retina. With their research program the researchers were admitted to the heavily funded “Graphene” Flagship Program of the EU.

Graphene is viewed as a kind of “miracle solution”: It is thin, transparent and has a tensile strength greater than that of steel. In addition, it conducts electricity better than copper. Since it comprises only a single layer of carbon atoms it is considered two-dimensional. In 2010 the scientists Andre Geim and Konstantin Novoselov were awarded the Nobel Prize for their ground-breaking work on this material. In October 2013, the “Graphene” project was selected alongside the “Human Brain Project” as a Flagship Project of the EU FET Initiative (Future and Emerging Technologies). Under the supervision of Chalmers University of Technology in Sweden, it bundles the research activities and will be funded with one billion euro over ten years. In July 2014 the program took on 66 new partners, including Technische Universität München (TUM).

Optical prostheses for blind people:

Because of its unusual properties, Graphene holds great potential for applications, especially in the field of medical technology. A team of researchers led by Dr. Jose A. Garrido at the Walter Schottky Institut of the TUM is taking advantage of these properties. In collaboration with partners from the Institut de la Vision of the Université Pierre et Marie Curie in Paris and the French company Pixium Vision, the physicists are developing key components of an artificial retina made of Graphene.

Retina implants can serve as optical prostheses for blind people whose optical nerves are still intact. The implants convert incident light into electrical impulses that are transmitted to the brain via the optical nerve. There, the information is transformed into images. Although various approaches for implants exist today, the devices are often rejected by the body and the signals transmitted to the brain are generally not optimal. Excellent biocompatibility

In contrast to the traditionally used materials, graphene has excellent biocompatibility thanks to its great flexibility and chemical durability. With its outstanding electronic properties, graphene provides an efficient interface for communication between the retina prosthesis and nerve tissue.

(Source: http://www.tum.de/en/about-tum/news/...}

Photograph: Natalia Hutanu / TUM

Artificial Retina: Physicists develop an interface to the optical nerve

(A peep into Nano-Technology)

Edited: Dr. Madiha Durrani, FRCS Canada
Double vision, or diplopia, is a symptom to be taken seriously. Some causes of diplopia are relatively minor, but others need urgent medical attention. Double vision is not normal and should be reported promptly.

**Causes:** Opening your eyes and seeing a single, clear image is something you probably take for granted. But that seemingly automatic process depends on the orchestration of multiple areas of the vision system. They all need to work together seamlessly:

- The cornea is the clear window into the eye. It does most of the focusing of incoming light.
- The lens is behind the pupil. It also helps focus light onto the retina.
- Muscles of the eye -- extraocular muscles -- rotate the eye.
- Nerves carry visual information from the eyes to the brain.
- The brain is where several areas process visual information from the eyes.

Problems with any part of the visual system can lead to double vision. It makes sense to consider the causes of diplopia according to the part of the visual system that has the problem.

**Corneal.** Problems with the cornea often cause double vision in one eye only. Covering the affected eye makes the double vision go away. The abnormal surface of the eye distorts incoming light, causing double vision. Damage can happen in several ways:

- Infecstions of the cornea, such as herpes zoster, or shingles, can distort the cornea.
- Corneal scars can alter the cornea, creating unequal visual images.
- Dryness of the cornea can create double vision.

**Lens.** Cataracts are the most common problem with the lens that causes double vision. If cataracts are present in both eyes, images from both eyes will be distorted. Cataracts are treated surgically.

**Ocular Muscles.** If a muscle in one eye is weak, that eye can’t move smoothly with the healthy eye. Gazing in directions controlled by the weak muscle causes double vision. Muscle problems can result from several causes:

- Myasthenia gravis is an autoimmune illness that blocks the stimulation of muscles by nerves inside the head. The earliest signs are often double vision and drooping eyelids, or ptosis.
- Graves’ disease is a thyroid condition that affects the muscles of the eyes. Graves’ disease commonly causes vertical diplopia, one image is on top of the other.

**Nerve palsies.** Several different conditions can damage the nerves that control eye muscles and lead to double vision:

- Multiple sclerosis can affect nerves anywhere in the brain or spinal cord. If the nerves controlling the eyes are damaged, double vision can result.
- Guillain-Barre syndrome is a nerve condition that causes progressive weakness. Sometimes, the first symptoms occur in the eyes and cause double vision.
- Uncontrolled diabetes can lead to neuropathies in one of the eyes, causing eye weakness and double vision.

**CNS.** Since visual processing takes place inside the brain. Many different causes for double vision originate in CNS. They include:

- Strokes
- Aneurysms
- Raised pressure of CSF, trauma, bleeding, or infection
- Brain tumors
- Migraine headaches

**Symptoms of Double Vision:** Diplopia can occur by itself with no other symptoms. Depending on the cause, other symptoms may be present with double vision, such as:

- Misalignment of one or both eyes (a “wandering eye” or “squinting” appearance)
- Pain with eye movements in one or both eyes
- Pain around the eyes, such as in the temples or eyebrows
- Headache
Aetiology of Diplopia

- Nausea
- Refractive errors
- Ptosis

Diagnosed: Double vision that’s new or unexplained needs medical attention right away. With so many potentially serious causes for double vision, it’s important to discover the reason without delay. It is important to diagnose the cause for double vision. Blood tests, a physical exam, and possibly imaging studies like computed tomography (CT) or magnetic resonance imaging (MRI) are frequently used.

One of the most effective tools in diagnosing diplopia, though, is the information you can provide. You can make the diagnosis for double vision more accurate by answering several questions beforehand.

- When did the double vision start?
- Have you hit your head, fallen, or been unconscious?
- Were you in a car accident?
- Is the double vision worse at the end of the day or when you’re tired?
- Have you had any other symptoms besides double vision?
- Do you tend to tilt your head to one side? Look at old pictures, or ask family -- you may not even be aware of the habit.

Now, focus on something unmoving in your field of vision -- a window or a tree.

- Are the two objects side by side, or is one on top of the other? or are they slightly diagonal? Which one is higher or lower?
- Are both images clear but simply unaligned with each other? or is one image blurry and the other clear?
- Cover one eye, then uncover it and cover the other. Does covering either eye make the double vision go away?
- Pretend your field of vision is a clock face. Move your eyes around the clock, from noon to six and up to 12 again. Is your double vision worse at any clock position? Does any position make your double vision improve?
- Tilt your head to the right, then to the left. Do any of these positions improve the double vision, or make it worse?

Treatment: With double vision, the most important step is to identify and treat the underlying cause. In some cases, double vision can be improved by managing or correcting its cause.

- If weak eye muscles are the cause, or if a muscle has been pinched as a result of injury, surgery may help.
- Myasthenia gravis can be treated with medications.
- Graves’ disease is often curable with surgery or medical therapy.
- Blood sugar in diabetes can be controlled with medicines and/or insulin.

If double vision can’t be reversed, treatments can help people live with double vision. Sometimes, this requires wearing an eye patch or special prism glasses to minimize the effect of double vision.

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IMPORTANT NOTE

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LAHORE - A CITY OF NOBLE LAUREATES

Lahore - Popularly known as city of colleges it means a cultural, intellectual and artistic hub of the country which has produced most illustrious men of learning. If history and architecture are your passion there’s an evocative mix, from formidable Mughal monuments to faded legacies of the British Raj.

Pakistan is crazy about cricket and one way of breaking the ice with Lahorites is to strike up a conversation about the game. Lahore – which, incidentally, is the home to the cricket- sometimes serves as the venue for high-profile international matches. It also has some serene architecture and gardens on the subcontinent. Following are the Noble Laureates from Lahore.

1. Joseph Rudyard Kipling was an English short-story writer, poet, and novelist. He wrote tales and poems of British soldier in 1907. He edited the civil & Military Gazette newspaper of Lahore and termed it “mistress and most true love”. He won his Noble Prize for writing the best novel ‘Kim’, the cannon on the Mall in front of the Lahore museum.

2. Prof. Dr. Arthur Holly Compton He worked in the Chemistry Department of the University of Punjab. During his stay he has done lot of research in Magneto-Chemistry and won the Noble in 1927

3. Har Gobind Khorana Noble Prize for Genetics 1968
Born at Raipur Kabirwala Dr. Khorana was responsible for producing the first man-made gene in his laboratory in the early seventies. This historic invention won him the Nobel Prize for Medicine in 1968. Khorana, born in a poor family, he took his M.Sc from Punjab University at Lahore in 1945. Khorana’s work, which is an important scientific landmark of the 20th century, has brought closer the day when synthetic DNA may be introduced into the defective human tissues to treat mentally retarded people.

4. Dr. Subrahmanyan Chandra Sekhar Physics 1983
Born in Lahore, educated in Government College and served as a lecturer there. Won Noble in (Physics) 1983 for discovering a black hole in the universe. There is a telescope named after him in space “Chandra” His father was Auditor General in Lahore.

5. Prof. Dr. Abdus Salam Chaudhary
Prof. Dr Mohammad Abdus Salam Chaudhary, Physicist and first Pakistani Nobel Laureate 1979. Born in Jhang, Punjab, was a Pakistani theoretical physicist, astrophysicist and Nobel laureate in Physics for his work in United Field Theory 1979. Salam holds the distinction of being the first Muslim Nobel Laureate. Even today, Salam is considered as one of the most influential scientist and physicist in this country. He founded the International Institute of Theoretical Physics at Trieste, Italy later named after him as Abdus Salam International Institute of Theoretical Physics. He was Professor of Physics at Government College, Lahore

6. Malala Yousafzai Nobel peace prize winner 2014
Champion of Children has been given Nobel Peace Prize
Development of Super-Resolved Fluorescence Optical Microscope – Peep Into the Nanoworld

For a long time, the optical microscope were limited by wavelength of light and other factors. Scientists believed that they could never yield a resolution better than 0.2 micrometer, but the three scientists i.e., Eric Betzig, William Moerner (both from USA) and Stefan Hell from Germany were able to break that limit by using molecules that blow on command. The advance took optical microscope into new dimension that made it possible to study the interplay between molecules inside cells, including the aggregation of disease-related proteins.

The technology offers advantage over an electron microscope, which offers slightly better resolution but can’t be used to examine cells that are alive. It is used to get better understanding of the nerve cells and brain synapses. Mr. Moerner studied proteins related to Huntington’s disease and Mr. Betzig tracked cell division inside the embryo.

Since it will be a powerful microscope, it will enable the scientists to see how disease develop inside the tiniest cell. They used the glowing molecule in diseases such as Parkinson’s Disease, and Alzheimer’s and Huntington’s disorder at a molecular level. Two US and one German scientist win Nobels in Physical Chemistry for opening a window into the nano-world with their development of ‘super-resolved fluorescence microscopy’

Inauguration of Breast Cancer Clinic at Holy Family Hospital, Rawalpindi

Professor Muhammad Umar, Sitara-i-Intiaz, Principal of Rawalpindi Medical College and Chief Executive of Allied Hospitals has recently inaugurated the Breast Cancer Clinic at the surgical outdoor of Holy Family Hospital, Rawalpindi.

According to different studies 40000 women die due to advanced breast cancer in Pakistan which is much higher as compared to other Asian countries. According to a recent study conducted in NORI hospital, Islamabad, the number of new cases of cancer has swelled from 2000 in 1998 to over 4000 in 2013. The incidence has increased by 20% and mortality rate has also increased by 20%. There is one out every 8 women who is likely to suffer from this dreaded disease. It is estimated that the breast cancer is 35% of all the female cancers, and out of them 60% report in advanced stage which is due to lack of awareness, poverty, social and cultural taboos.

Globally speaking, the number of cancer patients have arisen from 12.7 million in 2008 to 14.1 million in 2012 and it is expected to rise further to 19.0 million in 2025. Multiple risk factors are smoking, obesity, lack of physical activity and indiscriminate use of hormones and reluctance of our female population to consult a doctor. As such we need many clinics almost in every teaching hospital of Pakistan where we can provide the state-of-art facilities to our people.

Keeping in view of this fact, Rawalpindi Medical College and its Allied Hospitals has always been torchbearer in taking the health facilities to higher level. It is worth mentioning here that Prof. Muhammad Umar who is a very humble, helpful, cheerful, energetic and an untiring personality has already established a most modern Liver diseases Clinic, providing latest treatment for Hepatitis ‘C’ patients and other liver diseases. He held a Workshop on Clinical Audit, which goes a long way in improving the health services and now a Breast Cancer Clinic with state-of-the-art services to the Public.

Realizing the difficulties of our people Prof. Umar has gone a long way to undertake this project on priority basis. Other professors who are helping this project are Prof. Hamamatul Bushra, Prof. Idrees and Dr. Jahangir Sarwar as active members of the team. Prof. Bushra highlighted to the audience the major causes of...
increasing incidence of Breast cancer. Patients mostly depend on unqualified and untrained healers. Our female population always think that it is immoral to get examined especially in the rural areas.

Dr. Sarwar indicated that the newly established clinic will greatly increase the awareness in our female population and stressed the need for early detection of the disease. We need to educate our womenfolk regarding the importance of early detection of cancer in case they happen to suspect any small lump in the breast, which will ultimately help in saving the lives of millions. Young mothers should be encouraged to breast feeding and to adopt a healthy life style.

Chief Editor

Letter to the Editor

Dear Prof. Durrani,

We gratefully acknowledge the receipt of your esteemed quarterly journal 'International Ophthalmology update' Vol 12 No:4, October-December,014. We are sure that this is going to provide useful additional information for our postgraduate students involved in research project for their M.Phil and PhD programs. I am sure that your support in academic field will continue to enrich the knowledge of the student population and the faculty at the University. We thank you once again for the complimentary copy of the journal. With best regards,

Yours sincerely,

Assistant Librarian.

University of Health Sciences,
Lahore.

Dear Prof. Yasin Durrani

Keeping my words, I have just finished my paper “General impact of ocular anti-angiogenic therapy” and I am sending it to your attention. Today I have received a hard copy of the Ophthalmology Update and just have read about your new Guidebook. I am very impressed with a wide field of your professional interest. My cordially congratulations to you on new book, Why should I become a doctor Taking this opportunity I would like to express my deep gratitude to you for sending me the Journal and I wish you once more continued successful and fruitful work and all the very best. Best regards,

Prof. Marianne Shahsuvaryan
Prof. of Ophthalmology, Yerevan State Medical University, Republic of Armenia

Dear Prof. Yasin Durrani, AOA. I hope you are in the best of your health. Today I received in the mail the Ophthalmology Update magazine. I was very delighted to see my article “Are we on Right Path in Glaucoma”. I have no words to say my thanks for your kindness and support. I am certain, one day by Grace of Allah, my colleagues would listen to me. I always enjoy Iqbal’s poetry in your magazine which really makes your magazine even more colorful. I really admire your dedication that you are so actively involved in publication of Ophthalmology Update in your age. I pray to Allah to bless Pakistan with more persons like yourself. My best regards.

Syed S. Hasnain M.D.
General Ophthalmology
560 W. Putnam Ave. Suite #6Porterville, CA 93257
Tel: 559.781.7482 Fax: 559.781.8446
Email: hasnain40@sbcglobal.net

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