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Patho-physiology of Dry Eye Syndrome (DES)  
(Current Concept)

With the increasing age in life expectancy the dry eye syndrome has become a very common disorder which has badly affected the quality of life especially in the female population after menopause so much so that a careless approach to the treatment may damage the eyes permanently. According to recent studies in Pakistan the incidence of DES has sprung from 5 to 35% in population. Beaver Dam study has revealed the problem of 14% in the age group of 50-90 years. DES is generally described in two sub-types: aqueous deficient and evaporative type. In the former there is a lack of aqueous secretion by the lachrymal glands which is more common while in the later the tear film evaporates too quickly is less common, though some patients have mixed type of condition as in hot climates, poor lid function in older people and vit-A deficiency.

Currently, it has been observed that those patients operated for cataract and refractive surgery have suffered from DES. In view of the fact that adequate tear film along with the corneal interface act as the first optical power of the eye. Any disturbance of this balance will affect the good quality of vision. Therefore it is necessary for the ophthalmologist to be aware of this phenomenon while treating their patients with fluctuating vision. In this context, fluorescein, lesser green and rose Bengal are very important and helpful tools to identify any associated corneal, degenerative or conjunctival pathology. Dr. Freeya Gupta has routinely used Matrix Metalloproteinase 7 assay and osmolarity test in his clinic while screening his patients.

In fact, DES has not yet been fully understood as it appears to be a complex disorder due to its diverse clinical presentation. The ophthalmologists are still struggling to treat cases adequately by targeting the inflammatory pathway as well.

Presently, the basic patho-physiology of DES has completely changed. Previously, the clinician have understood it merely an aqueous deficient disorder due to Meibomian gland dysfunction (MGD) which was considered the commonest cause of the dry eye. In fact, multiple endogenous and exogenous factors are responsible for DES. The activated T-cells, after extravasation, release cytokines that damage the ocular tissue thereby reducing the tear production by interfering the patho-physiological and immuno-inflammatory pathways.

Cyclosporine - A intranasal stimulating liquid, induces a reflex pathway at nasal mucosa to produce aqueous, mucus and lipids.

In Meibomian gland dysfunction (MGD), bacteria prevent lid margin secretion-lipases which breaks the lipid layer into soap and fatty acids seen as frothiness of tear film at the lid margin, which acts as an irritant resulting in inflammatory process. There are many other conditions which masquerade and may worsen the associated symptoms like limbal keratoconjunctivitis, punctuate keratitis, contact lens related toxicity, chemical burn, allergic/ atopic disorders, trachoma, spring catarrh and blephritis etc.

Careful history and examination of the patient to correctly diagnose and treat these disorders before coming to final diagnosis is very essential. So far the treatment of DES has been palliative and the use of artificial tears, lubricants with polymer based products such as carboxy-methyl-cellulose, lipid emulsion, products containing hyaluronic acid and vit-A ointments, are the cornerstones of the treatment. A number of other agents with anti-inflammatory properties like topical steroids for a short period supplemented with oral doxycycline, azithromycin (oral and eye drops) are also a part of the treatment but the current strategies have expanded the therapeutic regime taking into account the importance of targeting
the etiology and inflammatory process. Cyclosporin-A 0.05% (Ristasis-marketed by Sante in Pakistan) eye drops and topical Lifigrast 5% (Xiidra eye drops approved by FDA, not yet commercialized in Pakistan) are also very helpful in DES cases.

Since the basic pathology of DES has completely changed in terms of quality and quantity of tears. It is well recognized that the T-cell mediated inflammatory process involve the group of lachrymal glands and goblet cells producing tear film hyperosmolarity. T-cells released Cytokines which activate the antigen presenting cells (APC), migrating to lymph nodes and ocular surface are responsible for inflammatory response causing tissue damage, thereby reducing tear production. In fact, the hyperosmolarity is considered the primary trigger for the cellular and molecular events in the immune pathway leading to DES. Cyclosporin-A (Restasis eye drops) and Liftegrast (Xiidra eye drops 5%) act as antagonist of intracellular adhesion molecule (ICAM-1) and act directly on T-cells through different mechanism.

Today, new treatment are emerging fast like fatty acid based artificial tears with perfluorohexyloctane as a base with Cyclosporine-A intranasal stimulating liquid, which induces a reflex pathway at nasal mucosa to produce aqueous, mucus and lipids.

A recent research suggested that the dry eye pain could be neuropathic. Topical Gabapentin which is orally used for neuropathic pains (as observed by Edward J. Holland and approved by FDA in 1993 as a standard treatment in epileptic children and postherpetic neuralgia); has also been used successfully since 2014 as topical eye drops in painful conditions like herpes zoster, glaucoma, uveitis, optic neuritis and dry eye. (the drug is still in experimental stage and has not been commercialized). It is presumed that it may prove a solution for dry eyes in future.

Another novel approach by Dr. Stephen C. Pflugfeldar from Bayer College of Medicine, Houston, USA has been devised as intranasal lachrymal neurostimulator (ILN)-researched through Allergan which acts as a stimulator to anterior ethmoidal branch of trigeminal nerve and effectively stimulate goblet cells in the conjunctiva. It also acts synergistically with Cyclosporin-A to increase tear meniscus as proved by OCT.

Additionally, Tavilermide 1% neurotrophic ophthalmic solution has supported corneal nerve activation thereby enhancing mucin secretion. Likewise, RGN-259 has been used in DES; it is a peptide naturally found in human blood cells and is currently under investigation, rapidly acting as anti-inflammatory agent which promotes tissue repair. Another anti-inflammatory topical liquid 5kQ1 is also being researched with cis-urocanic acid which reduces the mitochondrial oxidative stress thereby acts as anti-inflammatory agent.

In Pakistan we have seen a number of publications on DES, hardly based on investigative research. There is a dire need to surge in this field with the coordinated efforts of scientists, rather traversing on the same beaten tracks. We have full confidence in our researchers who can very well delve on the subject in the best interest of the scientific advancement for the population with ever increasing debility.

REFERENCES.
2. GalorevA et al Eye (Lond) 2015; 29(3):301-312

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Ophthalmology update welcomes the participants of Hyderabad Ophthalmic Conference.
ABSTRACT
Background: Diabetic Retinopathy (DR) can be defined as a damage which is caused to microvasculature in the retina by prolonged hyperglycaemia.
Objective: To determine the frequency of diabetic retinopathy(DR) and to compare the frequency of D.R in Type1 and Type2 diabetics.
Results: Out of 140, 77(55%) were males and 63(45%) were females. Type1 diabetic patients were 55(39.3%) whereas Type2 diabetics were 85(60.7%). Overall prevalence of DR was 48.6%. The prevalence was higher in type 1 than type 2 diabetics (58.2% vs 42.4%).
Conclusion: Diabetic retinopathy is more prevalent in type 1 diabetics as compared to type 2 diabetics.
Key words: Frequency, Diabetic Retinopathy, Type 1 Diabetes, Type 2 Diabetes, Fundoscopy

INTRODUCTION
Diabetic retinopathy (DR) involves the damage to the small blood vessels in the retina; results from chronically high blood glucose levels in people with poorly controlled diabetes. The world health organization estimates that more than 180 million people worldwide have diabetes mellitus and this number is likely to rise ,e., more than double by 2030. Tragically this will lead to approximately 4 million people around the world losing their sight from DR, the leading cause of blindness in patients age 20-74 years. 

DR is classified into proliferative and non-proliferative diabetic retinopathy depending upon growth of new blood vessels on retina. The major cause of sever visual impairment is proliferative diabetic retinopathy. The risk of development and progression of DR is related with type, duration of diabetes, blood glucose, blood pressure and lipids. The presence of retinopathy may indicate micro-circulatory dysfunction in other body organ system.

The prevalence of DR is 45.9%. The statistical Data available worldwide shows the prevalence of this disorder to be different in Type 1 and Type 2 diabetics. One study showed it to be 54.6% in Type 1 and 34.2% in Type 2 diabetics. Another study showed Type1= nearly all patients and Type2= >60%. In another study Type1= 60.2% and Type2= 33.92%.

The Diabetic Retinopathy (DR) is more prevalent in type 1 as compared to type 2 Diabetics. It is more prevalent amongst the males than females and is statistically associated with the duration of disease, type of diabetes, age and gender.

Keeping in mind the lack of statistical data on DR in Pakistani population, variable prevalence reports on Type1 and Type2 diabetics worldwide and its implications on a patient’s life, we plan to conduct this study. This evidence will benefit, as the disease is more aggressive in type1 than type 2 diabetics. It is important to prevent DR by identifying the signs of retinopathy at earlier stage by more frequent follow-ups and for adequate ant timely retinal laser photocoagulation and normalization of blood sugar because it is a key indicator of systemic diabetic micro-vascular complications, and as such a sentinel indicator of the impact of diabetes.

MATERIAL AND METHOD:
It was a Cross-sectional study conducted at the
Department of Retina, Al Shifa Trust Eye Hospital, Rawalpindi from 24th Dec 2015 to 25th June 2016, using WHO calculator with following assumptions: confidence level = 95%, anticipated population proportion = 34.2%; absolute precision required =8%; sample size being = 136 out of 140 through non-probability consecutive sampling.

**Inclusion criteria:** Patients who will be diagnosed with diabetes, presenting with decrease vision of < 6/6 by Snellen’s visual acuity chart. All adult patients of both genders.

Patients from 20-74 years of age.

**Exclusion criteria:** Patients with maturity cataract and hazy media, whose fundi could not be examined. Patients with history of exposure to radiation, hypertensive retinopathy, sickle cell disease and phaochromocytoma which mimic same fundus findings. Independent t test was used to check the comparison of diabetic retinopathy in type 1 and type 2 diabetes, and data was analyzed through SPSS version 20.

**RESULTS**

Total number of participants in this study were 140, among whom 77 (55%) were males and 63 (45%) were females. Type 1 diabetic patients were 55 (39.3%) whereas Type 2 diabetics were 85 (60.7%). Out of 55 Type 1 diabetics 30 were male and 25 were females and in case of Type 2 diabetics out of 85 patients 47 were male and 38 were females. Frequency distribution of DR is shown in (Table No.6) showing that DR was present in 68 (48.6%) patients and was absent in 72 (51.4%) patients.

**Table 1:** Frequency of diabetic retinopathy:

<table>
<thead>
<tr>
<th>Diabetic Retinopathy</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>68</td>
<td>48.6%</td>
</tr>
<tr>
<td>No</td>
<td>72</td>
<td>51.4%</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>100%</td>
</tr>
</tbody>
</table>

The study found out that diabetic retinopathy is found to be more prevalent among patients of type 1 diabetes as compared to type 2 diabetes (p=0.000, df=139,95% CI).

**Table 2:** Comparison of diabetic retinopathy in type 1 and type 2 diabetes:

<table>
<thead>
<tr>
<th>Type of Diabetes</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Degree of Freedom</th>
<th>P Value</th>
<th>T value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR in Type 1 Diabetes</td>
<td>0.5429</td>
<td>0.49995</td>
<td>139</td>
<td>0.000</td>
<td>13.814</td>
</tr>
<tr>
<td>DR in Type 2 Diabetes</td>
<td>0.5784</td>
<td>0.49556</td>
<td>139</td>
<td>0.000</td>
<td>12.848</td>
</tr>
</tbody>
</table>

**Table 3:** Association between diabetic retinopathy and duration of disease:

(x^2 =28.008, d.f=3, p=0.000)

The study found out that out of all patients who had type 1 diabetes 55 (39.3%), 34 (24.3%) were found to be in age group 20-30 years, 21 (15.0%) were in 31-40 years, 0 (0%) were in 41-50 years, 51-60 years, 61-70 years and greater than 70 years. While out of those who had diabetes type 2 85 (60.7%), 0 (0%) were in 20-30 years and 31-40 years, 27 (19.3%) in 41-50 years, 37 (26.4%) in 51-60 years, 17 (12.1%) in 61-70 years and 4 (2.9%) above 70 years of age group.

**DISCUSSION**

Diabetic retinopathy is the most serious and most common vascular complication in diabetes mellitus. It is also considered as one of the leading cause of total visual loss. Prevalence of DR is different in type1 and type2 diabetic patients.

The data evolving from our study is partly different from other similar studies which are conducted in other countries showing overall prevalence of DR among diabetic patients was 45.9% in Russia, 33.2% in the USA, 34.5% in Japan, 16.1% in Germany, 33.6% in the UK, 17.4% in Slovakia, and 22.4% in Ukraine.

In our study the prevalence of diabetic retinopathy was higher in type 1 58.2% than in type2 diabetics 42.4%. The prevalence of DR in type1 diabetics in our study in lower as compared to other studies like one studies shows the prevalence of DR in type1 was 60.2%. Another study shows nearly all type1 patients having DR. One study shows prevalence 54.6%. Prevalence of DR in type2 diabetics, in our study is 42.4%. Different studies show different prevalence of DR in type2 diabetics like one study shows 34.2%. Another study shows >60% and 33.92%.

In our study we perceived an increase in the severity and prevalence of DR as the duration of diabetes increases. Our data shows that DR appears as early as 0-5 years of diabetes (12.9%) and almost 100% of patients have DR after 25 years of having diabetes. This finding of our study is consistent with another study showing appearance of DR as early as 5 years and more than 90% of patients having DR after 25 years of having diabetes.

Present study found out that out of all patients who did not have diabetic retinopathy 59 (42.1%), 8 (5.75) had < 5 years of duration of DM, 13 (9.3%)
had >5-8 years, 27(19.3%) 10-20 years and 11(7.9%)>20 years of duration of DM. similarly all those patient who had diabetic retinopathy 81( 57.9%), 15(10.7%) had <5 years of duration of DM, 11(7.9%) had >5-10 years, 13(9.3%)10-20 years and 42(30.0%) had > 20 years of duration of DM. while similar studies reported that duration of diabetes mellitus is strongest predictor of diabetic retinopathy.

A study from Wesdr have shown that among youngest patient the prevalence of retinopathy is 8% at 3 years, 25% at 5 years, 60% at 10 years, and 80% at 15 years. The study found out that the increase in prevalence is 0% with every 3 years increase in disease duration but it is 25% with every 15 years increase in disease duration. The incidence of diabetic retinopathy also increases with increase in duration of diabetes mellitus4.

The present study has established that out of all who had type 1 diabetes 55(39.3%), 30(21.3%) were males while 25(17.9%) were females. Out of all patients who had type 2 diabetes 85(60.7%), 74(52.9%) were males while 11(7.9%) were females. While similar studies reported that the patients who had diabetic retinopathy found to be more aged as compared to those without diabetic retinopathy. Evidence exist that diabetic retinopathy is found to be more prevalent among females patient as compared to males6.

The present study also found out that out of all patients who had type 1 diabetes 55(39.3%), 34(24.3%) were in age group 20-30 years, 21(15.0%) were in 31-40 years, 0(0%) were in 41-50 years, 51-60 years, 61-70 years and greater than 70 years. While out of those who had diabetes type 2 85(60.7%), 0(0%) were in 20-30 years and 31-40 years, 27(19.3%) in 41-50 years, 37(26.4%) in 51-60 years, 17(12.1%) in 61-70 years and 4(2.9%) above 70 years of age group. Similar studies found out that 61.2% males and 88.6% patients were between 20-30 years of age. Evidence exist that diabetic retinopathy is more prevalent among patients above 40 years of age7.

The study also found out that diabetic retinopathy is found to be more prevalent among patients of type 1 diabetes as compared to type 2 diabetes (p=0.000 , df=139,95%CI). Similar studies reported that diabetic retinopathy is more prevalent among patients of diabetes mellitus type 18 while some studies had reported more chances9 of diabetic retinopathy among type 2 diabetes patients. A study conducted on diabetic retinopathy and macular edema among American citizens revealed that DR is more prevalent among females and among type 1 diabetic patients10.

**CONCLUSION**

The DR is more prevalent in type 1 diabetics as compared to type 2 diabetics diabetic retinopathy is more prevalent among males than females. Diabetic retinopathy is found to be statistically associated with duration of disease, type of diabetes age and gender

**REFERENCES:**

Visual Outcome in Patients Treated for Clinically Significant Macular Edema (CSME)


ABSTRACT:
Purpose: To evaluate the visual outcome of patients treated for clinically significant macular edema.
Study Design: In this interventional quasi experimental technique was adopted.
Place and Duration of Study: Vitreo-retina clinic eye OPD, Hayatabad Medical Complex, Peshawar, for a period of 6 months.
Material and Methods: It was interventional hospital based study, after quasi experimental sampling technique. Data was collected in vitreo retinal clinic of Eye OPD Hayatabad Medical Complex. All the patients with diabetes were included. Complete visual assessment, ocular slit lamp examination and fundus examination were carried out according to the performa before and after intervention. Those patients who were diagnosed with diabetic macular edema were taken as sample. Grading of diabetic retinopathy was done according to modified Airlie House Classification adopted and modified by Early Treatment Research Group.1
Results: Diabetic retinopathy (DR) was found in 22% of 742 diabetic patients in which 35% (256) had sight threatening diabetic retinopathy. Laser was advised in 95% (243) individuals, accepted by 72% (174) individuals. Amongst 174 patients, 236 eyes had CSME, grid laser was done in 155 eyes (66%) and focal laser was done in 18 eyes (8%) and anti VEGF (intra vitreal avastin) was given in 63 eyes (26%). All patients completed 3 months of follow-up with a mean follow-up period of 5.12±2.59 months. It was found that best corrected visual acuity had declined in 15 eyes 5%, stabilized in 153 eyes (65%) and improved in 75 eyes (30%).
Conclusion: Laser therapy and intravitreal avastin injection resulted in significant improvement in BCVA in patients with CSME and this beneficial effect persisted for up to 3months. However, the slight reduction in this improvement at 3 months suggests that repeated intervention might be necessary. To evaluate the long-term safety and efficacy, further prospective randomized controlled clinical trials will be needed.
Key Words: Clinically Significant Macular Edema, Diabetic Retinopathy, Intravitreal Avastine, Focal Laser.

INTRODUCTION:
Diabetic retinopathy, a Diabetes Mellitus complication that may leads to irreversible blindness. The longer you have diabetes and the less controlled your blood sugar is, the more likely you are to develop this eye complication1, It is becoming a public health issue in developing countries and Eastern Mediterranean Region2 and are at risk of developing diabetic macular edema causing severe visual loss ranging from mild to severe vision loss.2 Both focal and diffuse leakage from retinal capillaries can cause Diabetic macular edema14. Early treatment diabetic retinopathy study (ETDRS) group had recommended Macular photocoagulation treatment in diabetic patients having clinically significant macular edema5.

Laser therapy and intravitreal Avastin injection significantly improves BCVA in patients with CSME and this beneficial effect persists up to 3months, may be with slight reduction in improvement at 3 months which suggests that repeated intervention might be necessary trials will be needed.
Globally, the number of people with DR will grow from 126.6 million in 2010 to 191.0 million by 2030, and we estimate that the number with vision-threatening diabetic retinopathy (VTDR) will increase from 37.3 million to 56.3 million, if prompt notice is not taken. Pakistan had over 7 million cases of diabetes in 2015 with 26% of diabetic retinopathy.

In treatment of Clinically Significant Macular edema (CSME), focal and grid lasers and anti vascular endothelial growth factor (VEGF) has been preferred as an important step in reducing CSME by breakdown of the blood retina barrier with increased vascular permeability resulting in retinal edema through affecting the endothelial tight junction proteins. Hypoxia to the retina start stimulation of the secretion of VEGF from RPE cells. Therefore anti VEGF is required to treat CSME. Bevacizumab (Avastin) is indicated for treating tumors as it binds all subtypes of VEGF. Recent medical researches shows that this drug is useful if injected intravitreal for reducing macular edema secondary to any form of vascular occlusion or neovascularization. In “focal” CSME, a focal laser pattern is used to treat leaking micro aneurysms identified on the FA that contribute to the retinal edema. In “diffuse” CSME, intraretinal leakage is noted on the FA from dilated retinal capillary beds or intra-retinal microvascular abnormalities (IRMA) without isolated, discrete foci of leakage. Laser photocoagulation has been shown to decrease the risk of moderate visual loss from 24% to 12% in 3 years.

The present study will provide base line evidence in managing diabetic patients with clinically significant edema.

MATERIALS AND METHODS:

It was interventional hospital based study, conducted from 2nd January to 1st June, 2016 of 6months duration. Informed written consent was taken from every participant before study and approval was taken from institution ethical review committee of Pakistan Institute of Community Ophthalmology (PICO) Peshawar. Data was collected in vitreo retina clinic of Eye OPD Hayatabad Medical Complex. In this study all the patients who came to vitreo retina clinic with diabetes were included. Complete visual assessment, ocular slit lamp examination and 90D lens fundus examination was done. OCT was carried out to record the retinal thickness before and after intervention. Patients with diabetic macular edema were taken as sample. Grading of diabetic retinopathy was done according to modified Airlie House Classification adopted and modified by Early Treatment Research Group. Patients who were diagnosed as having clinically significant Macular edema were advised Laser therapy or Intra Viteral Inj anti VEGF.

RESULTS:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Years)</td>
<td>54± 12.2</td>
</tr>
<tr>
<td>Gender (Male: Female)</td>
<td>2:4</td>
</tr>
<tr>
<td>DM Type (Type1:Type2)</td>
<td>4:16</td>
</tr>
<tr>
<td>Duration of DM Years</td>
<td>16±11.2</td>
</tr>
<tr>
<td>Duration of DM with CSME Years</td>
<td>4± 2</td>
</tr>
<tr>
<td>Stages of DR (Severe NPDR, PDR)</td>
<td>10:15</td>
</tr>
<tr>
<td>Treatment Plan</td>
<td></td>
</tr>
<tr>
<td>Grid Laser</td>
<td>66%</td>
</tr>
<tr>
<td>Focal laser treatment</td>
<td>8%</td>
</tr>
<tr>
<td>Inj Anti VEGF</td>
<td>26%</td>
</tr>
<tr>
<td>Mean Follow up months</td>
<td>4.12±1.59</td>
</tr>
<tr>
<td>Baseline Visual Acuity</td>
<td>0.63±0.48</td>
</tr>
<tr>
<td>Base line central retinal thickness</td>
<td>482.42±171.81</td>
</tr>
</tbody>
</table>

Decline/Stabilized/Improved Visual Acuity:

<table>
<thead>
<tr>
<th>Frequency of Visual acuity Decline/ Stabilizes (n=243 eyes)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decline in Visual Acuity</td>
<td>35%</td>
</tr>
<tr>
<td>Stabilizes Visual Acuity</td>
<td>65%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency of Visual acuity Improvement (n=150 eyes)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>One line Improvement</td>
<td>29%</td>
</tr>
<tr>
<td>Two line Improvement</td>
<td>43%</td>
</tr>
<tr>
<td>Three line Improvement</td>
<td>17%</td>
</tr>
<tr>
<td>Four line Improvement</td>
<td>11%</td>
</tr>
</tbody>
</table>

DISCUSSION:

Macular edema is a complication of uncontrolled diabetes and it produces severe visual impairment at any stage of diabetic retinopathy. Pathologically the progression of Diabetic Macular edema occurs due to damage to the inner blood retinal barrier which is affected by the alteration in retinal pigmented epithelium and retinal vascular endothelium, primarily by the metabolic changes occurring in the body. The literature searched shows that diabetes is an emerging...
chronic disease in all parts of the world but affecting low and middle income countries like Pakistan. The global prevalence of diabetes among adults over 18 years of age has arisen from 4.7% in 1980 to 8.5% in 2014. Diabetes complication in eye is sight threatening diabetic retinopathy and affecting the vision worse in clinically significant macular edema.

The ETDR results after its publication (ETDR treatment for Diabetic retinopathy study in 1990) suggests that laser photocoagulation is the accurate treatment for macular edema in diabetic patients. In treatment of the of CSME, focal or grid laser application is considered because it reduce permeability of leaky blood retinal barrier. Photocoagulation laser significantly improve the visual outcome as reduces the macular edema, this finding is also supported by studies carried out in UK. VEGF is an endothelial cell specific mitogenic and angiogenic inducer, is up regulated by hypoxia, and it plays a role in DME which contributes to the excessive vascular permeability and leads to macular edema. Anti VEGF (Bevacizumab) binds and inhibits all biologically active isomers of VEGF.

A study carried out by CM and Olk RJ on diabetic macular edema treated by grid laser photocoagulation, the result showed improvement in visual acuity in 14.5%, unchanged in 60.9%, and worse in 24.6%. Another study conducted by Michaud S et al on long term visual outcome, they preferred photocoagulation over the intravitreal steroids. Haritoglou et al conducted a study of case series on patient treated for DME with 1.25mg bevacizumab, they also noted a significant reduction the macular thickness at 2 weeks with P value 0.002, and visual acuity was improved significantly with P value 0.02 after 6 weeks. However the present study showed significant improvement in macular thickness and visual acuity soon after intravitreal bevacizumab injection for 3 months. In the present study best corrected visual acuity had declined in 15 eyes (5%), stabilized in 153 eyes (65%) and improved in 75 eyes (30%), these finding are comparable to international studies. The findings of present observation are also supported by a study carried out in Armed Force Institute of Ophthalmology Rawalpindi which showed that PRP laser is safe and effective in patients with PDR and DME.

**CONCLUSION:**

In recommendation that retinal thickness, visual acuity and best timing of intervention should be monitored to have fruitful results prior to the loss of visual acuity due to clinically significant Macular Edema (CSME). Prospective and controlled randomized trials studies should be carried out to evaluate long term effect of the treatment.

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10. Spaide RF, Fisher YL. Intravitreal bevacizumab (Avastin) treatment of proliferative diabetic retinopathy complicated by vitreous hemorrhage. Retina [Internet]. 2006 Mar [cited 2017...
Visual Outcome in Patients Treated for Clinically Significant Macular Edema (CSME)


************ British Children “Extreme Internet users ” mostly Suffers from Anxiety Neurosis. ************

According to the Organization Economic Cooperation report in a program on international students mostly aged 15 years in 48 countries, it was observed that 28% of the pupil in UK are not satisfied with their lives placing UK at 38th position of the countries that means one in every ten students suffer from some sort of anxiety particularly the girls, mostly very anxious and suffer from anxiety before their examination even if they are well prepared.

British children are extreme internet/computer users as such they are lagging behind those in France, Spain and United States. They further observed that the children from Dominican Republic are the most happiest in the world followed by those in Mexico, Costa Rica, Croatia and Finland.

************
Effect of Pinhole Size on the Improvement of Visual Acuity in Relation to the Level of Ammetropia.

Tayyaba Ayub MS.,(P.H), iOD., BSc (Hon) in Opt & Ortho.,¹ Mukhtar Hussain MBBS², Muhammad Akhtar MBBS.,³ Mehran Hassan Aizaz., Bsc. (Hons) Vision Sciences,iOD⁴

ABSTRACT:
Background: Vision is a broad term used for one’s ability to perceive an object’s shape, colors and its fine details. The maximum perfection in one’s vision, is be able to gain maximum correction of refractive errors by using lenses and pinhole is an estimation by the eye care practitioner. It can be taken as a tool for the improvement of central vision in a person having refractive errors without any other pathology. To make the image more clear, sharp and defined we need to make pinhole size smaller so as to gain the phenomenon of diffraction that allows only central ray to pass through the nodal point.

Objectives: To check the variations in the visual acuity of different types of refractive errors by changing the size of pinhole.

Method: It was an observational study involving the use of structured performa. A total of 200 adult patients, 100 males having refractive error more than ±1.00D and 100 females also having refractive error more than ±1.00D were checked by various sizes of pinhole and their visual acuity taken with three i.e. 0.50mm, 1.00mm and 1.50mm of pinhole diameter is compared.

Results: Results shows that young patients with low refractive errors show better visual acuity with smaller size of pinhole while the patients with higher error or any opacity gave better visual acuity with larger size pinhole 1.50.

Conclusion: In normal individuals with low refractive errors the visual acuity is better improved with 0.5mm and 1mm pinhole size while the individuals with high error give better vision with larger sizes pinhole i.e. 1.50mm.

Keywords: Pinhole, Refraction, Ammetropia, Pupil constrictions

INTRODUCTION
Vision is a broad term used for the one’s ability to perceive an object’s shape, colors and its fine details. The maximum perfection in one’s vision that is be able to gain by lenses for correction of refractive errors and by using pinhole is estimation by the eye care practitioner. It can be taken as a tool for the improvement of central vision in a person having refractive errors without any other pathology.

Pinhole works on the principle of blocking the peripheral rays and focusing of the central rays on the retina to get the clear image. Previously, it is seen that in many cases central vision cannot be improved while in many other cases it can be improved due to pinhole effect in visually impaired patients¹. Clinically, pinhole propose the diffraction phenomenon that prevent distortion and gives fine image².

Pinhole principle is based on the principle of blocking all the peripheral rays coming from infinity and only the central ray can pass through the nodal point of eye and thus focus on the retina as in Fig.

In this figure we can see that the peripheral rays are blocked and only the central ray is passing through the center of the refractive medias of eye and focuses on the retina to get a clear image of an object.

In normal individuals with low refractive errors the visual acuity is better improved with 0.5mm and 1mm pinhole size while the individuals with high error give better vision with larger sizes pinhole i.e. 1.50mm.

To make the image more clear, sharp and defined we need to make pinhole size smaller so as to gain the phenomenon of diffraction that allows only...
central ray to pass through the nodal point\(^3\).

When there is any pathology that compromises the central vision, this single pinhole will not be effective. Therefore, multiple pinholes are available for the passage of light from other than central point. Gaining sharp and fine image in central corneal opacities, cataract and macular pathologies, we use multiple pinhole\(^4\) which acts as an optical device used to get the rough estimation of the refractive errors.

**MATERIAL AND METHODS:**

Non probability purposive study, conducted in College of Ophthalmology and Allied Vision Sciences (COAVS), Lahore from August 2014 to December 2014. Two hundred patients were included in study by using non probability purposive sampling method. Individuals between 15 to 35 years of age with refractive error greater than 1.00DS, having no pathology were included in study. Patients who were mentally retarded, uncooperative, who have undergone any surgical process, having refractive error less than 1.00DS were excluded. Distance visual acuity was assessed by using Snellen's visual acuity chart assessed by filling a self-structured proforma. Data was recorded and entered in statistical package for social science (SPSS version 20.0). The results were analyzed and tabulated by using same software.

**RESULTS:**

Pinhole is an indicator for the presence of refractive error. According to the definition of refractive error, it is a condition of an eye that does not allow the rays to focus. Pinhole provides the effect that it allows only single ray to pass through so that focus on retina and gain fine image. The conclusion for “population-based assessment of sensitivity and specificity of a pinhole for detection of significant refractive errors in the community” was that pinhole use is an effective

<table>
<thead>
<tr>
<th>Table 1: Visual acuity right eye with 0.50mm size pinhole</th>
<th>visual acuity right eye with 1.50mm size pinhole</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross tabulation</td>
<td>6/6-6/9</td>
<td>6/12-6/18</td>
</tr>
<tr>
<td>Visual acuity right eye with 0.50mm size pinhole</td>
<td>60</td>
<td>66</td>
</tr>
<tr>
<td>Visual acuity right eye with 1.50mm size pinhole</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2: Visual acuity left eye with 0.50mm size pinhole, visual acuity of left eye with 1.00mm size pinhole</th>
<th>visual acuity right eye with 1.50mm size pinhole</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross tabulation</td>
<td>6/6-6/9</td>
<td>6/12-6/18</td>
</tr>
<tr>
<td>Visual acuity left eye with 0.50mm size pinhole</td>
<td>57</td>
<td>78</td>
</tr>
<tr>
<td>Visual acuity right eye with 1.50mm size pinhole</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Table</td>
<td>57</td>
<td>82</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 3: Visual acuity left eye with 0.50mm size pinhole, visual acuity of left eye with 1.50mm size pinhole</th>
<th>visual acuity right eye with 1.50mm size pinhole</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross tabulation</td>
<td>6/6-6/9</td>
<td>6/12-6/18</td>
</tr>
<tr>
<td>Visual acuity left eye with 0.50mm size pinhole</td>
<td>53</td>
<td>56</td>
</tr>
<tr>
<td>Visual acuity right eye with 1.50mm size pinhole</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>57</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 4: Visual acuity left eye with 1.50mm size pinhole, Visual acuity of left eye with .50mm size pinhole</th>
<th>visual acuity right eye with 1.50mm size pinhole</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross tabulation</td>
<td>6/6-6/9</td>
<td>6/12-6/18</td>
</tr>
<tr>
<td>visual acuity right eye with 0.50mm size pinhole</td>
<td>53</td>
<td>0</td>
</tr>
<tr>
<td>visual acuity right eye with 1.50mm size pinhole</td>
<td>56</td>
<td>1</td>
</tr>
<tr>
<td>visual acuity right eye with 0.50mm size pinhole</td>
<td>59</td>
<td>4</td>
</tr>
<tr>
<td>visual acuity right eye with 1.50mm size pinhole</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
<td>6</td>
</tr>
</tbody>
</table>
measure that improves the sensitivity to predict the status of an eye7.

The results of pinhole test on visual acuity were extremely changeable, under and over estimating. If the improvement in visual acuity is very small after refraction then pinhole test is not so reliable test as compared to those who attain better visual acuity after refraction8.

DISSCUSSION:
Research was done by using various size of the pinhole i.e. 0.50mm; 1.00mm and 1.50mm in some patients with high refractive error than the normal have somewhat better visual acuity with the larger sized pinhole while the subjects with low error respond better with the normally used pinhole size i.e. 0.50mm and 1.00mm. The reason behind this may be the higher age group, any unknown pathology or may have higher refractive error and low visual acuity. After cataract and corneal opacity, the visual impairment is the third largest cause of blindness9. It is also seen that pre-operative for cataract surgery that are having visual acuity less than 6/60 did not perform well while after surgery good visual assessment with the pinhole was found10.

Pinhole was proved to be a part of screening program for vision in previous studies11. It is suggested that it should be used as a measuring tool for visual acuity. In this way, it may play an important role for assessing one’s visual acuity which may helpful in leading good life.

The age group i.e. 15-35 was selected because the children smaller than this age may have poor vision when the child reaches to about 15 years , he can better detect the problem relating to his vision.

The eye of young person can quickly change its optical power by bringing the change in the crystalline lens. This change in the power is accommodation which is measured by taking the inverse of the focal length called as dioptre. The amplitude of accommodation is the diopteric difference between near and far vision12 and it decrease by 0.25D per year13.

Presbyopia is the reduction of the amplitude of accommodation with the increasing age. It normally starts after 35 years of age (Carnevali, 2005 #30). which progressively increase with the passage of time which can be corrected by the anterior chamber phakic IOL or multifocal intraocular lens[Alio, 2005 #26]. We took the sample of age group less than 35 years just to avoid the presbyopic conditions.

We observed in the individuals with low refractive errors especially in younger age who responds well to the stimulus have better vision with the pinhole of smaller size i.e.0.5mm and 1mm while those peoples who have higher refractive error, visual pathology, physically weak, corneal opacity etc can respond well with a pinhole of size a little larger i.e. 1.50mm.

CONCLUSION
While assessing visual acuity in normal person they are better with pinhole. Visual acuity is considered as one of the important component of visual functions. It effects one’s life when any of it is defected. Therefore, the routine assessment for these functional components should be done with pinhole which gives an important information regarding the refractive status of eye. It estimates the refractive correction, distinguishes the cases of pathological and non-pathological condition. It is also concluded that young patients (15-20) response better than any other age group which may be a factor of decreasing vision as the eye grow older, power decreases. While those, who cannot achieve better vision with pinhole, may suffer from any pathology or having problem with the refractive media. Pinhole assessment may help in conducting the survey of the population which need refractive correction. To aware the population regarding their vision and to help them in enhancing their life styles, this method will be helpful.

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Profile of Amblyopia & Factors Responsible for Non-compliance to Amblyopic Therapy at HMC, Peshawar.

Fahad Ghayyur BVS, MPH,1 Junaid Faisal Wazir, FCPS, MPH, M.Sc MHR,2 Sadiq Ullah M.Sc.,3

ABSTRACT

Purpose: To determine profile of amblyopia and factors responsible for noncompliance to amblyopic therapy amongst pediatric patients from age 5 to 15 years, reported in eye OPD Hayatabad Medical Complex Peshawar Pakistan.

Study Design: The study was cross-sectional, descriptive type accidental technique of sampling was adopted at Orthoptics room, in Eye OPD, Hayatabad Medical Complex Peshawar, at 6 months duration.

Material and Methods: In this study all those children within the age 5-15 with amblyopia was included. The reduced visual acuity due to any other ocular problem was excluded. Visual acuity less than 6/12 due to refractive error was examined and did not show any improvement with pinhole. Reduced VA, not being improved due to strabismus, anisometropia mixed or combined, stimulus deprived, or idiopathic were declared as amblyopic with best corrected visual acuity less than 6/12 without any noticeable pathology.

Results: In this study 126 patients were reported as amblyopic. Out of these (62%) were male and (38%) were female. Stimulus deprived were (10%), anisometropic were 51 (40%), strabismus were (33%) mixed or combine amblyopia were (17%) were reported. Mean age of the patients was 11 + 2 Years, ranging from 5-8 years (36%), 9-12 years (26%) 13-15 Years (37%). Reason for noncompliance of regime acceptibility was (2.4%), accessibility to optometric care was (9%), affordability of care (glasses/patching/ surgery) was (11.9%), lack of awareness is about amblyopia (54.8%) and other causes (i.e cosmetic reasons rather than vision, first visit or late reported in clinic) (21.4%).

Conclusion: Amblyopia was the major cause of ocular morbidity amongst children of age 5-15 years because this is the period to develop amblyopia so early.

Key Words: Prevalence, Amblyopia, Compliance, Amblyopic Therapy.

INTRODUCTION:

Amblyopia is classically defined as reduction in corrected visual acuity in the absence of visible organic abnormalities and is due to misdirected, blurred, or absent retinal images during development of visual system. The causes of amblyopia include strabismus, anisometropia, high refractive error, media opacities, high astigmatism or combination of two or more etiologies in the same patient. (1, 2, 3, 4)

Types of Amblyopia:

1. Strabismus Amblyopia: This leads to domination of cortical vision centers by the fixating eye and chronically reduced responsiveness to the non-fixating eye input.

2. Refractive or anisometropic amblyopia: Refractive amblyopia may result from anisometropia (unequal refractive error between the two eyes).

3. Deprivation and occlusion amblyopia: Deprivation amblyopia results when the ocular media become opaque, such as is the case with congenital cataract or corneal haziness.

4. Mixed amblyopia: Where there is strabismus and anisometropia in the same patient. (5, 6, 7, 8, 9)

Amblyopia is the major cause of ocular morbidity among children of aged 5-15 years because this is the period to develop amblyopia so early.

WHO estimates that in 2002 there were 161 million visually impaired people in the world (about 2.6% of the total population). Of this number 124 million (about 2%) had low vision and 37 million (about 0.6%) were blind. In order of frequency the leading causes
were cataract, uncorrected refractive errors, glaucoma, and age related macular degeneration. In 1987, it was estimated that 598,000 people in United States met the legal definition of blindness. Of his, 58% were over the age of 65 1994-1995, 1.3 million Americans reported legal blindness.

In Singapore the amblyopia prevalence in children aged 30 to 72 months was 1.19% with age or sex difference Unilateral amblyopia(0.83%) was twice as frequent as bilateral amblyopia (0.36%). Of children with amblyopia, 15.0% had strabismus, whereas 12.5% of children with strabismus had amblyopia.

Another survey was conducted in Singapore among young adults young Chinese, Malay and Indian for the cause of and prevalence of amblyopia. In this survey 122,596 men examined, out of these 122,569 patients there were 428 amblyopic, an overall prevalence of 0.35%. The prevalence was similar among Chinese (0.34%), Malays (0.37%) and Indians (0.41%). Anisometropic amblyopia was the most common type and strabismus amblyopia was more common in Indians. There were little racial differences in the prevalence of meridional or form deprivation amblyopia. (10)

In Iran in schoolchildren of Shiraz mean age 2638 schoolchildren was 12.5 years. Prevalence of anisometropia was 2.31%. 2.29% of schoolchildren were amblyopic. The prevalence of amblyopia was 2.02%. The prevalence of exotropia and esotropia was 1.30 % and 0.59% respectively.

A survey was conducted in ophthalmology outpatient department Khyber Teaching Hospital Peshawar for causes of amblyopia. Strabismus amblyopia was present in most common type.In strabismus amblyopia esotropia prevalence was higher than other exoptropia. In refractive amblyopia hypermetropia was most prevalent. Only 22% of patients showed compliance to treatment.12

Amblyopia has attained much attention in strabismology while one of the major public health problems. It develops early in life, a critical period which needs special attention. Proper management, orthoptist clinic, pediatric ophthalmologists, Strabismologist can overcome this problem.

The study of incidence of amblyopia in various ethnic groups tat already exists but the need of hour is to find non-compliance of amblyopia and age wise distribution of amblyopia. The high failure rate of the amblyopia therapy stresses need for the prevention of amblyopia by early visual screening and detection of those at risk.

**MATERIAL AND METHODS:**

This institution based cross sectional study in Hayatabad Medical Complex Peshawar was carried out from January 2016 to July 2016 on patients with Amblyopia. The reduced visual acuity due to any other ocular problem was not taken into account. Visual acuity less than 6/6 due to refractive error was documented. Visual acuity improved with pinhole or otherwise and did not show improvement as well. Reduced VA not been improved due to strabismus, anisometropia mixed or combined, stimulus deprived, were included. Finally patients were declared as amblyopic. Accidental sampling technique was adopted were interviewed in orthoptics room of the hospital.

**RESULTS:**

Total 126 patients were reported in three months as amblyopic. In this study stimulus deprived were 12(10%), anisometropic were 51 (40%), strabismus were 42 (33%) mixed or combine amblyopia were 21 (17%) and idiopathic 0% were reported. Out of these 78 were male and 48 were female. Reason for noncompliance to acceptability was 3 (2.4%), accessibility is 12 (9%), affordability was 15 (11.9%), lack of awareness is 69 (54.8%) and other causes (i.e interest in cosmetic appearance rather than vision, first visit or late reported in clinic) 27 (21.4%).

Total ophthalmic patients were 1180 in which males were 470 (40%) and females were 710 (60%) from which 42 (3%) patients were amblyopic.

<table>
<thead>
<tr>
<th>TYPE OF AMBLYOPIA</th>
<th>NO. OF PATIENTS</th>
<th>PERCENTAGE</th>
<th>Chi Square P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL AMBLY OPIC...</td>
<td>TOTAL OPHTH</td>
<td>frequency of amblyopia by type:</td>
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</tr>
</tbody>
</table>
Profile of Amblyopia & Factors Responsible for Non-compliance to Amblyopic Therapy at HMC, Peshawar.

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<table>
<thead>
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<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td><strong>Anisometropic</strong></td>
<td>51</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Strabismus</strong></td>
<td>21</td>
<td>33%</td>
</tr>
<tr>
<td><strong>Mixed</strong></td>
<td>42</td>
<td>17%</td>
</tr>
<tr>
<td><strong>Stimulus deprived</strong></td>
<td>12</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>126</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Amblyopia</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed</td>
<td>17%</td>
</tr>
<tr>
<td>Strabismic</td>
<td>17%</td>
</tr>
<tr>
<td>Anisometric</td>
<td>86%</td>
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</table>

Frequency of amblyopia on Visual acuity:

<table>
<thead>
<tr>
<th>Visual Acuity</th>
<th>No. of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>6/12, 6/18</td>
</tr>
<tr>
<td>Moderate</td>
<td>6/24, 6/60</td>
</tr>
<tr>
<td>Severe worse than</td>
<td>6/60</td>
</tr>
</tbody>
</table>

Refractive Status of patients with Amblyopia:

**DISCUSSION:**

Strabismus and refractive errors are the primary causes of ocular morbidity that leads to amblyopia in childhood. The prevalence of amblyopia in general population varies from 2 to 5% depending on the diagnostic criterion. The prevalence of amblyopia in our study included all age groups of general population even though children have the prevalence of 3% in untreated adults and older group. However, the difference in frequency in different races is not significant.

Strabismus is the most common cause of amblyopia in children. The other causes of amblyopia, anisometropia, combined strabismus with anisometropia and sensory deprivation. These findings are comparable to the present study. The prevalence of unilateral squint has higher frequency of amblyopia than the alternating squint. The density of amblyopia was graded according to visual acuity in mild moderate and severe amblyopia. Mild amblyopia is more common than the other two in our study which is also supported by Vinding T. Gregersen E, Jensen A, et al.

Amblyopia was more common in males than females. More than half of the patients presented in the younger age group. Poor compliance is a barrier to successful amblyopia therapy in our practice. Refractive or Anisometropic Amblyopia was the most common type of amblyopia. The main reason for strabismus amblyopia was due to lack of awareness of visual impairment after amblyopic therapy. Sixty five percent (65%) of the strabismus amblyopia was due to esotropia. Despite the fact that esotropia was more common than exotropia. This supports that convergent squint is more prone to cause amblyopia than divergent type. Early detection of amblyopia and its treatment can reduce the overall prevalence as proved by many studies in different parts of the world.

**CONCLUSION:**

It was concluded from this study that amblyopia is the major cause of ocular morbidity among children of age 5-15 years because this is the period to develop amblyopia so early.

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Diabetic Retinopathy: Knowledge, Awareness and Practice amongst Diabetic Patients in Fatima Memorial Hospital, Lahore

Adeel Mushtaq MBBS¹, Yousaf Zahoor MBBS². Matlub Murtaza MBBS³

ABSTRACT

Background: Diabetic retinopathy (DR) is a serious cause of irreversible blindness and is one of the most common complication of diabetes. Raising awareness of diabetic retinopathy is considered to be a key element for early diagnosis and treatment. Objective: To get to know the knowledge and awareness level about diabetic retinopathy among diabetic patients.

Method: A cross sectional study was conducted and sample was collected from performa. Patients were included in the study who presented with decreased vision < 6/6 by Snellen’s visual acuity chart. All adult patients of both genders ranged from 20-74 years of age

Results: Out of 200, 137(68%) were males and 63(31.5%) were females. Out of 137 male patients DR was present in 46.8% patients and in case of females out of 63 diabetic retinopathy was present in 50.8% patients.

Conclusion: Diabetic retinopathy is more prevalent in female diabetic patients mostly uneducated as compare to male diabetic patients.

Key Words: Frequency, Diabetic Retinopathy, Prevalence , Fundoscopy.

INTRODUCTION

Diabetic retinopathy (DR) involves damage to the small blood vessels in the retina; results from chronically high blood glucose levels in people with poorly controlled diabetes.¹ The world health organization estimates that more than 180 million people worldwide have diabetes mellitus and this number is likely to double by 2030.² Tragically this will lead to approximately 4 million people around the world losing their sight from DR, the leading cause of blindness in the age group of 20-74 years.³

Better literacy among women is contributory to better public awareness, however, the trend for poor practice patterns needs to be radically changed with aggressive public motivation emphasizing on the necessity of retinopathy screening and follow up.⁴ Keeping in mind the lack of statistical data on DR in Pakistani population, variable prevalence reports on diabetics worldwide and its awareness on a patient’s life, we planned to conduct this study. This evidence will benefit the patient to have knowledge about diabetic retinopathy which is important to prevent DR by identifying retinopathy at an earlier stage through frequent follow-ups and receiving adequate laser application. Normalization of blood sugar is a key indicator of systemic diabetic micro-vascular complications.

Many previous researches had an ample proof that patients who never attended school were less likely to visit an ophthalmologist than those with proper education.⁵ An educational level of middle school or higher education from the university are associated with better awareness of DR. The independent factors associated with visiting an ophthalmologist on a regular basis are DM awareness. However, there is a lack of appropriate knowledge of management of DR in less educated people. The purpose of this study is to know the awareness level of diabetic patients about diabetic retinopathy and also to know the factors associated with the lack of awareness.

Diabetic retinopathy is more prevalent in females than in males. Intensive health education by treating physicians and diabetic associations is required to make them aware of the possible complications in order to change the attitude to prevent visual impairment.

MATERIAL AND METHOD:

It was a cross-sectional study conducted at the Fatima Memorial Hospital Lahore for six month from 24th Dec 2016 to 25th June 2017 with non-probable conveniante sampling using WHO calculator with assumptions: Confidence level = 95%, Sample size = 185, Inflation rate: =15%

Inclusion criteria: i)Patients who will be diagnosed with diabetes, presenting with decrease vision of < 6/6...
by Snellen’s visual acuity chart. ii) All adult patients of both genders iii) Patients from 20-74 years of age

**Exclusion criteria:** i) Patients with mature cataract and hazy media, whose fundi could not be examined ii) Patients with history of exposure to radiation, hypertensive retinopathy, sickle cell disease and pheochromocytoma which mimic same fundus findings.

**RESULTS**

Out of 200 participants, 137 (68%) were males and 63 (31%) were females. Frequency distribution of DR is shown in (Table No.1) showing that DR was present in 68 (48.6%) patients and in 72 (51.4%) patients without DR.

Table 1: Frequency of diabetic retinopathy:

<table>
<thead>
<tr>
<th>Diabetic Retinopathy</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>68</td>
<td>48.6%</td>
</tr>
<tr>
<td>No</td>
<td>72</td>
<td>51.4%</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Inferential Statistics:** The study found out that out of all patients who had type 1 diabetes 55 (39.3%), 30 (21.3%) were males while 25 (17.9%) were females. Out of all patients who had type 2 diabetes 85 (60.7%), 74 (52.9%) were males while 11 (7.9%) were females.

Table no 2: Frequency distribution of diabetic retinopathy with gender:

<table>
<thead>
<tr>
<th>Gender</th>
<th>DR Present</th>
<th>DR Absent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>56%</td>
<td>81%</td>
<td>77%</td>
</tr>
<tr>
<td>Percentage</td>
<td>40.8%</td>
<td>59.2%</td>
<td>100%</td>
</tr>
<tr>
<td>Female</td>
<td>32%</td>
<td>31%</td>
<td>63%</td>
</tr>
<tr>
<td>Percentage</td>
<td>50.8%</td>
<td>49.2%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Frequency of distribution of DR according to education is shown in (Table No.3) that 20 out of 23 patients having DR have education up to graduation, 15 out of 17 patients have education up to FA, 10 out of 16 up to Matriculation, 2 out of 7 up to middle, 11 out of 22 up to primary and 70 out of 115 patients with DR were un-educated.

Table 3: Frequency distribution of diabetic retinopathy with education:

<table>
<thead>
<tr>
<th>EDUCATION</th>
<th>DR Present</th>
<th>DR Absent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduation</td>
<td>20(15%)</td>
<td>3(4%)</td>
<td>23(12%)</td>
</tr>
<tr>
<td>Higher secondary</td>
<td>15(11%)</td>
<td>2(4%)</td>
<td>17(8.5%)</td>
</tr>
<tr>
<td>Matriculation</td>
<td>10(7%)</td>
<td>6(8%)</td>
<td>16(8%)</td>
</tr>
<tr>
<td>Middle</td>
<td>2(1.5%)</td>
<td>5(7%)</td>
<td>7(3.5%)</td>
</tr>
<tr>
<td>Primary</td>
<td>11(8.5%)</td>
<td>11(15%)</td>
<td>22(11%)</td>
</tr>
<tr>
<td>Un-educated</td>
<td>70(54.6%)</td>
<td>45(62%)</td>
<td>115(58%)</td>
</tr>
<tr>
<td>Total</td>
<td>128(100%)</td>
<td>72(100%)</td>
<td>200(100%)</td>
</tr>
</tbody>
</table>

**DISCUSSION:**

Diabetic retinopathy is the most common vascular complication in diabetics. It is also considered as one of the leading cause of total visual loss. Prevalence of DR is different in type 1 and type 2 diabetic patients. In our study the prevalence of DR was highest in un-educated patients, higher in female as compared to male. Many previous studies have reported that patients who never received education were less likely to visit an ophthalmologist as compared with educated ones. In our study we perceived an increase in the severity and prevalence of DR is associated with awareness level. This result is consistent to the study conducted in Ghana. Accordingly, only 103 (26.6%) patients knew the type of diabetes mellitus they were suffering from. Knowledge on ocular effects of diabetes mellitus was low and only 15 (3.8%) had the knowledge. Attitude to routine eye examination was poor. As much as 135 (34.6%) had never had an eye examination since being diagnosed of diabetes. Knowledge of the type of diabetes mellitus the individual had or any ocular complication of this disorder was significantly related (DR: 4.22; \( P < 0.001 \) and DR: 2.55; \( P < 0.001 \)) respectively to their attitude to seeking eye care.

Diabetic patients’ knowledge on diabetes mellitus and its ocular manifestations, and the attitude of diabetic patients towards eye examination were poor as observed by the intensive health education by diabetes care givers and leaders of the Ghana Diabetic Association.

The present study found out that out of all patients who had type 1 diabetes 55 (39.3%), 34 (24.3%) were found to be in age group 20-30 years, 21 (15.0%) were in 31-40 years, 0 (0%) were in 41-50 years, 51-60 years, 61-70 years and greater than 70 years. While out of those who had diabetes type 2 85 (60.7%), 0 (0%) were in 20-30 years and 31-40 years, 27 (19.3%) in 41-50 years, 37 (26.4%) in 51-60 years, 17 (12.1%) in 61-70 years and 4 (2.9%) above 70 years of age group. Similar studies found out that 61.2% males and 88.6% patients were between 40-80 years of age. Evidence exist that diabetic retinopathy is more prevalent among patients above 40 years of age.

A study conducted on diabetic retinopathy and macular edema among American citizens found that DR is more prevalent among females and among type 1 diabetic patients. Previous study shows that a total of 216 PCPs completed the questionnaire. The mean overall knowledge score was 57 ± 14 out of 100.
significant difference in knowledge score between physicians who had obtained a subspecialty degree in family medicine compared to non-professionals (59 ± 14, 53.3 ± 14 respectively; \(P = 0.003\)). Only 19% of PCPs were aware of anti-vascular endothelial growth factor (VEGF) injections as a modality of treatment. A laxity was found in the screening and follow-up of type 1 diabetics, and only 24% of physicians correctly referred patients with type 1 diabetes to an ophthalmologist. 12

CONCLUSION:
Diabetic retinopathy is more prevalent in female diabetic patients that are uneducated as compared to male diabetic patients. Patients who never attended school were less likely to visit an ophthalmologist than those with proper education. Intensive health education by diabetes care givers and leaders of Diabetic Association for diabetic patient is therefore required to improve attitude towards eye care to prevent visual impairment.

REFERENCES:
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Being thin makes you depressed
Psychiatrists have reported in 183 different studies in British Journal of Psychiatry that being skinny and underweight leads to depression. They have cautioned those people who are practicing to lose weight may suffer from some kind of depressive psychosis, mostly affecting the womenfolk. Scientists from National University of Medicine, Seoul who are carrying this study has observed that people who are suffering from Depression run the risk of losing weight even the fatter people are more depressed than they feel.

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Efficacy of Probing & Silicon Intubation in Adults with acquired Nasolacrimal Duct Obstruction

Muhammad Akmal Khan, FCPS¹, Muhammad Usman Ahmed FCPS², Abdul Ghaffar Khan FCPS³.

POF Hospital & Wah Medical College, Wah Cantt

INTRODUCTION
Dacryocystitis results from some kind of obstruction in nasolacrimal duct. Acquired duct obstruction may be primary where the cause cannot be identified, while in secondary obstruction, the cause is secondary to some known cause. The causes can be infectious, inflammatory, neoplastic, traumatic or mechanical. Silicon tube intubation has been effective in children with success rates of about 90%.

Nasolacrimal duct intubation with silicon tubing without performing a dacryocystorhinostomy was first described by Keith in 1968, but he didn’t differentiate between adults and children. Crawford modified the technique to facilitate the passage and retrieval of tubes in adults.

Only few studies have investigated the efficacy of silicon intubation in the management of lacrimal obstruction in adults. Our study was carried out at POF hospital Wah Cantt from December 2015 to December 2016, total 41 eyes of 41 patients with severe epiphora due to NLD obstruction underwent bicanalicular silicon intubation (SI) which were removed after 6 months. 71% of patients had complete relief of epiphora while in remaining patients there was partial relief of persistent epiphora as before intubation.

MATERIALS AND METHODS
The study was conducted at Pakistan Ordinance Factory (POF) Hospital Wah Cantt from February 2016 to February 2017. Forty one patients (25 females and...
16 males) were included in the study. There ages were between 39 years and 59 years with mean age of 49.5. All patients were examined by ENT specialist. Patients with any nasal pathology like severe DNS, nasal polyps, nasal allergy were excluded from the study. All patients were selected from the outpatient department of POF hospital Wah Cantt. They underwent thorough ophthalmic examination for upper lacrimal drainage system like nasolacrimal puncta, upper and lower canaliculi or common canalicular blockage, previous lacrimal surgery, post traumatic dacrocystitis. Patients with any bony deformity of nasolacrimal area were excluded from the study.

All patients were investigated for systemic diseases like diabetes mellitus, hypertension and hepatitis B and C. ECG and X ray chest and X ray PNS were also carried out. CT scan was also carried out when advised by the ENT specialist. A dacrocystography (DCG) was performed to confirm the site and extent of obstruction and to rule out dacrolithiasis. All patients had to undergo general anaesthesia fitness. A written informed consent was taken from all the patients.

The procedure was performed under general anesthesia, nasal cavity was packed with cotton soaked in nasal decongestant xylometazoline 10mg/ml both upper and lower puncta were dilated. Probe was then passed through the inferior punctum and inferior canaliculus to the lacrimal sac. After getting a hard stop the probe was rotated downward towards the nasolacrimal duct into the nasal cavity beneath the inferior concha. Same procedure was carried out for the upper punctum. The silicon tube intubation was carried out using silicon tube having malleable steel probes. The probe was retrieved by placing a grooved director under the inferior turbinate to guide the probe out of the nose. Steel guide was cut from the nose. Same procedure was repeated with the upper punctum. Both the ends of silicon tubes were tied together and then sutured to the lateral wall of the nose. The patient was given decongestant nasal drops (Xylometazoline) 3 times a day for 2 weeks along with topical antibiotic drops 6 hourly.

Silicon tubes were removed after 6 months (average). The mean followup period was 12 months. In 2 cases the SI could not be done due to very hard block in NLD. Slight post-op bleeding occurred in 8 cases which stopped spontaneously in a day or two. During intubated period all the patients remained asymptomatic. Success was defined as symptomatic relief of epiphora. Complete success was documented with relief of symptom (epiphora) and free flow of saline during irrigation. Partial success was reserved for those in which there was partial flow of saline during irrigation with or without epiphora. Total obstruction and recurrence of symptoms was a failure.

In one patient the tube could not be found while removing them. Silicon tubes were normally removed under local anaesthetic drops by cutting the tube between the two puncta and untangling of tubes from the nasal wall and retrieving it nasally.

RESULTS

Epiphora in adults may be caused by obstruction at different parts of nasolacrimal drainage system right from the puncta, canaliculi and nasolacrimal duct. The most common site of obstruction is the Valve of Hasner at the lower end naso lacrimal duct. Out of total 39 patients, there were 23 females and 13 males. There ages were between 39 years and 59 years with mean age of 49.5 years. Results were observed and analyzed at 12 months. During intubated periods, all the patients remained asymptomatic. After removal of tubes after 6 months, the epiphora recurred in a few patients. Partial success was observed in 17.94% (7/39). However there was complete relief from epiphora in 64.1% (25/39). Complete failure of surgery was observed in 17.94% (7/39) at 1 year. No patient was lost in follow up.

During the study it was also noted that success rate of silicone intubation was inversely proportional with the duration of nasolacrimal duct obstruction. The patients with shortest duration were the most suitable candidates for nasolacrimal duct intubation. The patients with recurrent episodes of acute dacryocystitis were found to be not as successful as with patients having less recurrent acute episodes. No difference of success rate was noted between the two genders. It was equally effective in both males and females. The age of patients does not seem to have any effect of the outcome of the procedure.

DISCUSSION

Epiphora in children and adults is managed by probing or sac syringing in an attempt to identify the site of obstruction and clearance is also attempted at the same time. This procedure relieves symptoms in many patients but re-probing is unlikely to give lasting relief of epiphora. The gold standard in the management of epiphora in these patients is to go for DCR either without or usually with silicon tube as a permanent measure. The reported success rates varies from 85% to 99% in different studies. Zaman M et al showed success rate of 97.5%, whereas Tarbet and Custer reported 95% success result. As an alternative, we perform nasolacrimal duct intubation in these patients without DCR. Nasolacrimal duct intubation using silicon tube without a DCR was first reported by Keith in 1968, who found a 73% success rate in 15 patients between the age of 2 and 82 years. This report did not differentiate between the results in children and adults.

In this study there was complete relief of symptoms in 63% (26/41) cases. Fulcher et al reported only a 22% rate of complete success after 2 years of follow up, whereas Pashby et al found a success rate of 60% after a follow up period of 9 months. Kashkouli et al reported a 59% complete success with bicanalicular SI
Efficacy of Probing & Silicon Intubation in Adults with acquired Nasolacrimal Duct Obstruction

in adults after a mean follow up period of 15 months\textsuperscript{13}. The severity of nasolacrimal duct obstruction due to some nasal pathology was a cause of concern in patients undergoing NLD intubation, because the intubation could not be performed in cases having nasal pathology like severe DNS or altered nasolacrimal duct anatomy. In our study, in 2 patients intubation could not be carried out because of such problems. Inspite of thorough ENT examination and necessary investigations, we still may have problems doing NLD intubation in certain cases.

In all the reported studies the success rates are lower than those of DCR, advantages of SI are that it is a simple procedure which does not alter the anatomy of nasolacrimal system as compared to DCR where a bypass is made to the existing nasolacrimal duct. It also has less procedure time and less complications.

Several authors have reported slitting of the punctum and canaliculi after SI of nasolacrimal drainage system\textsuperscript{14}. Other complications of SI include tube displacement, infection, tube breakage and retained tube after cutting of canthal loop. In 2 cases, the removal of tube from nasal cavity was difficult. In these cases help from ENT specialist was sought. In this study, there were 3 slit inferior puncta, and 2 premature extrusion of tube.

CONCLUSIONS

To conclude, silicon intubation was found to be an effective procedure in the management of epiphora in adults. Although the results are not as good as that of DCR, but it may avoid the need of DCR in certain patients. The main advantages of this procedure that it is easy to perform, does not alter the normal anatomy of nasolacrimal passages and DCR may later be performed in unsuccessful cases. DCR remains the gold standard in the treatment of epiphora in adults. However, it may be considered in patients who are not willing for DCR surgery, the relatively less favorable outcome compared to DCR does not justify its use in all adult cases of epiphora.

REFERENCES

(Endnotes)


22nd Annual Congress of Ophthalmology
Under the auspices of
Ophthalmological Society of Pakistan, Hyderabad Branch
from 3-5 Nov’2017, at Hotel Indus, Hyderabad.

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Upper Age Limits for Cycloplegic Refraction at Mayo Hospital Lahore

Warida Naeem Alvi MBBS\textsuperscript{1}, Asghar Ali MBBS\textsuperscript{2}, Waqar Ahmed MBBS\textsuperscript{3}

ABSTRACT

Background: Cycloplegic refraction is one of the most reliable procedure to quantify refractive error. Though new methods of refraction have been developed with the advancement of time, but even then cycloplegic refraction is considered a time tested and valid procedure.

Objective: The aim of this study was to find out the greatest extend of age for cycloplegic refraction using cycloplegic drops.

Methods: One fifty patients (300 eyes) were examined by instilling drops of cycloplegic agent, retinoscopy and auto refraction was performed before instillation of drops and after instillation up to 90 minutes with a regular time interval of 15 minutes after instillation of first drop. The prescription of both eyes and the age of patient are computed.

Results: All myopic, hyperopic, and astigmatic patients of 7-10 years of age need cycloplegic refraction. The hyperopic patients of 11-14 years of age need cycloplegic refraction while half myopic and astigmatic patients of 11-14 years of age need cycloplegic refraction and half myopic and astigmatic patients need not cycloplegic refraction.

Conclusion: The upper age limits for cycloplegic refraction is 11-14 years of age for hyperopes and 7-10 years of age for myopic and astigmatic patients.

Key Words: Cycloplegic refraction, astigmatism, myopia, hypermetropia

INTRODUCTION:

Cycloplegic refraction is the process to measure the refractive error using cycloplegic agents to paralyze the ciliary muscles temporarily. It is defined as the paralysis of ciliary muscles which help in accommodation. The cycloplegic drugs used are anticholinergic agents which block the muscarinic receptors located on the ciliary muscles and prevent acetylcholine and muscarinic agents to bind to them and hence produces cycloplegia or temporary paralysis of ciliary muscles resulting into mydriasis\textsuperscript{1}. Cycloplegic refraction is also indicated in latent hyperopes, strabismus, pseudo myopia, high refractive errors, high heterophorias, accommodative esotropia, malingers, and amblyopic etc\textsuperscript{2}.

Though new methods of refraction have been developed with the advancement of time, but even then cycloplegic refraction is considered a time tested, valid, authentic and reliable procedure to quantify refractive error. In non-verbal, non-communicative, uncooperative patients or infants, in functional visual problems or when visual acuity is not corrected to an expected level, cycloplegic refraction is thought to be essential for an accurate and comprehensive assessment of refractive errors. It is also considered necessary in patients with poor response or patients having opaque media and aberrations.

The most commonly used cycloplegic agents are Cyclopentolate, Atropine, Homatropine. Two other cycloplegic agents are Scopolamine and Oxyphenonium bromide which are not commonly used\textsuperscript{3}. The most common cause of impairment of vision are the refractive errors worldwide. In our country 11.4% blindness is due to uncorrected refractive errors. So the purpose of this study is find out the greatest extend of age for cycloplegic refraction using cycloplegic eye drops.

The upper age limits for cycloplegic refraction is 11-14 years for hyperopes and 7-10 years of age for myopic and astigmatic patients.

MATERIAL AND METHOD:

A cross sectional study was conducted on patients of 7-18 years in Mayo Hospital Lahore. Convenient based sampling was done and sample size was 150. Informed consent was taken from each patient. Following instruments were used for data collection Pen torch, Retinoscope, 1% cyclopentolate E/D

Data was analysed using SPSS 20.00 software. Quantitative variables like age was described in mean and standard deviation. Qualitative variables were expressed in frequencies and percentages. All the data was presented in the form of tables, and graphs.

RESULTS:

The result shows that 52\% female and 48\% male were included in this study. This result also showed...
that 32% of the patients were between 7-10 years, 42% were 11-14 years and 26% were 15-18 years of age in which 57% difference is present between cycloplegic and non cycloplegic refraction. This result also shows that 11 patients had V.A from counting finger to 6/60, 32 patients have V.A from 6/36 to 6/24, 57 patients had V.A from 6/18 to 6/12, 71 patients had V.A from 6/9 to 6/6.

Graph 1. age * cycloplegic refraction in myopia bar chart

Explanation: All Myopic Patients from 7-10 years of age showed need of cycloplegic refraction. Half Myopic Patients from 11-14 years of age showed need of cycloplegic refraction and half showed no need of cycloplegic refraction. All myopic patients from 14-18 years of age showed not need of cycloplegic refraction. One sample t-test was applied and the p value is .000 which showed the significance of results.

Graph 2: age * cycloplegic refraction in hyperopic bar chart

Explanation: All hyperopic patients from 7-10 years of age showed need of cycloplegic refraction, and patients from 11-14 years of age showed need of cycloplegic refraction. All hyperopic patients from 14-18 years of age showed no need of cycloplegic refraction. One sample t-test was applied and the p value is .000 which showed the significance of results.

Graph 3: age * cycloplegic refraction in astigmatism bar chart

Explanation: All astigmatism patients from 7-10 years of age showed need of cycloplegic refraction. However, half astigmatic patients from 11-14 years of age showed need of cycloplegic refraction while half of them showed no need of cycloplegic refraction. All astigmatism patients from 14-18 years of age showed not need of cycloplegic refraction. One sample t-test was applied and the p value is .000 which shows the significance of results.

DISCUSSION: Cycloplegia is the paralysis of ciliary muscles which relaxes the accommodation. With 1% cyclopentolate, complete cycloplegia is not achieved rather it leaves a residual accommodation. Cycloplegic refraction is time consuming and lengthy procedure which involves waiting at least 1 hour for refraction after instillation of cycloplegic drops, so it is very difficult to check every patient under cycloplegia due to limited interest and cooperation of patients especially in young adults.

Furthermore, it is a tiring process for an optometrist as well. The idea was to evaluate the upper limit of age for cycloplegic refraction after which the difference between cycloplegic refraction and non cycloplegic refraction becomes insignificant. This will lessen the need of cycloplegia in every patient as the patient were unable to see properly to carry out daily routine work. Moreover, post mydriatic test (PMT) also unnecessary time consuming in the procedure of refraction for the patient who do not need cycloplegic refraction after upper age limit.

A study was conducted in teaching hospitals of Bannu and DHQ Hospital, Kharak to investigate
the profile of refractive error of school going children. It included 2680 school aged children from 5 to 15 years of age. It concluded that prevalence of myopia in examined children was 54.53%, hyperopia 36.29% and astigmatism 9.17%. Another study showed that over-refraction with +2.00 D fogging lenses is suitable to attain extra slackening of the accommodative response in a same way to cycloplegia when open-field auto-refraction is done in younger adults.

Hopkins, S. performed population-based refractive error study under cycloplegia in children which causes more hypermetropic changes as compared to lengthy optical fogging to reduce accommodation. These results upkeep the usage of cycloplegic refraction rather than extended optical fogging as a method of controlling accommodation in refractive errors of children.

According to a study on non-cycloplegic auto-refraction was found to be extremely incorrect in school-age children and not appropriate for readings of refractive error or for recommendation of glasses in this population. A comparative study compared refraction before and after cycloplegia in adults and the clinically unimportant differences were perceived between spherical equivalents before and after pharmacologic cycloplegia, signifying that cycloplegia may not be required in epidemiological studies of refraction in adults. Sanfilippo PG conducted a study that showed the non-cycloplegic autorefraction can cause in mean spherical equivalent refraction differences than cycloplegic autorefraction and it happens in teenagers between 13 to 19 years of age, but not in adults of 20 to 26 years. This data recommend that difference between pre- and post-cycloplegia spherical equivalent refraction (SER) was noteworthy in all age groups till the age of 20 years and once they reach approximately 20 years of age, cycloplegia is not pre-requisite for refractive error of young adults.

CONCLUSION:
The upper age limits for cycloplegic refraction is 11-14 years of age for hyperopes and 7-10 years of age for myopic and astigmatic patients.

REFERENCES
Role of Pars Plana Vitrectomy with ILM-Peeling in Diffuse Diabetic Macular Edema

Nesr Farooq FCPS¹, Assad Zaman KhanFCPS², Mohammad Naeem Rustam FCPS³

ABSTRACT

Purpose: To evaluate the benefit of parsplana vitrectomy with ILM peeling in persistent diffuse diabetic macular edema.

Design: Prospective randomized comparative clinical trial.

Methods: Eyes with diffuse diabetic macular edema from 6-18 months of duration, attached posterior hyaloid and grid laser performed more than 4 months ago were considered for parsplana vitrectomy with ILM peeling. Patients were randomized into vitrectomy group and control group. Early Treatment Diabetic Retinopathy Study (ETDRS) visual acuity, retinal thickness using Zeiss stratus OCT were carried at baseline and followed by 1, 3, and 6 months post-operation period.

Results: Fifty eyes (100%) were enrolled in the study. Twenty five eyes (50%) were randomized in Vitrectomy group (Gr I) and twenty five eyes (50%) into control group (Gr II). Group I had gender distribution (48% male and 52% female) while in group II (44% were male and 56% were female) and mean age Gr I (51.36 years) and Gr II (51.32 years). Statistical significance improvements were shown in Gr I ETDRS visual acuity (P= .01 to .004). Retinal thickness changes were measured with optical coherence tomography in both groups during follow-up, showed statistically significance in favor of Gr I; P values were <.0001 for month 1, 3, and 6.

Conclusion: we concluded that ParsPlana Vitrectomy with ILM peeling is beneficial to the patients than observation alone in the treatment of refractory diffuse diabetic macular edema for 6-18 months. However, to rule out any temporary benefits, prolong and large case studies are needed to confirm these findings.

INTRODUCTION

In diabetic patients the most common cause of decrease vision is macular edema, which occurs in 29% of the diabetic population with the disease duration of more than 20 years.¹ In routine practice laser treatment is recommended for diabetic macular edema.² Results for focal laser treatment for focal macular edema were better than with grid laser for diffuse macular edema.³⁶

The pathophysiology of diabetic macular edema is complex than edema caused by any other pathology because of poorly understood mechanisms involving leakage from abnormal retinal capillaries and microaneurysms.⁷ The presence of posterior hyaloid in a diabetic patient is very important in addition to other factors as laser treatment, hypertension and duration of diabetes mellitus.⁸⁻¹⁰

In 1988 Nasrallah and associates observed the lower incidence of posterior hyaloid detachment in diabetic patients with macular edema than without macular edema.¹¹ In 1997 Hikichi and associates observed the spontaneous resolution of macular edema in 55% of eyes after posterior hyaloid detachment than 25% in eyes without complete posterior hyaloids detachment.¹² Over the years the improvement in retinal function and anatomy was noted on posterior hyaloids removal through vitrectomy by retrospective studies of single case series.¹³⁻²²

The following study was carried out to prospectively assess the benefit of vitrectomy with ILM peeling in eyes with persistent diffuse macular edema compared with control group not undergoing surgery. The efficacy of the procedure will be assessed by both function and anatomy.

METHODS

This was a prospective randomized comparative clinical trial.

Inclusion criteria: Diffuse macular edema for a minimum of 6 and a maximum of 18 months; macular laser treatment done at least 4 months earlier, documentation of attached posterior hyaloid by B-scan ultrasound examination.

Exclusion criteria: more than three laser
Role of Pars Plana Vitrectomy with ILM-Peeling in Diffuse Diabetic Macular Edema

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Vitrectomy group 1, 3 and 6 months revealed

With an Un-operated Control Group (Gr II).

Vitrectomy for Diffuse Macular Edema (Gr I) compared

Study (ETDRS) Visual Acuity in Eyes Following

Results of Early Treatment of Diabetic Retinopathy

was performed by comparing slopes and intercepts of
time as a continuous variable, so covariance analysis
groups were compared. The models in levels included
using the differences, the time variable was used as a
were also included as covariates. For the regressions
the interaction of these two terms were included in

time since the

Multivariate analysis was performed to test
the evolution of (ETDRS). For each of the scores, mixed
models for the levels (absolute levels) as well as for
the differences to baseline were used. Time since the
date of operation, a dummy variable for therapy, and
the interaction of these two terms were included in
each regression. The baseline value, age, and gender
were also included as covariates. For the regressions
using the differences, the time variable was used as a
categorical variable and the least-squares means of the
groups were compared. The models in levels included
time as a continuous variable, so covariance analysis
was performed by comparing slopes and intercepts of
the regressions fitted for both groups.

Results of Early Treatment of Diabetic Retinopathy
Study (ETDRS) Visual Acuity in Eyes Following
Vitrectomy for Diffuse Macular Edema (Gr I) compared
With an Un-operated Control Group (Gr II).

Vitrectomy group 1, 3 and 6 months revealed
increased significance on statistical evaluation. Surgery
was performed under general anesthesia. A standard
three-port vitrectomy was combined with removal of
the posterior hyaloid. The internal limiting membrane
(ILM) was stained with 0.25mg/ml brilliant blue G
(Brilliant peel; Fluoron/Geuder, Ulm, Germany) in
balanced salt iso-osmolar solution for 45 seconds wait,
extract the dye by active aspiration and proceed to peel
the ILM with ILM forceps. Patients with mild cataract
and age more than 60 years, combined procedure of
phacoemulsification with posterior chamber lens
implantation was performed. Topical antibiotic and
antiinflammatory therapy was administered four times
daily for 4 weeks in both groups.

RESULTS

Pars plana vitrectomy with ILM peeling was
performed on 50 eyes of 50 patients who fulfilled the
study criteria. All patients completed the 6-month
Examination without any dropouts or missing data for
statistical analysis. twenty-three 23 (46%) patients were
men, and twenty seven 27(54%) were women. Mean
patient age was 51.34 years (range, 30-73).

Twenty-five eyes from 25 patients (50%)
were randomized in to Gr I (vitrectomy group) and
50 eyes from 50 patients (50%)were included in the
Gr II (controls). There was no significant difference in
mean age (51.36 years in Gr I and 51.32 years in Gr II)
and gender (nearly half were male, half were female)
between the two groups.

Surgery was uneventful in all cases. During
the early postoperative course, minimal cell flare in
the anterior chamber was present in 27.27% (6 of 22)
of the eyes operated on, which was sufficiently treated
topically. There was no rise of the intraocular pressure.
In the control group (Gr II), B-scan ultrasound revealed
no spontaneous separation of the posterior vitreous
surface during follow-up examinations. Cataract
extraction and posterior chamber lens implantation in
combination with vitrectomy was performed in 28% (7
of 25) of the eyes.

Macular edema was absorbed in 44% (11 of 25)
of the eyes in Gr I as compared with 20% (5 of 25) of
the eyes in Gr II on examination with biomicroscopy.
Visual acuity result are shown in Table. Average ETDRS
visual acuity in the vitrectomy group is 0.29 and 0.36 in
the control group with baseline range between 0.03 and
0.73.

Post-operative one month, the average visual
acuity was 0.31 (range 0.05-0.73) and 0.35(range 0.03-
0.73) in the Gr I and Gr II respectively. The proportion
of eyes that improved in Gr I and Gr II (48% 12/25
VS. 20% 5/25). The proportion of eyes that remained
unchanged at this time were higher in the Gr II than Gr
I (56% 14/25 VS. 36% 9/25). 4/25 (16%) of patients in
Gr I worsened as compared to 6/25(24%).

Post-operative three months, The average
visual acuity was 0.32 (range 0.03-0.65) and 0.28 (range
Role of Pars Plana Vitrectomy with ILM-Peeling in Diffuse Diabetic Macular Edema

Macular thickness in both groups during follow-up was statistically significant (P .0001).

DISCUSSION

Visual disability in diabetic patients is mainly due to macular edema. Results of a population based study shows that 9% of diabetic population had macular edema within 1 disc diameter of the center of the macula, 40% of which had involvement of central macula resulting in visual impairment.1,7,8 Pathogenesis of macular edema has multiple factors, which include duration of diabetes, type of diabetes (IDDM, NIDDM), HbA1C, proteinuria, hypertension, and PRP. 1,8,10

The pathophysiology of diabetic macular edema is unknown but the retinal capillaries pericyte loss which leads to an increased permeability is an important factor.24 Vitreous may have an important role in the development of macular edema as reported by Nasrallah and colleagues.20,26

High level of enzyme mediated collagen cross linking and non enzymatic glycation was found in human diabetic vitreous according to Sebag and associates.27,28 which according to them affects the collagen structure, leading to destabilization of vitreous gel. These changes of the vitreous can induce condensations and tractions on the macula leading to the persistence of edema.29 As a result of breakdown of the blood-retinal barrier vitreous is infiltrated by different mediators and induce macular edema in case of vitreomacular adhesion.30 Thickened posterior vitreous surface due to Glycemia-related molecular changes can lead to decreased permeability and high concentration of chemical mediators.27,28 38% to 92% of the eyes improved 2 or more lines with vitrectomy and removal of the posterior hyaloid as reported by many retrospective clinical studies.13-21 A functional benefit of approximately 50% after vitrectomy was described in larger series of Tachi and Ogino,14 and Yamamoto and associates.20

ILM peeling was performed in all vitrectomy eyes, in our series. The internal limiting membrane (ILM) was stained with 0.25mg/ml brilliant blue G (Brilliant peel; Fluoron/Geuder, Ulm, Germany) in balanced salt iso-osmolar solution for 45 seconds wait, Extract the dye by active aspiration and proceed to peel the ILM with ILM forceps.

The natural course and relationship of

<table>
<thead>
<tr>
<th>Time (month)</th>
<th>Group</th>
<th>Worsened</th>
<th>No change</th>
<th>Improved &gt;10 letters</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gr I</td>
<td>4 (16%)</td>
<td>9 (36%)</td>
<td>12 (48%)</td>
<td>.113</td>
</tr>
<tr>
<td></td>
<td>Gr II</td>
<td>6 (24%)</td>
<td>14 (56%)</td>
<td>5 (20%)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Gr I</td>
<td>3 (12%)</td>
<td>11 (44%)</td>
<td>11 (44%)</td>
<td>.015</td>
</tr>
<tr>
<td></td>
<td>Gr II</td>
<td>10 (40%)</td>
<td>12 (48%)</td>
<td>3 (12%)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Gr I</td>
<td>3 (12%)</td>
<td>9 (36%)</td>
<td>13 (52%)</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11 (44%)</td>
<td>11 (44%)</td>
<td>3 (12%)</td>
<td></td>
</tr>
</tbody>
</table>
Role of Pars Plana Vitrectomy with ILM-Peeling in Diffuse Diabetic Macular Edema

is comparable to the abovementioned studies.14,19,20 The OCT multivariate analysis shows a different result between the two groups. After 1 month, stable values were achieved by the control group, whereas the vitrectomy group showed a sharp decrease (significance P .0001) which then stabilized (P .6 to .8). At any time the differences between both groups were highly significant (P .0001).

Yamamoto and associates20 showed a marked decrease in retinal thickness on 7th post-operative day which remained unchanged for the next 1 month and stable for up to 4 months. As also postulated by Stefansson and colleagues31,32 that there is increased oxygen concentration which causes vasoconstriction and decreased leakage. We concluded that the vitrectomy with ILM peeling is superior to observation alone in patients with diffuse diabetic macular edema for more than 6 months and improves far vision and retinal anatomy. However, to rule out any temporary benefits prolong and large case studies are needed to confirm these data.

CONCLUSION:

We concluded that Pars Plana Vitrectomy with ILM peeling is beneficial to the patients than observation alone in the treatment of refractory diffuse diabetic macular edema for 6-18 months old. However, to rule out any temporary benefits, large number of case studies are needed to confirm these findings.

REFERENCES

The Efficacy of Patient’s Referral System in Khyber Pakhtunkhwa’s (KPK) Health Care System

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Pakistan Institute of Community Ophthalmology, Hayatabad Medical Complex, Peshawar

ABSTRACT

Aim and Objectives: The correct referral system will help in providing good health care to people and the patients will utilize the facilities of the primary health services in a better way. The main objectives of the study were to see the efficacy of referral system and to assess whether the available referral system is utilized by the patients in KPK.

Materials & Methods: It is an observational qualitative research study. A questionnaire was developed to record the availability of referral form or other documentation of patient referred by the general practitioners or health workers in public health care centers of that areas.

Result: A total number of 229 patients were referred from eye camps, amongst them 95(41.48%) patients were male and 134 (58.51%) were female but only 90(39.30%) male and 119(51.96%) female with full referral record came to the hospital for cataract surgery. However, 20 (8.73%) failed to report. On the other hand, 220 patients admitted in the eye ward for cataract surgery from different areas of KPK did not bring the referral record. Among these 220 patients, 171(44.11%) males and 49(12.09%) females were operated.

Conclusion: There is no proper referral system in public sector hospitals. Patients are free to seek health facilities at any level from any health center. Since no treatment grading of diseases exist therefore the patients avoid public sector health facilities.

Key words: Eye camps; Referral system; Referral form.

INTRODUCTION:

Health facilities have major role in the economic development of a country. Good health improves the economic growth of a nation and leads to wellbeing of the community [1]. There are different systems for keeping proper health of an individual in government sector, one of them is proper referral system. Referral is a process of health system with limited resources (medicines, equipment, skills) to a highly equipped facility and to get a specialist opinion.⁴

A well-established referral system ensures a close association amongst health workers at all stages of the health system and ensure people to get the very best care close to their homes. An efficient referral system (i) provides best health care with less expenses, (ii) and economically affordable consultant opinion which are readily available. (iii) Lady Health Workers (LHW) is the first tier of primary health care of referral system [³] and an effective guide for the patients to a suitable health care center [⁴].

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Referred patient should be facilitated for fast treatment as compared to non-referred patients, in order to encourage them to adopt referral track. Awareness and proper guidance should be given at the community level and confidence of people should be built on the quality of services offered by lower level health facilities.

In Pakistan the health system comprises of public and private sectors hospitals. In the public sector, the Basic Health Units (BHUs) and Rural Health
Centers (RHCs) form the base of the primary health care structure. Secondary health care system consist of Tehsil Headquarter Hospitals (THQs), District Headquarter Hospitals (DHQs) which are supported by the state-of-the-art tertiary teaching hospitals. The private health sector consists of a wide range group of doctors, nurses, pharmacists, traditional healers, drug vendors, laboratory technicians, quacks (unqualified) and spiritual practitioners. Economic census (2001-2003), reported that there are 96,430 private health establishments, including hospitals, dispensaries, hakims, homeopaths and others who provide health services to patients. Pakistan Social and Living Standards Measurement (PSLMS) reported that two third of the patients get the health facilities through the private sector \(^5\).

In the presence of good network of primary health facilities, patients who can be easily managed at primary level tends to bypass and visit tertiary care centers and thus overcrowding the major hospitals. \(^6\) One study reported that patients are not satisfied from the primary health care system due to weak referral system \(^7\), therefore they go to private sector health facilities which shows the effective private system though costly and at time may unaffordable to most of the patients.

Therefore the referred patient should be treated in a special way as compared to non-referred patients. Thus giving message to non-referred patients about the reason of fast-tracking of referred patients. This is important to encourage non-referred patients to adopt referral track. When these referred patients go back to the primary level they should again be treated more quickly than non-referred ones.

Awareness and proper guidance should be given to the community about health care services at different levels of the health system. Confidence of people should be built on the quality of services offered by lower level health facilities.

**MATERIAL AND METHOD:**

It is an observational qualitative research work. The data was collected from free eye camps referred patients to tertiary hospitals for surgery and compared with referral system to eye unit Hayatabad Medical Complex from different areas of KPK. A questionnaire was developed to record the availability of referred form or any other documentation of patient referred by the general physician or health worker of that area. The same questionnaire was applied in the free eye camp patients conducted in rural area of Peshawar. The questionnaire was made simple with name, age, sex, area of origin from where they travel with referral documentation. Parents or immediate family members were interviewed in case of children (<16 years of age). The number of patients who came to the hospital were cross checked as referred patients from the eye camp. All the patients were the residents of Peshawar Division or from different area of KPK. The economic and education level of all patients was also recorded.

**Inclusion Criteria:** Referred patients from other hospitals of KPK including Peshawar division for surgical procedures.

**Exclusion criteria:** Referred patients from other units in the same hospital, acute emergency patients of trauma (ocular and ocular associated with other parts of the body), patients who were admitted for non-surgical procedure and those who come from private clinics of consultant working in the same unit.

**RESULT:**

<table>
<thead>
<tr>
<th>Table No. 1</th>
<th>The number of male and female patients including children referred from free eye camp for cataract surgery.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td><strong>Referred</strong></td>
</tr>
<tr>
<td>Male</td>
<td>95(41.48%)</td>
</tr>
<tr>
<td>Female</td>
<td>134(58.51%)</td>
</tr>
<tr>
<td>Total</td>
<td>229(100%)</td>
</tr>
</tbody>
</table>

**Table No.2** The No. of male and female children referred for cataract surgery from eye camps

<table>
<thead>
<tr>
<th>Gender</th>
<th>Referred (directly come)</th>
<th>Operated</th>
<th>Did not come</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>7(63.63%)</td>
<td>7(63.63%)</td>
<td>00</td>
</tr>
<tr>
<td>Female</td>
<td>4(36.36%)</td>
<td>4(36.36%)</td>
<td>00</td>
</tr>
<tr>
<td>Total</td>
<td>11(100%)</td>
<td>11(100%)</td>
<td>00</td>
</tr>
</tbody>
</table>

**Table No.3** The number of male and female adult and children admitted in eye ward from different areas of KPK and Peshawar.

<table>
<thead>
<tr>
<th>ORIGIN</th>
<th>Male</th>
<th>Female</th>
<th>Referred</th>
<th>Did not came</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Different areas of KPK</td>
<td>171(44.11%)</td>
<td>133(35.29%)</td>
<td>00</td>
<td>304(79.41%)</td>
<td></td>
</tr>
<tr>
<td>Peshawar</td>
<td>49(12.09%)</td>
<td>32(8.49%)</td>
<td>00</td>
<td>81(20.58%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>220(56.20%)</td>
<td>165(43.79%)</td>
<td>00</td>
<td>385(100%)</td>
<td></td>
</tr>
</tbody>
</table>

**Table No.4** The number of male and female children came for cataract surgery from different areas of KPK and Peshawar.

<table>
<thead>
<tr>
<th>ORIGIN</th>
<th>Male</th>
<th>Female</th>
<th>Referred</th>
<th>Did not came</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Different area of KPK</td>
<td>36(45.56%)</td>
<td>25(31.64%)</td>
<td>00</td>
<td>61(77.21%)</td>
<td></td>
</tr>
<tr>
<td>Peshawar</td>
<td>12(15.18%)</td>
<td>06(7.59%)</td>
<td>00</td>
<td>18(22.78%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>48(60.75%)</td>
<td>31(39.24%)</td>
<td>00</td>
<td>79(100%)</td>
<td></td>
</tr>
</tbody>
</table>

**Flow Chart:** Comparison of Government and Free eye camp patients
The Efficacy of Patient’s Referral System in Khyber Pakhtunkhwa’s (KPK) Health Care System

DISCUSSION:
Proper referral system need an excellent network and understanding at different level of health care and also need the help of higher to lower level in the care of patients. In this study 209(91.26%) patients who were referred from eye camp, came to the hospital with full referral record but some of the referred patient 20(8.73%) failed to attend the hospital in spite of free services.

There may be multiple reasons pertaining to the attendance of referred patients. The reason for our higher number will be free services or the patients may be confident about the services, or it may be because of the good reputation of the referred hospital. The low number of patients 20(8.73%) may be due to non-affordability of cost of health services or may transporting expenses or they may have no one to accompany them to the hospital on account social taboo of the society or the male members cannot leave their wage earning responsibilities etc. Other studies reported low number of referred patients (4%) who cannot reach the proper health care center due to unavoidable multiple reasons. On the other hand high number (96%) were using their own resources[8]. The study from Karachi reported less number of referred patients (4%) who availed the services at the referred hospitals as compared to our studies.

Among the referred patient from the eye camp(Table No. 1) shows that the number of female was more as compared to male but female arrival was less than male for cataract surgery in the hospital. The low number of female arrival may be due to more responsibilities on female like housekeeping, monetary difficulties, poverty, or a matter of social taboo that females cannot travel alone. The high number of male may be because of freedom of expenses, and free mobility without any support etc. One study reported extreme tolerance of female patients with eye diseases even with worse diagnosis risking the bad health[9].

The current study shows that admitted patient in the eye unit both adult and children came from different area of KPK, (table No 3). They came directly to the hospital with no referral record meaning that they did not utilize the available health facilities at their doorstep. It was revealed that the area, where they came from for cataract surgery to the tertiary hospital, has all the latest infrastructure and trained human resources for cataract surgery. One study reported that in Pakistan, there is an extensive network (over 5000) of Basic and Rural Health Centers. They did not achieve the desired result related to good health of the community therefore, it show that referral system is not properly functioning[10]. The reason for no referral through proper health centers patient might not be aware of the facilities available close to their areas or they may not have confidence on the health care providers. For that reason, they directly come to tertiary care hospitals because more qualified and experienced professionals are available at these institutions with good reputation as compared to local health centers, therefore urban and political people prefer to visit and get treatment in these hospitals and bypass the primary and secondary level health facilities. The study also reported that skilled personnel frequently try to work in tertiary hospital than rural or district hospital because of better facilities in big cities[10].

It has been observed in most of the instances that there is no awareness about eye diseases in illiterate people and even its management not known to non-ophthalmologists. A study in Karachi, for retinopathy of prematurity was reported of lack of awareness to doctor and the importance its referral to appropriate speciality.[11] A study reported that low quality of care, non-availability of physician are the reasons for the poor confidence and dissatisfaction of patients at the local first level care facilities (FLCF). The utilization rate of FLCF was less than 0.6 patient visits/person/year[12]

CONCLUSION:
1. There is no proper referral system in government hospitals.
2. Patient is free to seek health facilities at any level anywhere they like.
3. No treatment grading of diseases at health service level exists.
4. Patients are not properly utilizing district or Tehsil health services.
5. Primary and secondary health care centers do not try to gain patient’s confidence while treating them.

Recommendation: A number of methods can be developed to improve referral system.

1. Referred patient should be facilitated in a proper way for fast treatment as compared to non-referred patients. This is important to encourage non-referred patients to adopt referral track. When these referred patients go back to the primary level they should again be treated more quickly than non-referred.
2. Non-referred patients may be charged a fee for not adopting the referral channel. But such a decision should be taken after careful consideration and planning before implementing the new policy. Mass advertisement and communication will be required before its implementation.

3. Awareness and proper guidance pertaining to health care services should be provided to the community at different levels and importance of confidence of people should be built on the quality of services offered by lower level health facilities.

4. Strict outcome of all eye units be recorded with training.

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ABSTRACT
Purpose: The purpose of study was to find out correlation of axial length with birth weight in newborn babies in Pakistani population.
Methods: The study was carried out in a tertiary teaching hospital. Axial length of 200 eyes of 100 new born babies was determined by using B scan. One hundred newborns had their birth weight recorded and correlation of axial length and birth weight was studied.
Results: In the present study, male to female ratio was 55:45. In the study birth weight of 100 newborns was analyzed. Most of the newborns (n=42(42%)) had birth weight ranging from 3.1 to 3.9 Kg, (n=24(24%)) newborns had birth weight ranging from 2.1 to 2.9 Kg, (n=19(19%)) newborns had birth weight ranging from 4.1 to 4.9 Kg, (n=15(15%)) newborns had birth weight ranging from 1.6 to 1.9 Kg and all these 15 babies had axial lengths of less than 13mm. Mean birth weight was 2.99 Kg with a standard deviation ± 0.80. All the 10 babies with weight less than 2kg had axial length of less than 12mm while all the 5 babies with weight between 2-3 kg had axial length less than 13mm.
Conclusions: Low birth weight babies tend to have shorter axial length. This could be important as shorter axial length lead to hypermetropia which if uncorrected can develop amblyopia in children. The present study suggests that birth weight rather than gestational age should be used as the criteria to screening for refractive errors, especially in the developing countries where we have a higher incidence of malnutrition.
Keywords: New born, axial length, B scan, birth weight, Amblyopia

INTRODUCTION:
The anatomy of the living human eye has concerned scientists ever since the beginning of medicine. Within the eye the axial length has been the focus of attention for many years because of its direct relationship with refractive errors and hence vision1. Different techniques have been established to determine axial length include radiography, ultrasonography2 and computerized tomography3. The first application of diagnostic ultrasound in ophthalmology was reported by Mundt & Hughes in 19564 and later by others including Adehayo et al 20075. However B-scan examination of the axial length was introduced by Baum and Greenwood6. The most popular way of measuring axial length measurements in children is B-scan ultrasound7, which is also most reliable form of axial length measurement in this age group8. However in adults and cooperative children A-scan ultrasonography is utilized for axial length measurements9.

Birth weight can be used to predict refractive error and later on development of Amblyopia. Hence, nutritional deficiency during pregnancy with appropriate measures should be taken during the ante-natal care of the expectant mother in order to prevent low birth weight and refractive errors, eventually, leading to smaller ocular axial lengths in under weight babies.

Visual development in premature infants at the time of birth is incomplete. It has been observed that even in full term babies that visual system is incomplete in maturity. Under normal maturation process, which is called the emmetropisation, both the neurological and optical visual processes continue to development after birth10. Approximately 66% of the ocular growth takes place within the first two and a half years of life. This is followed by a deceleration in ocular growth. There is considerable debate as to the
exact age at which the eye growth finally stops\textsuperscript{11,12}. Babies born can only perceive hand movements within the first week of life. The emmetropisation process starts immediately after birth and it will be complete in about 82\% of the babies in full term around their first birthday\textsuperscript{13}. Emmetropisation defined as the natural physiological process due which eyeball will grow and the axial length of the eye ball increase in response to the normal hypermetropic process of neonatal eye\textsuperscript{14,15}. During the process of the emmetropisation, focusing of the light increase on the retinal surface and axial length of the eyeball increases. It explains that hypermetropia in infants and how they become emmetropes later on due to shorter axial length\textsuperscript{16}. We have already studied that difference in axial length of right and left eye can be helpful in predicting amblyopia\textsuperscript{17} while in present study we have studied possibility of predicting amblyopia with birth weight.

**MATERIALS AND METHODS:**

The present study was carried out at tertiary teaching hospital. Hundred newborns admitted to the nursery ward of hospital were included in the study. The study was carried out over 12 months.

This cross sectional study was carried out using B-scan ultrasonography for determination of axial length of the eye ball. Neonates with parental history of high myopia in parents, underlying metabolic and genetitc disease and ocular anomalies such as, anophthalmos, retinoblastoma, congenital glaucoma and persistent hyperplastic primary vitreous were excluded from study. B-scan is the more accurate technique for the measurement of the axial length in newborns and small children. The axial length of the eye ball was measured in millimeters by the help of the B-scan ultrasonography. B-scan was performed on all the neonates fulfilling the inclusion criteria. Ultrasound examination of the neonate was carried out in the supine position. The probe was applied to the closed eyelids after generous application of the coupling gel. The eye ball was scanned along the axial length of the eye ball.

**RESULTS:**

This was a cross sectional descriptive study conducted at tertiary care hospital. A total of 100 newborns were included in the study. In the present study a total of hundred newborns were included, 55\% of the babies were male and 45\% were female. 84\% of the births were term and 16\% were pre-term. Birth weight of 100 newborns was analyzed, most of the newborns n=42(42\%) had birth weight ranging from 3.1 to 3.9 Kg, n=24(24\%) newborns had birth weight ranging from 2.1 to 2.9 Kg, n=19(19\%) newborns had birth weight ranging from 4.1 to 4.9 Kg, n=15(15\%) newborns had birth weight ranging from 1.6 to 1.9 Kg and all these 15 babies had axial lengths of less than 13mm. Mean birth weight was 2.99 Kg with a standard deviation ± 0.80. All the 10 babies with weight less than 2kg had axial length of less than 12mm while all the 5 babies with weight between 2-3 kg had axial length less than 13mm (Table no 1).

**DISCUSSION:**

It was also observed in the present study, that the birth weight had a significant relationship with the mean axial length of the eye ball rather than the overall gestational age. The present study reveals that newborns with lower birth weight have shorter axial length. This eventually forms the basis for the development of refractive errors and subsequent amblyopia.

**TABLE NO 1:** Co-relation

<table>
<thead>
<tr>
<th>Axial Length</th>
<th>1.6-1.9 Kg</th>
<th>2.1-2.9 Kg</th>
<th>3.1-3.9 Kg</th>
<th>4.1-4.9 Kg</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1-11.9 mm</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>12.1-12.9 mm</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>13.1-13.9 mm</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>14.1-14.9 mm</td>
<td>2</td>
<td>4</td>
<td></td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>15.1-15.9 mm</td>
<td>4</td>
<td></td>
<td>8</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>16.1-16.9 mm</td>
<td>7</td>
<td></td>
<td>16</td>
<td>6</td>
<td>29</td>
</tr>
<tr>
<td>17.1-17.9 mm</td>
<td>5</td>
<td></td>
<td>8</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>18.1-18.9 mm</td>
<td>2</td>
<td></td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td><strong>24</strong></td>
<td><strong>42</strong></td>
<td><strong>19</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Correlation of Axial Length in Newborns with Birth Weight

The purpose of the present study is to find out any relationship between the presence of a refractive error and birth weight. The presence or absence of refractive errors in the human eye is based on the axial length of the eye ball. It has now been established that the normal development of vision takes place in the first five years of life and more particularly in the first three years of life. Identifying easily measurable parameters in babies can help us in the prevention of refractive error and eventually preventing blindness in such babies. If we could establish a relationship between refractive errors and birth weight, we might be able to detect refractive errors in babies at a much early age and prevent the occurrence of amblyopia in such babies.

This study is new of its kind in this region and there are few which provide sufficient detailed information to permit even the most basic of comparisons with the present data. The study of refraction in new born babies is helpful to understand the incidence of refractive errors. Most of the studies have been performed on young children and adults.

It was observed in the present study, that the birth weight had a more significant relationship with the mean axial length of the eye ball rather than the overall gestational age. The present study reveals that newborns with lower birth weight have shorter axial length. This eventually forms the basis for the development of refractive errors and subsequent amblyopia. Anne et al observed that eyes of premature infants have shorter axial length shallower anterior chamber and more curved cornea than eye of full term infants. However the present study reveals that short axial length is related to low birth weight rather than prematurity. The reason might be that Anne et al only studied the axial length in premature newborns.

Verma & Chhatwal studied 50 premature newborns and observed that 52% of the infants had a low birth weight and 62% were born between 34 and 36 weeks of gestation. At 6 months, none of the 50 newborns had normal vision and 66.6% of these born at 31-33 weeks of gestation and 70% of those born at 34-36 weeks of gestation were hypermetropes or farsighted. They also reached at the conclusion that astigmatism at 6 and 12 months was associated with low birth weight it consistent with the finding of present study. Stone et al conducted a similar study, using the same growth parameters such as head circumference, birth weight, birth length and gestational age.

Their findings are consistent with the findings of the present study that the axial length and the refractive status depends upon the weight of the newborns.

Modrzejewska et al carried out a study, in Pomeranian university, to evaluate the refractive status and ocular axial length in preterm infants with regards to birth weight and gestational age. The ultrasonic A-scan biometry was performed to measure the axial length and they concluded that infants with low birth weight had a shorter axial length and hypermetropic The present study also confirms their results that the lower the birth weight and the higher the chances of refractive error. Elvis et al in Sydney studied the impact of birth parameters on the ocular dimension or axial length and they observed that birth weight has a direct relation with axial length, consistent with the findings of the present study.

The present study suggests that growth parameters such as a birth weight should be used as important tools in the criteria for evaluation of the refractive errors in infants and young children. It is also suggested that regardless of the gestational age and gender, if the new born is under weight, there is an increased risk that the infant will suffer from hypermetropia and eventually amblyopia if not treated well in time. Refractive errors subsequent to a smaller eye carry even more weight in developing countries, where the incidence of intrauterine malnutrition is higher.

It is suggested that underweight babies must be referred to ophthalmologists for adequate visual screening to rule out significant refractive errors and therefore prevent the establishment of amblyopia. An ophthalmological examination at one year of age can prevent substantial visual handicap.

CONCLUSION AND SUGGESTIONS:

The present study suggests that birth weight can be used to predict refractive error and hence amblyopia. The present study also suggests that appropriate measures should be taken during the ante-natal care of the expectant mother against malnutrition to prevent low birth weight and refractive errors eventually. Further studies are needed to evaluate nutritional deficiency during pregnancy and to look more critically into specific nutritional deficiencies leading to smaller ocular axial lengths in under weight babies.
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REFERENCES:
(Endnotes)
21. Modrzewskas M, Grzesiak W, Karczewicz D, Zaborski D. Refractive status and ocular axial length in preterm infants without retinopathy of prematurity with regard to birth weight and gestational age. JMP 2010;38:339-41

***************************************************************************
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***************************************************************************
Healthcare Assistants’ Knowledge & Understanding of the Impact of Eye Diseases associated with Diabetes.

Nizam M. Darwesh, MD, MSc, PhD1 Prof. Mike Cook., Ph.D2.,
Irshad Ahmad Ph.D., (Bio)3, M. Naeem FCPS4.

ABSTRACT
Aims and Objectives: This study aimed to investigate and to evaluate healthcare assistants’ knowledge and understanding of the impact of eye diseases associated with diabetes.
Material and Methods: The exploratory investigation was conducted at the Institute of Diabetes for Older People (IDOP) Putteridge Bury University of Bedfordshire UK. To achieve the objectives of the study 20 healthcare assistants were trained using the educational toolkit which was developed by the researcher. Their knowledge was tested before the training, immediately after the training and one month after the initial training. Following Kirkpatrick’s model, the skills and practical use of the educational toolkit was assessed using an open-ended qualitative approach.
Results: The results found that many health care assistants had the perception that eye diseases including low vision in older people was a normal ageing process and could not be rectified. The results found that 82% of the HCAs had not had any training in the area, and more than half of the HCAs did not have sufficient knowledge of eye diseases associated with diabetes. After training, however, their knowledge was increased. The study also found that knowledge does decline over time, and therefore regular training for HCAs is required in order to maintain eye health and diabetes in older people, as well as improving their quality of life.
Conclusion: Most of eye diseases associated with diabetes were preventable or treatable if detected in its early stages and could be avoided by simply wearing appropriate spectacles, or possible surgery.
Key words: low vision, diabetes, eye diseases, older people, HCAs training, residential care home.

INTRODUCTION
Diabetes is a major health concern amongst the ageing population1. Due to numerous complications associated with diabetes, its care has suffered from lack of guidance to prevent long-term complications2. This study has considered the low vision and other eye diseases associated with diabetes in older people living in residential care homes.

The number of individuals over the age of 60 is estimated to increase threefold in the years between 2005 and 2050 3456. There is, therefore, likely to be an increase in both diabetes and eye disease, and older people with diabetes have a 90% chance of developing eye disease78, including common ocular complications, retinopathy and changes in refraction if they fail to strictly control their blood glucose levels 28.

Educating health care assistants on low vision and diabetes can result in greater awareness on the effects of illness. Education toolkit is an effective method for educating them preferably every six months, which will have a positive effect on the knowledge of health care assistants around diabetes and other eye disease. This could have an effect on the quality of life of older people, and reduce the associated problems of eye diseases after avoiding wrong medication. There is a dire need to initiate training programme amongst all health care assistants to ensure its efficacy and success.

Research 1011 estimated that 50% to 70% of low vision cases are preventable or treatable by simply wearing appropriate spectacles or may be
Healthcare Assistants’ Knowledge & Understanding of the Impact of Eye Diseases associated with Diabetes

surgery. The Barometer Report on Global assessment of diabetic retinopathy from International Diabetes Federation was published, and according to the Barometer Report\textsuperscript{12} worldwide direct and indirect costs of visual impairment is 2.95 Trillion ($USD) which will increase up to 3.56 Trillion ($USD) by 2020, furthermore the study has suggested that 80% of global visual impairment is avoidable\textsuperscript{12}. However, in order to identify these 50%, 70% or 80% avoidable and treatable visual impairment, everyone concerned should be able to recognise the signs and symptoms of preventable low vision, particularly HCAs. Therefore, the researcher involved in this study recruited a number of HCAs to understand the problems in the field. Furthermore, the researcher designed and developed a toolkit, which acted as a training programme to educate health care assistants on eye disease associated with diabetes. To assess whether the toolkit was effective, the health care assistants were tested on their knowledge through the use of questionnaires before the training, immediately after the training and one month after the training.

The study aims to evaluate the knowledge and understanding that health care assistants have on the impact of eye diseases associated with diabetes in older people living in residential care homes. To enhance the knowledge and understanding to support health care assistants to provide better health care to older people who have low vision and other eye diseases associated with diabetes.

METHODS.

Qualitative research is identified as an appropriate approach for this study. The study was conducted in the Institute of Diabetes for Older People (IDOP) University of Bedfordshire UK. Ten residential care home managers were contacted to explain the study and toolkit training details, and to provide criteria of sampling. This entailed randomly choosing 20 qualified health care assistants, 2 participants from each residential care home, with minimum qualifications of NVQ2 or QCF2 and 2 years’ experience of work in a residential care home, with no age or gender restrictions.

The care home managers were able to provide lists of potential participants; they also gave the participants a brief explanation of the study. Following the identification of 20 participants, they were contacted by the principal researcher and visited in the residential care homes. The participants were given details on the study and toolkit training and any questions about the study were answered. The potential participants were given one week to read and consider the Participant Information Sheet and the Consent Form. Twenty health care assistants from 10 residential care homes were recruited for training between 4\textsuperscript{th} September 2014 and 4\textsuperscript{th} November 2014, for this study.

The educational toolkit was presented by the principal researcher to twenty health care assistants at a residential care home in Luton; all the participants received toolkit training, following Kirkpatrick’s model\textsuperscript{13} the skills and practical use of the educational toolkit package was assessed prior to the delivery of the toolkit, as well as immediately after wards, for participants of 10 questions to evaluate and assess their baseline knowledge. After one calendar month the toolkit was tested again using the same 10 questions, for which the results are presented below.

In order to assess HCAs knowledge the evaluation questionnaire content and format was designed by the principal researcher. The questions were formulated from the frequently asked questions that the HCAs participants had asked during data collection. The questions were also developed from the literature review findings, for example: Is glaucoma a diabetes-related eye disease? Blindness occurs mainly because of? Based on the participant findings and the literature review, 10 open-ended questions were created for pre-test, immediate post-test following the educational session, and again after 1 month, using the same questions to evaluate and assess knowledge of the participants.

The advantages of open-ended questions are to

<table>
<thead>
<tr>
<th>Qualifications of Participants</th>
<th>Gender</th>
<th>Age</th>
<th>Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>20 HCAs</strong> with minimum qualification of NVQ2 or QCF2 and 2 years’ experience of work in a residential care home, with no age or gender restrictions.</td>
<td>Female 18</td>
<td>16 participants aged 20-30, 4 participants aged 31-40</td>
<td>White 12</td>
</tr>
<tr>
<td></td>
<td>Male 2</td>
<td></td>
<td>Black Caribbean 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Indian 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Other Asian 2</td>
</tr>
</tbody>
</table>
collect rich details in the data. Open-ended questions will answer complex issues, and permit an unlimited number of possible answers. The questionnaire was designed on multiple aspects of low vision and diabetes and disseminated using Survey Monkey online, which provides a forum and variable formats to upload information to generate the questionnaires. 20 participants responded to the questionnaire; the responses were then stored for the researcher to access, analyse and download.

The questionnaire were reviewed by the experts panel and each question was subject to discussion to reach an agreement about the final questionnaire and as the experts panel members Professor Alan Sinclair and Professor Peter Scanlon, both of whom have relevant experience and a large number of the questions we used for our study were adopted from the studies completed by Sinclair and Scanlon. It was decided that the questionnaires we developed were appropriate to use in this study. Full ethical approval was granted by the Institute of Diabetes for Older People (IDOP) University of Bedfordshire UK.

RESULTS:

The findings and results of the pre-test, post-test and after one month test questionnaires.

Figure 1 Result of the training

When considering the responses of participants to the pre-test questionnaire, it was clearly observed that there was a mixture of responses for most of the questions posed. It is evident to see that many of the participants were not clear about the relationship between diabetes and eye disease, although the toolkit results show that the participants may have had a vague idea but were not entirely sure. For example, approximately 40% of the participants thought that glaucoma was related to diabetes, whereas 45% participants selected the incorrect answer and 15% were not sure in the pre-test result. Furthermore, when considering the same question in the post-test result, 95% of the participants answered correctly, whereas only 5% were not sure of the answer. However, after the test one month later, in the results for the same question, 90% of the participants answered correctly whereas 10% of the participants answered incorrectly. This was a similar theme for Question 2 about the causes of cataracts. In Question 3 about the cause of blindness, 100% of the participants got the answer correct in the post-test and after the test one month later. Furthermore, all participants were aware that diabetic retinopathy caused blindness in adults. Overall, there was confusion regarding the complications associated with diabetes and eye disease.

Furthermore, the HCAs were not aware of the recommended testing for individuals with diabetes. In total, only 40% of the participants answered the questions correctly before undergoing training, whereas the remaining 60% answered incorrectly. It should also be noted that a number of participants gave the response ‘I don’t know’ when available; this suggests that the participants may have had some knowledge but were not fully sure of their knowledge. The results of the pre-test indicate that health care assistants need to be trained and educated with regards to the effects of low vision and diabetes. If health care assistants were educated in this area then this could help prevent or identify blindness in older people.

Once the participants had undergone training using the toolkit, they were immediately given the same questionnaire to answer. The study aimed to determine what changes occurred in the responses. It was predicted that an improvement in the response rate would be observed immediately after training. The results of the post-training questionnaire demonstrated
that 94% of the responses given were correct and only 6% were incorrect. This demonstrates a large improvement in responses compared to before undergoing training.

The results indicate that the health care assistants were more aware of the connection between eye disease and diabetes. Furthermore, the health care assistants were more aware of the testing that should be carried out in order to detect problems, as well as preventing them. Looking more specifically at the participants, nine (9) participants gave all correct answers to the questions and the maximum number of wrong answers was two for any given participant, with 50% of participants giving one incorrect answer. The results of the immediate post-training questionnaire suggest that the toolkit had been effective in educating HCAs. However, in order to determine if the education was effective in the long term, the same questionnaire was also circulated to the participants after one month.

Participants were given the questionnaire one month after the toolkit training to determine whether they needed more time to fully understand the information. It could be predicted that the results would be mostly correct. The results from the third questionnaire, which was conducted one month after the training was delivered, were equally as promising as the previous results. The results one month post-training showed that 90% of the responses given were correct and 10% were incorrect. The results were similar to the questionnaire conducted immediately after the training in terms of the benefits of the training. The results indicate that the health care assistants were now more aware of the connection between low vision and diabetes.

Furthermore, the health care assistants were more aware of the testing that should be carried out in order to detect problems, as well as to prevent them. Out of the 20 participants included, seven participants gave all correct answers to the questionnaire, compared to nine when the questionnaire was conducted immediately after training. Two participants who had previously got either one or two questions incorrect in the immediate post-training questionnaire, got all answers correct in the one month post-training questionnaire.

This suggests that these participants had learnt more after training, or may have done some further reading in the field. Furthermore, the number of participants giving two incorrect answers increased after one month, with 7 participants giving two incorrect answers compared to two participants immediately after the training was delivered. Looking more specifically at the responses, the health care assistants answered questions relating to the types of eye problems, and testing for blindness and eye conditions, accurately, whereas questions related to the symptoms of eye conditions led to the greatest number of incorrect answers. It can be suggested that health care assistants had forgotten certain aspects of their training, or may not have fully understood the training in the first place.

DISCUSSION

The educational toolkit should help health care assistants to understand the importance of diabetes control and eye examinations with early diagnosis and prompt treatment, as well as reducing the risk of diabetic complications.

Research has demonstrated that early detection of low vision and eye complications is paramount in treating these conditions; therefore this was a major focus of the educational toolkit. Most of the population believes that visual loss is irreversible and a natural part of the ageing process; however, there is a need to educate health care assistants and older people on ways in which visual loss can be reversed if detected early. Previously, health care assistants were trained using the educational toolkit, as they spent sufficient amount of time with older individuals and therefore are most likely to be able to detect problems. GPs and nurses only tend to have limited interaction with older people living in residential care homes, whereas health care assistants are involved in intimate care such as personal help going to the bathroom and changing clothes. During these tasks it is likely that health care assistants can detect symptoms of low vision as evident from such activities.

This study found that over half the participants had a poor knowledge of eye complications related to diabetes, as 60% of the participants answered the questions incorrectly. After receiving training, the results of the questionnaire improved and over 95% of the questions were answered correctly immediately after training, which is very effective in improving their knowledge. The study demonstrated that participants lost some knowledge one month after the training. This is normally expected, especially if the participants had not refreshed from the material. This suggests that regular training may be beneficial to ensure that diabetes and eye care are given importance in the clinical setting. Annual training sessions may be appropriate and could lead to detection of low vision associated with diabetes.

CONCLUSION

In conclusion, educating health care assistants...
Healthcare Assistants’ Knowledge & Understanding of the Impact of Eye Diseases associated with Diabetes

on low vision and diabetes can result in greater awareness on the effects of this illness. A pre/post-test design was used by the researcher. This study is aimed at determining whether the use of the low vision and diabetes education toolkit is an effective method for educating health care assistants. The study has demonstrated that large numbers of the health care assistants did not have a clear understanding of diabetes and eye disease, and that they required more training. Following the completion of the training, the results suggest that the training has had a positive effect on the knowledge of health care assistants around diabetes and eye disease. The results of the questionnaire conducted one month after training suggest that there was a slight decrease in the number of correct answers, and therefore it can be suggested that although training is effective, there may be a need to retrain health care assistants on an annual basis, or more preferably, every six months. Such a training plan could improve awareness of low vision and diabetes in residential care homes, and even increase the number of people treated for eye disease and diabetes. This could have an effect on the quality of life of older people, and reduce the associated problems of eye disease, including trips and falls, and taking the wrong medication. There is a need to ensure that such a training programme is initiated amongst all health care assistants to ensure its success.

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5. Sinclair AJ. Good clinical practice guidelines for care home residents with diabetes. Diabetes UK. 2010 January:: p. 120.
Refractive Errors, Eye Disorders & Associated Risk Factors Amongst Medical Students

Kh.Faiz-ur-Rab FCPS¹, Shehla Dareshani FCPS², Prof.Masood Hussain Rao M.A.(Economics)³, Tarique Saleem FCPS ⁴, Mariam Jabir⁵

ABSTRACT:

Background: Refractive error is a condition in which parallel rays of light from infinity do not focus on the retina at the resting state of accommodation. Its prevalence is increasing dramatically in the group of people who are getting education at higher level. It is developed by hereditary as well as other factors like environmental life style etc.

Objective: To determine the prevalence of refractive error, other eye disorders, and its associated risk factors amongst the medical students.

Methodology: A cross sectional survey was conducted through non probability consecutive sampling technique with permission from the Principal and a verbal consent of each student. A pre tested and validated questionnaire having socio demographic, the prevalence of refractive errors, eye disorders, and its associated risk factors were used and the data analyses through SPSS version 21 was recorded. For continuous variables i.e. age, mean and standard deviation were computed and for categorical variables, frequencies and percentages were calculated. To determine any association between the two categorical variables, Chi-Square test was applied and P value at 0.05 was fixed for any statistical significant association.

Result: Frequency of refractive error was found in 257 students (68.2%). Out of total 377 students, the parents / siblings of 72.1% were also having refractive error. Majority of the students (197 i.e. 52.3%) suffering with the myopia followed by hypermetropia (36 i.e. 9.5%) and astigmatism (20 i.e. 5.3%). Four students were also suffering with colour blindness. Factors found statistical significance to develop the refractive error were age, gender, parental/siblings having refractive error and reading while lying down.

Conclusion: Refractive error was found at its peak in medical students. The factors causing the refractive error were age, gender, parental/siblings having refractive errors and reading while lying down. The other factors like excessive use of computer, mobile phones etc., were found insignificant to develop refractive error.

Key words: Complications, Eye Defects, Eye Diseases, Myopia, Hypermetropia, Astigmatism, Color Blindness.

INTRODUCTION:

Refractive error is a condition in which parallel rays of light from infinity do not focus on the retina at the resting state of accommodation. Its prevalence is increasing dramatically in the group of people who are getting education at higher level. It is developed by hereditary as well as other factors like environmental, life style etc. The common refractive errors are myopia, hypermetropia and astigmatism. Refractive error if not treated and corrected then its effects are immediate as well as long term in which there is loss of education, employment and quality of life with economic benefits. Myopia is the most common type of refractive error developed by environmental and genetic factors. The factors mostly play role in development of refractive errors are age, lack of awareness, fashion, life style, use of electronic devices and hereditary.

68.2% of Medical students had some type of refractive error. The main symptoms were headaches with eye irritation or itching. The factors causing the refractive error were age, gender, parents having refractive errors while reading at lying down position. The other factors were excessive use of computer and mobile phones.

Refractive error is a worldwide problem and becoming
a public health issue. Prevalence of refractive error is at its peak especially in students securing higher education. In Pakistan around 27.1 million people of ages 16-39 are suffering with refractive errors. According to World Health Organization, uncorrected refractive error remains second common cause of global visual impairment. It is estimated that 1.53 billion people all over the world are suffering with refractive errors. A survey report mentions that 25 thousand people of Latin America and Caribbean are either blind or they complained for vision impairment. In sovereign island country Dominica, the prevalence of refractive errors i.e. myopia 30.5%, hypermetropia 12.0%, and astigmatism 33.5%. Medical schools at Singapore, Taiwan, Denmark and Norway showed prevalence of eye defects among their students at the rate of 89.8%, 90%, 50% and 50.3% respectively. In Turkey about 1/3rd medical students had refractive error of which myopia is on the top and main factor is hereditary myopia.

On the basis of above mentioned facts and figures, it becomes very alarming to this part of the world. Very little data have been available on this important issue as far as Pakistan is concerned. Therefore this study has been planned to determine the prevalence of the refractive errors in our medical students such as myopia, hypermetropia and astigmatism. This study has also focused on the various factors which are associated in development of these refractive errors, occurrence and symptoms of these refractive errors necessitate to develop a preventive plan at national level for the future. The objective of this study is to determine the prevalence of refractive error, visual disorders, and its associated risk factors among medical students.

MATERIALS AND METHODS

A cross sectional survey was conducted during June 2017 to August 2017 through non probability consecutive sampling technique. Permission from the Principal of Dow Medical College, Karachi was obtained for data collection purposes. A verbal consent was taken from each student eligible to participate in the study. A research questionnaire was specially designed for this purpose after pretest and validation was used. 377 students of Dow University of Health Sciences available during the study period were approached to get filled the questionnaire. The questionnaire has been divided into socio-demographic, the prevalence of refractive error, eye defects, and its associated risk factors among medical students.

The collected data was entered into SPSS version 21.0 for analysis purposes. For all continuous variables like age, mean and standard deviation were computed. For all other categorical variables, frequencies and percentages were calculated and presented in shape of tables and graphs. To determine any association between the two categorical variables, Chi-Square test was applied and P value at 0.05 was fixed for any statistical significant association.

RESULT:

This study was conducted on medical students of Dow Medical College who fulfilled the inclusion criteria of the study. Overall according to sample size, the data from 377 students were collected. Majority 273 (72.4%) were females and the rest 104 were males (27.6%). Fifty five percent (55%) students were between the ages of 20-22 followed by 32.9% who were more than 22 years of age. The mean age was 20.8 ± 1.2 years. Frequency of refractive error was found in 257 students (68.2%). Out of total 377 students, the parents / siblings of 72.1% were also having refractive error. (Table 1). According to the analysis of the data, 257 (68.2%) students were suffering with refractive error. (Figure 1)

Out of 377 students only 120 i.e. 31.8% were free from any refractive errors. Majority of the students (197 i.e. 52.3%) were suffering with myopia followed by hypermetropia (36 i.e. 9.5%) and astigmatism (20 i.e. 5.3%). Four students were also suffering with color blindness eye defect. (Table 2)

Regarding ocular symptoms among medical students, we have divided them into two groups, having refractive error and without any refractive error to see the effect of different factors on development of refractive error in medical students. We asked different questions from the participating students whether they have any ocular symptoms or not. The first point was whether you suffer from headache due to unknown reasons frequently, 23.3% of the non-refractive group and 41.6% of the refractive group feel so. This difference was found statistically significant at P<0.001. In reply to another question whether you ever have eye discharge, majority (80% of non-refractive error group and 82.9% of refractive error group) of both the groups said no. The next ocular symptom was feeling of redness of eyes after long time reading, only 26.75% of non-refractive group and 24.5% of refractive error group reply in positive. This difference was found insignificant. In reply to a question whether you suffer from any eye irritation or itching, 26.7% of non-refractive error group participant students and 40.9% of refractive error group said yes. Refractive error group were suffering more with this ocular symptom, and the difference was found statistically significant at P<0.008. Regarding other ocular symptoms like experience of photophobia and taking any drug for allergy affecting your eyes, no difference was found in both the groups. (Table 3)

The data was further analyzed to determine the associated factors of the refractive error and to see the effect of different factors on development of refractive error. According to the analysis, the age factor and gender were statistically significant in the development of refractive error as compared to normal students (P
Use of vitamin A supplement was found very low in both the groups, as only 13.3% in non-refractive error group and 11.3% in refractive error group students were taking Vitamin A supplement. Majority of the students of both the groups were studying more than 3 hours in a day. In replying of a factor, whether you take a rest of at least one hour after reading, 69.2% of non-refractive error and 70.0% of refractive error group students were doing so. However, this difference did not found statistically significant in both the groups (P<0.86). The habit of study at late night was found in 50.8% of the non-refractive error group and 61.5% of the refractive error group. Although in refractive error group, more students study late night as compared to non-refractive error group but this was not found statistically significant. Majority of both the groups started

Table 1. Basic data of the participants

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<tr>
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<th>%</th>
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</thead>
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<tr>
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<tr>
<td>&lt;20 years</td>
<td>45</td>
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<tr>
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<td>&gt;22 years</td>
<td>124</td>
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<td><strong>Gender</strong></td>
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<tr>
<td>Male</td>
<td>104</td>
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<tr>
<td>Female</td>
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<td><strong>Refractive error</strong></td>
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<tr>
<td>Yes</td>
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<td><strong>Parental /sublimes reflective error</strong></td>
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<td>272</td>
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<td>No</td>
<td>105</td>
<td>27.9%</td>
</tr>
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</table>

Table 2. Frequency distribution of type of Refractive errors and eye defect among medical students

<table>
<thead>
<tr>
<th>Eye Defects</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emmetropia</td>
<td>120</td>
<td>31.8</td>
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<tr>
<td>Myopic</td>
<td>197</td>
<td>52.3</td>
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<tr>
<td>Hyperopic</td>
<td>36</td>
<td>9.5</td>
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<tr>
<td>Astigmatism</td>
<td>20</td>
<td>5.3</td>
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<tr>
<td>Color Blindness (Eye defect)</td>
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### Table 3. Ocular symptoms among medical students

<table>
<thead>
<tr>
<th>Factors</th>
<th>Non-Refractive errors</th>
<th>Refractive errors</th>
<th>Chi-square</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you suffer from headaches due to unknown reason frequently</td>
<td></td>
<td></td>
<td>11.919a</td>
<td>0.001</td>
</tr>
<tr>
<td>No</td>
<td>92</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>28</td>
<td>107</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you ever have eye discharge</td>
<td></td>
<td></td>
<td>.459a</td>
<td>0.498</td>
</tr>
<tr>
<td>No</td>
<td>96</td>
<td>213</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>24</td>
<td>44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you ever feel redness of eyes after a long time of reading</td>
<td></td>
<td></td>
<td>.201a</td>
<td>0.654</td>
</tr>
<tr>
<td>No</td>
<td>88</td>
<td>194</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>32</td>
<td>63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you suffer from any eye irritation or itching</td>
<td></td>
<td></td>
<td>7.120a</td>
<td>0.008</td>
</tr>
<tr>
<td>No</td>
<td>88</td>
<td>152</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>32</td>
<td>105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you experience photophobia</td>
<td></td>
<td></td>
<td>.003a</td>
<td>0.957</td>
</tr>
<tr>
<td>No</td>
<td>110</td>
<td>236</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>10</td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you take any drug for allergy affecting your eyes</td>
<td></td>
<td></td>
<td>.467a</td>
<td>0.494</td>
</tr>
<tr>
<td>No</td>
<td>113</td>
<td>237</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7</td>
<td>20</td>
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<td></td>
</tr>
</tbody>
</table>

### Table 4. Refractive errors and its associated factors among medical students

<table>
<thead>
<tr>
<th>Factors</th>
<th>Non-reflective error</th>
<th>Reflective error</th>
<th>Chi-square</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td>15.90</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>&lt; 20</td>
<td>26</td>
<td>19</td>
<td>7.4%</td>
<td></td>
</tr>
<tr>
<td>20 - 22</td>
<td>58</td>
<td>150</td>
<td>58.4%</td>
<td></td>
</tr>
<tr>
<td>&gt; 22</td>
<td>36</td>
<td>88</td>
<td>34.2%</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>7.26</td>
<td>0.007</td>
</tr>
<tr>
<td>Male</td>
<td>44</td>
<td>60</td>
<td>23.3%</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>76</td>
<td>197</td>
<td>76.7%</td>
<td></td>
</tr>
<tr>
<td>Parents/siblings have Refractive errors</td>
<td></td>
<td></td>
<td>25.76</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>No</td>
<td>54</td>
<td>51</td>
<td>19.8%</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>66</td>
<td>206</td>
<td>80.2%</td>
<td></td>
</tr>
<tr>
<td>Do you take Vitamin A supplement</td>
<td></td>
<td></td>
<td>0.327</td>
<td>0.568</td>
</tr>
<tr>
<td>No</td>
<td>104</td>
<td>228</td>
<td>88.7%</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>16</td>
<td>29</td>
<td>11.3%</td>
<td></td>
</tr>
<tr>
<td>Number of hours study per day</td>
<td></td>
<td></td>
<td>0.034</td>
<td>0.853</td>
</tr>
<tr>
<td>&lt; 3</td>
<td>39</td>
<td>86</td>
<td>33.5%</td>
<td></td>
</tr>
<tr>
<td>&gt; or equal 3</td>
<td>81</td>
<td>171</td>
<td>66.5%</td>
<td></td>
</tr>
<tr>
<td>Do you rest after reading for one hour</td>
<td></td>
<td></td>
<td>0.030</td>
<td>0.864</td>
</tr>
<tr>
<td>No</td>
<td>37</td>
<td>77</td>
<td>30.0%</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>83</td>
<td>180</td>
<td>70.0%</td>
<td></td>
</tr>
<tr>
<td>Do you study at late night</td>
<td></td>
<td></td>
<td>3.808</td>
<td>0.051</td>
</tr>
<tr>
<td>No</td>
<td>59</td>
<td>99</td>
<td>38.5%</td>
<td></td>
</tr>
</tbody>
</table>
use of computer at their primary or secondary level of education. However in majority, frequency of com-puter use was less than 3 hours in both the groups (67.5% and 69.6% respectively). Both the factors computerusing were found insignificant. It was found that majority of both the groups were reading while lying down (71.7% and 81.7% respectively). This shows that refrac-tive error group students were more habitual to read-ing while lying down and this factor was found statisti-cally significant at P<0.027. Majority of the students of both the groups go to bed after 11.0 am. Similarly, the use of mobile phone was more frequent as majority of both the group students use it for more than 2 hours. However these two factors did not found any statistical significance. (Table 4)

**DISCUSSION:**

Refractive error is the second commonest cause of global visual impairment. It becomes a public health issue in the world specially in East Asia countries, affecting our young generation especially the females. Medical students have to suffer a lot due to hard work and prolonged hours of study. In fact, refractive error is multi-factorial with environmental and genetic factors. According to a study, the mean age of the students of medical college was 18.9 ±1.3 years. In another study, mean age was 21± 1.5 years. Our study result was also near to it as mean age of our medical college students was 20.9 ± 1.3 years. In another study, of all myopic students had at least one parent as myopic. In a study, it was concluded that there is a strong association between parental history of myopia and genesis of myopia. In another study, had positive family history of myopia. In our study, of myopic medical students have also one of their parents/siblings myopic.

A study conducted in Saudi Arabia, showed 61.35% prevalence of myopia in medical students. In other studies, the prevalence of refractive error was 64.3%, 61.3%, 56.7% respectively in medical students. In a study conducted in India on medical college students, myopia was found to be 47.2% followed by hypermetropia 15.3% and astigmatism 8.8%. In another study, prevalence of myopia, hypermetropia, color blindness and astigmatism were 30.5%, 12.0%, 3.0% and 33.5% respectively. In a study conducted in Singapore, the prevalence of myopia was 89.8%, hypermetropia 1.3% and astigmatism 82.2%. Myopia and astigmatism in medical students of Singapore were highest in the world. Our study results of myopia were similar to above studies, myopia was 52.3% whereas prevalence of hypermetropiawas 9.5% and astigmatism was 5.3% in our medical students. As far as occurrence of the refractive errors is concerned, they also suffer from headaches frequently with irritation of eyes having statistically differences unmatched in other studies. According to a study, environmental factors play an important role in adolescents and young adult in development of refractive error. Some of these environmental factors which were identified were, prolonged hours of usage of laptop usage and electronic gadgets for studies and social interaction by students. As most of the students use dim light for studies we surveyed its impact on refractive errors. Our study results showed that age, gender, parents/siblings having refractive error and reading while lying down on the beds which were statistically significant, taking drugs as supplement and take little rest after studying, using computer and mobilephone frequently.

**CONCLUSION**

Refractive error was found at its peak in med-
ical students as 68.2% having some type of refractive error. Myopia, hypermetropia and astigmatism were the main refractive errors. The main symptoms of refractive errors were headaches and eye irritation or itching. Other factors causing the refractive errors were age, gender, parents/siblings having refractive error with faulty reading habits. The other factors are like normal use of computer, mobile phone were found to be insignificant.

**Recommendations:** Awareness of refractive errors should be cautioned in school going children to prevent myopia. The occurrence of eye defects among medical student tend to be alarming and student awareness scheme should be structured to reduce eye defects among medical students. Outdoor activities in early childhood have a protective role against the development of refractive errors. Special attention should be given to the students especially females if their parents/siblings are already affected. These identified risk factors in this study can help health care professionals to develop targeted control policies for the students with the assurance that preventive measures will be more rational, useful, and effective. Secondly physical exercises are very helpful to prevent early development of refractive errors. Moreover, eye checkup should be made mandatory at the entry level to the college/university especially the medical students.

**Acknowledgement:** We are thankful to the Principal of Dow Medical College for granting permission to collect the data from students. We are also thankful to the participating students who provided us all the useful information.

**Conflict of interest:** We confirm that there is no conflict of interest between the authors and we own the results of the study.

**REFERENCES:**


Prevalence of Myopia and its Associated Factors amongst Medical Students of Dow University of Health Sciences, Karachi

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Masood Hussain Rao⁴ M.A(Eco), Shehla Dareshani FCPS⁵, Maheen Akhter⁶

ABSTRACT:

Background: East Asia has the highest prevalence of myopia in students. It is a significant public health problem and its prevalence is increasing over the time. It is estimated that by 2020, 2.5 billion or 1/3rd of the world population will be affected by myopia.

Objective: To determine the prevalence of myopia and its associated factors among medical students.

Methodology: A cross sectional survey was conducted through non probability consecutive sampling technique with permission from the Principal and a verbal consent of each student. A pre tested and validated questionnaire having two parts, socio demographic and possible associated factors developing the myopia was used. The data analyzed through SPSS version 21. For continuous variables i.e. age, mean and standard deviation were computed and for categorical variables, frequencies and percentages were calculated. To determine any association between the two categorical variables, Chi-Square test was applied and P value at 0.05 was fixed for any statistical significant association.

Results: The prevalence of myopia was found in 51.4% of participated medical students. Age, gender and parental/siblings were significant associated factors of the myopia. However other factors like use of computer, mobile phone, study in late night and other factors did not get any association in development of myopia.

Conclusion: Myopia is very high as more than 50% students are suffering with it in medical college. The associated factors i.e. age, gender and parental/siblings were found significant for which awareness should be developed to control the incidence of rising myopia.

Keywords: Myopia, medical students, awareness, effect of myopia, age of onset, education, BMI, gender, parental influence, refractive error, visual acuity.

INTRODUCTION:
Myopia is a refractive error in which parallel rays of light from infinity focus in front of the retina at the resting state of accommodation. This adversely affects the vision at a distance. It has been observed that this type of condition is developed through nature and genetic. Myopia increases the risk of lot of other problems of eyes such as retinal detachment, cataract, glaucoma, macular degeneration, choroidal neovascularization, visual impairment, and blindness. Few studies reported that East Asia has the highest prevalence of myopia in students. It has become a significant public health problem.

Myopia is very high (50%) in students in the medical college. The associated factors i.e. age, gender and parental/siblings were found significant for which awareness should be developed to control the incidence of rising myopia.

In the previous years, wearing glasses was noticed in the adult population over 40 years of age. According to a study results, prevalence of myopia in India is 7-11% in <15 years old and 35% in adults. However in another study, the results showed that prevalence of myopia in medical students in western India is 45%. Myopia is the most common cause of decreased vision affecting

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Prevalence of Myopia and its Associated Factors amongst Medical Students of Dow University of Health Sciences, Karachi

Myopia is a significant public health problem and its prevalence is increasing over the time. In a study, it was reported that myopia is high in medical students, who are a group of young adults and spending much time on their studies in which prolonged reading and electronic media uses is at highest level. Before selecting for medical studies, they have to work much hard to get admission in Medical Colleges although there is a selected population with a high level of education as well as above average intelligence. With their intensive study regimen that spans many years, medical students have been reported to be at high risk for myopia. So the factors developing the myopia at its peak are increasing trend of getting higher education and developing the high standard living style. It is alarming that 43.3% myopic students start wearing corrective lenses at the age of about 20 years or less which indicate a high prevalence rate of adult-onset myopia.

It is estimated that by 2020, myopia will affect around 2.5 billion of the world population i.e, 1/3 of the world population. The etiology of myopia is multifunctional and both genes and environment play role. According to World Health Organization report, uncorrected refractive error remains second commonest cause of global visual impairment. The prevalence in the final year medical students was highest and eye glasses were used. The myopia is constantly increasing in medical students. On the basis of the above facts, it has been observed that very little work has been done on this major public health issue. Therefore, this cross sectional survey was conducted to determine the prevalence of myopia and its associated risk factors in medical students of a public sector college which has its name in the world.

MATERIALS AND METHODS

A cross sectional survey was conducted during June 2017 to August 2017 through non probability consecutive sampling technique. Permission from the Principal of Dow Medical College, Karachi was obtained for data collection purposes. A verbal consent was taken from each student eligible to participate in the study. A research questionnaire was specially designed for this purpose after pretest and validation was used. 383 students of Dow University of Health Sciences available during the study period were approached to get filled the questionnaire. The questionnaire has two parts, socio demographic and prevalence of myopia and its associated factors. Sample size was calculated by Open Epi software 3.0. Take the prevalence of myopia 47%, 5% Confidence limits and 95% Confidence Level. Total calculated sample size was 383.

The collected data was entered into SPSS version 21.0 for analysis purposes. For all continuous variables like age, mean and standard deviation were computed. For all other categorical variables, frequencies and percentages were calculated and presented in shape of tables. To determine any association between the two categorical variables, Chi-Square test was applied and P value at 0.05 was fixed for any statistical significant association.

RESULT:

We have collected the data from 383 medical students of Dow Medical College who fulfilled the inclusion criteria of the study. Out of these, 106 were males (27.75) whereas rest 277 (72.3%) were females. Majority of the participants were between the ages of 20-22(55.4%) followed by more than 22 years of age (32.4%). The mean age was 20.8 ± 1.2 years. Majority (340 i.e. 88.8%) of the students got check their eyes while remaining did not do so in their life. Similarly, majority of them (196 i.e.57.7%) did their eye checkup once in a year where as 15.6% did it more than once in a year. Most of the students (132 i.e. 38.8%) got their eye checkup through chart or in combination with the computerized system. However, only 92 students got their eye check up by only computer method. Frequency of myopia was found in 197 students (51.4%). Parents or siblings having myopia were found in 57.2% students which show a greater link of myopia through inheritance. (Table I)

Out of 383 students participated in the study, 197 i.e. 51.4% were myopic students whereas remaining 186 i.e. 48.6% were non myopic students. The dioptric < -0.5 was found in 1.3% in right eyes and 5.2 % in the left eyes of the myopic students. The extent of myopia less than -3 was found in right eyes of 26.9% students and in left eyes for 28.4% myopic students. The dioptic power of -3 or more was found in right eyes of 24.69% students and in left eyes for 23.0% of myopic students. (Table II)

For detailed analysis of the data, we have divided them into two groups, having myopia and not having the myopia to see the effect of different factors on development of myopia in medical students.

According to the analysis, the age, gender factors were statistically significant in myopic students (P< 0.001). Parents/siblings were also found statistically significant in myopic and non-myopic students (P<0.001). Use of vitamin A supplement was found very low in both the groups, as only 11.3% in non-myopia group and 12.7% in myopia group students were taking Vitamin A supplement. Majority of the students of both the groups were studying more than 3 hours in a day. In replying of a factor, whether you take a rest of at least one hour after reading, 68.8% of non-myopic and 70.1% of myopic students were doing so. However, this difference did not found statistically significant in both the groups (P<0.79). Majority 80.7% (79.0% of
Prevalence of Myopia and its Associated Factors amongst Medical Students of Dow University of Health Sciences, Karachi

Table I Basic data of the participants

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20 years</td>
<td>47</td>
<td>12.3%</td>
</tr>
<tr>
<td>20-22 years</td>
<td>212</td>
<td>55.45%</td>
</tr>
<tr>
<td>&gt;22 years</td>
<td>124</td>
<td>32.45%</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>106</td>
<td>27.7%</td>
</tr>
<tr>
<td>Female</td>
<td>277</td>
<td>72.3%</td>
</tr>
<tr>
<td><strong>Eye checkup during life</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>340</td>
<td>88.8%</td>
</tr>
<tr>
<td>No</td>
<td>43</td>
<td>11.2%</td>
</tr>
<tr>
<td><strong>Method of eye checkup</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computerized</td>
<td>92</td>
<td>27.1%</td>
</tr>
<tr>
<td>Chart method</td>
<td>132</td>
<td>38.8%</td>
</tr>
<tr>
<td>Both</td>
<td>116</td>
<td>34.1%</td>
</tr>
<tr>
<td><strong>Time for check up</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once in a year</td>
<td>196</td>
<td>51.2%</td>
</tr>
<tr>
<td>More than once in a year</td>
<td>53</td>
<td>13.8%</td>
</tr>
<tr>
<td>After every three years or more</td>
<td>91</td>
<td>23.6%</td>
</tr>
<tr>
<td><strong>Myopia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>197</td>
<td>51.4%</td>
</tr>
<tr>
<td>No</td>
<td>186</td>
<td>48.6%</td>
</tr>
<tr>
<td><strong>Parental /sublimes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>219</td>
<td>57.2%</td>
</tr>
<tr>
<td>No</td>
<td>164</td>
<td>42.8%</td>
</tr>
</tbody>
</table>

Table II. Frequency of myopic students according to No. of Diopters

<table>
<thead>
<tr>
<th>Eye</th>
<th>Right n</th>
<th>%</th>
<th>Left n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diopters</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; -0.5</td>
<td>5</td>
<td>1.3</td>
<td>20</td>
<td>5.2</td>
</tr>
<tr>
<td>-0.6 to-0.99</td>
<td>32</td>
<td>8.4</td>
<td>17</td>
<td>4.4</td>
</tr>
<tr>
<td>-1 to -1.99</td>
<td>39</td>
<td>10.2</td>
<td>42</td>
<td>11.0</td>
</tr>
<tr>
<td>-2 to-2.99</td>
<td>27</td>
<td>7.0</td>
<td>30</td>
<td>7.8</td>
</tr>
<tr>
<td>-3 to-3.99</td>
<td>32</td>
<td>8.4</td>
<td>37</td>
<td>9.7</td>
</tr>
<tr>
<td>-4 to-4.99</td>
<td>37</td>
<td>9.7</td>
<td>26</td>
<td>6.8</td>
</tr>
<tr>
<td>&gt; or equal -5</td>
<td>25</td>
<td>6.5</td>
<td>25</td>
<td>6.5</td>
</tr>
<tr>
<td>Total myopic students</td>
<td>340</td>
<td>51.4</td>
<td>340</td>
<td>51.4</td>
</tr>
<tr>
<td>Non-myopic students</td>
<td>186</td>
<td>48.6</td>
<td>186</td>
<td>48.6</td>
</tr>
</tbody>
</table>

non-myopic students and 82.2% of myopic students) of the students go to bed after 11.0 pm. However when we asked that whether you studied late at night, only 56.5% of non-myopic and 59.9% of myopic said yes whereas other students are resting and enjoying late at night with other activities. On further inquiring, it was found that 78.3% students were habitual to do their reading while lying down (77.4% of non-myopic and 79.2% of myopic students).

Although myopic students were more habitual to do study while they were lying down but this difference was not found statistically significant. Commonly it is observed that use of computer and mobile phone are the main factors for development of myopia. In our study, majority of the students start using computer when they were at their primary education level or secondary. Majority of the participating students of both the groups were found using computer for less than 3 hours (70.4% of the non-myopic group and 67% of the students of myopic group). In contrast, majority of the participants of both the groups were using mobile phone for more than 2 hours per day (76.9% of non-myopic group and 73.6% of myopic group). However these results did not found any statistically significance. (Table III)
Table III. Myopia and its associated factors

<table>
<thead>
<tr>
<th>Factors</th>
<th>Non-myopic</th>
<th></th>
<th>Myopic</th>
<th></th>
<th>Chi-square</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 20</td>
<td>36</td>
<td>19.4%</td>
<td>11</td>
<td>5.6%</td>
<td>17.824</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>20 – 22</td>
<td>99</td>
<td>53.2%</td>
<td>113</td>
<td>57.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 22</td>
<td>51</td>
<td>27.4%</td>
<td>73</td>
<td>37.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.548</td>
<td>0.002</td>
</tr>
<tr>
<td>Male</td>
<td>65</td>
<td>34.9%</td>
<td>41</td>
<td>20.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>121</td>
<td>65.1%</td>
<td>156</td>
<td>79.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents/siblings have myopia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36.787</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>No</td>
<td>109</td>
<td>58.6%</td>
<td>55</td>
<td>27.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>77</td>
<td>41.4%</td>
<td>142</td>
<td>72.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you take Vitamin A supplement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.177</td>
<td>0.674</td>
</tr>
<tr>
<td>No</td>
<td>165</td>
<td>88.7%</td>
<td>172</td>
<td>87.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>21</td>
<td>11.3%</td>
<td>25</td>
<td>12.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of hours study per day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.052</td>
<td>0.35</td>
</tr>
<tr>
<td>&lt; 3</td>
<td>56</td>
<td>30.1%</td>
<td>69</td>
<td>35.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; or equal 3</td>
<td>130</td>
<td>69.9%</td>
<td>128</td>
<td>65.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you rest after reading for one hour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.069</td>
<td>0.793</td>
</tr>
<tr>
<td>No</td>
<td>58</td>
<td>31.2%</td>
<td>59</td>
<td>29.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>128</td>
<td>68.8%</td>
<td>138</td>
<td>70.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you study at late night</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.467</td>
<td>0.494</td>
</tr>
<tr>
<td>No</td>
<td>81</td>
<td>43.5%</td>
<td>79</td>
<td>40.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>105</td>
<td>56.5%</td>
<td>118</td>
<td>59.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time of bed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.629</td>
<td>0.428</td>
</tr>
<tr>
<td>before 11pm</td>
<td>39</td>
<td>21.0%</td>
<td>35</td>
<td>17.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>after 11pm</td>
<td>147</td>
<td>79.0%</td>
<td>162</td>
<td>82.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading while lying down</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.176</td>
<td>0.675</td>
</tr>
<tr>
<td>No</td>
<td>42</td>
<td>22.6%</td>
<td>41</td>
<td>20.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>144</td>
<td>77.4%</td>
<td>156</td>
<td>79.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of computer use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.522</td>
<td>0.47</td>
</tr>
<tr>
<td>&lt;3 hours</td>
<td>131</td>
<td>70.4%</td>
<td>132</td>
<td>67.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>greater or equal 3 hours</td>
<td>55</td>
<td>29.6%</td>
<td>65</td>
<td>33.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of mobile use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.551</td>
<td>0.458</td>
</tr>
<tr>
<td>&lt; 2 hours</td>
<td>43</td>
<td>23.1%</td>
<td>52</td>
<td>26.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;2 hours</td>
<td>143</td>
<td>76.9%</td>
<td>145</td>
<td>73.6%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DISCUSSION:

Myopia is the major health problem all over the world. It is affecting our young generation receiving higher education specially females. Medical students have to suffer a lot with this issue as they have to study much more than anyone else. Myopia is thought to be multi-factorial with environmental and genetic factors as well as their interactions being involved.

According to a study 1, which was done on first and second year medical students, the mean age of the students of medical college was 18.83 ±1.34 years. In another study,15 which was done on overall medical students of all years, mean age was 21 ± 1.5 years. Our study result was also near to it as mean age of our medical college students was 20.8 ± 1.2 years. The reason may be that they took first and second year students whereas we have selected all grades of students.

In a study 16 which was conducted on gender basis to determine the prevalence of myopia in male and female, out of myopic students, 53.2% of females and 37.4% of males were myopic. Our study results were also similar to it as in our study, 56.3% (156/277) of females and 38.7% of males (41/106) were myopic. In the same study, 69.4% of all myopic students had at least one parent myopic. In a study,5 it was concluded that there is a strong association between parental history of myopia and genesis of myopia. In another study,17 60.7% had positive family history of myopia. In our study 57.2% of myopic medical students have also one of their parents myopic.

In a study1 conducted in western India vis-a-vis the East Asian epidemic, showed the prevalence of myopia in medical students in Taiwan 93%, Singapore 82%, China 71%, Norway & Denmark 50%, India 45%, Turkey 33% and Poland 32%. In another study,2 conducted in Mongolia medical college, China, the prevalence was 64.3% in medical students. In European medical students, this prevalence is 50%. In another study conducted in Pakistan in 2012, the prevalence of myopia was 57.6%. Our study results were also similar to it as prevalence of myopia in our medical students was 51.4%.

The most important refractive error is myopia. In a study 17 mean refractive error was -2.12D. In our study we have not only determine the general refractive error but also according to the right and left eye mean refraction was calculated. Accordingly, our study result showed that the mean refractive error was -2.9D in right eyes and mean refractive error was -2.8D in left eyes.

Different studies 1, 15-17 have shown other risk factors like reading hours, electronic gadgets, sleeping habits of students, amount of physical exercise done and dietary factors did not show any significant relationship. Our study results are also similar to it and all other factors associated with myopia found insignificant.

CONCLUSION:

Frequency of myopia is very high as more than 50% students are suffering with it in Medical College. High education performance by medical students increases the risk of myopia. The associated factors of age, gender and parental/siblings were found significant for which awareness should be developed to control the myopia. Other risk factors like reading more and use of electronic media and other factors did not found any statistical significance.

Recommendations: Awareness of myopia should be developed in school going children as the use of computer and mobile phone starts at this stage to prevent myopia. Special attention should be given to the students who are females and myopia is found in their parents/siblings. These identified risk factors in this study will help health care professionals to develop targeted myopia control policies for the population of students with the assurance that preventive measures will be more rational, useful, and effective. Secondly eye exercises and physical exercises are helpful. Eye exercises and physical exercises are protective factors for myopia as no harm has yet been detected by these exercises in any study.

Acknowledgement: We are thankful to the Principal of Dow medical College for granting permission to collect the data from students. We are also thankful to the participating students who provide us all the required information truly.

Conflict of interest: We confirm that there is no conflict of interest between the authors and we own the results of the study.

REFERENCES:

7. Pan CW, Rammurthy D, Saw SM. Worldwide prevalence and risk
Eye Injury from a Firecracker

A patient reported to the emergency department with pain and decreased vision in both eyes after receiving an injury while lighting a firecracker. He had no perception of light in the right eye and reduced vision 20/80 in the left eye. After MRI he had ruptured globe in right eye. Slit-lamp examination of the left eye revealed multiple foreign bodies embedded at superficial and deep levels in the corneal stroma. CT scans of both orbits showed multiple intraocular foreign bodies which is common in high-velocity injuries, such as those caused by firecrackers, gunshots, or industrial accidents. The use of appropriate eyewear is certainly helpful and protective in such cases. The foreign bodies were removed from the cornea, and the patient was treated with topical antibiotic agents and lubricating eye drops. During the next 3 months, visual acuity in the left eye improved to 20/40. Despite right surgical repair the eye remained non-functional going towards phthisis bulbi.

Curtesy: Parul C. Gupta, & Jagat Ram,
Postgraduate Institute of Medical Education & Research, Chandigarh, India
Comparison of Corneal Topography in Normal & Eyes with Keratoconus in Pakistani Population

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Nizam M. Darwesh, MD, MSc, PhD³, Mehwish Hussain BSc(Hons), MSc.(Stat), PhD⁴
Department of Ophthalmology, Dow University of Health Sciences, Karachi

INTRODUCTION:

Corneal curvature can be assessed by various tools. Initially it was the Placido Disc and the Keratometer was used. Better assessment was done by computerized machines. Principle of corneal topography is the reflection of light by the anterior corneal surface in the form of bands. Then it is analyzed by the computer. It is extremely important to do proper work up of anterior segment prior to surgery and for good outcomes. Many imaging techniques have been developed eg. optical coherence tomography (OCT), Scheimpflug imaging and Interferometry.

In our study, we have compared corneal topography parameters in normal eyes and those with keratoconus. In keratoconus corneal curvature is altered because of excessive thinning of the cornea. It generally occurs in young patients and is associated with myopia and astigmatism. The advantage of corneal topography is early detection and being non-invasive. New methods of corneal topography such as the golden angle are evolving, and any error caused by blinking of the eyes is being overcome by the capability of the machine to deduce data from partial scans.

The Ks, Kf and Av K when compared in between the normal eyes came out to be the same. Also when eyes with keratoconus were compared for the same parameters, there was no significant difference. Therefore, the eyes with keratoconus were predisposed bilaterally in the Pakistani population.

MATERIALS AND METHODS:

Our study was conducted in the Eye Department of Dow University of Health Sciences. It was for a time period of 7 months from January 2017 to July 2017. 88 eyes of 52 patients were included in it. Topography was done by Tomey-TMS 5 topographer. It is a Scheimpflug topographer for anterior segment imaging. Light cone measurement time is 0.5 sec per image. Topography and Scheimpflug methods have advantages and
Comparison of Corneal Topography in Normal & Eyes with Keratoconus in Pakistani Population

disadvantages in the precision of images due to their principles of acquisition. By merging both data the TMS 5 eliminates the errors of both methods and provides an accurate topographic map.

Since the slit light used in the Scheimpflug mode is emitted inside the cone, the TMS 5 is capable of capturing an image without a dark room. Data was then transferred to Excel and analyzed. Data were entered in MS Excel and analyzed in IBM SPSS V 22. Mean with standard deviation were calculated to express descriptive statistics of the KS, KF and average K. Independent samples t-test was performed.
Comparison of Corneal Topography in Normal & Eyes with Keratoconus in Pakistani Population

To compare these parameters between normal and keratoconus patients. To check the significant difference in observations from left and right eye between normal and keratoconus patients, repeated measures ANOVA was run. Paired samples t-test was executed to compare the observations within left and right eyes of patients in each group. The threshold for statistical significance was kept at 0.05 level.

RESULTS:
Out of 52 patients, one provided the consent but later continued the study. Three patients were observed for left eye only. Five patients were observed for right eye only. Posterior observations for two right eyes and three left eyes were not observed.

Table 1 described the comparison of KS, KF and average K observations between normal and keratoconus patients. The average anterior KS of right eye was significantly higher in keratoconus patients as compare to normal patients (P<0.001). The KF anterior of right eye was nearby significantly different between normal and keratoconus patients. The average K form normal patients was 43.8±2.5 while for keratoconus patients it was 49.1±5.9 and the different was statistically significant (P=0.002). The posterior observations of KS, KF and average K of right were also significantly lower in keratoconus patients as compare to their normal counterparts.

Similarly, the left eye anterior KS of keratoconus patients were significantly higher as compare to normal subjects (P<0.001). The KF anterior of left eye was also significantly different in both keratoconus patients and normal subjects (P=0.001). The average K of left eye anterior was 43.4±2.8 for normal subjects while it was 50.1±5.9 in keratoconus patients. The difference of left eye anterior average K was statistically significant (P<0.001). The posterior observations for KS and KF in left eye observations were significantly lower in keratoconus patients. However, no significant difference was found in posterior average K of left eye in both normal and keratoconus patients.

Table 1: KS, KF and average K in anterior and posterior of normal and keratoconus patients

<table>
<thead>
<tr>
<th></th>
<th>Normal Mean</th>
<th>Normal Standard Deviation</th>
<th>Keratoconus Mean</th>
<th>Keratoconus Standard Deviation</th>
<th>P Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right KS</td>
<td>44.66</td>
<td>2.82</td>
<td>51.85</td>
<td>6.40</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Right KF</td>
<td>42.97</td>
<td>2.42</td>
<td>46.25</td>
<td>5.99</td>
<td>0.044</td>
</tr>
<tr>
<td>Right Avg K</td>
<td>43.82</td>
<td>2.52</td>
<td>49.05</td>
<td>5.86</td>
<td>0.002</td>
</tr>
<tr>
<td>Right posterior KS</td>
<td>-6.29</td>
<td>.31</td>
<td>-7.56</td>
<td>1.29</td>
<td>.001</td>
</tr>
<tr>
<td>Right posterior KF</td>
<td>-5.93</td>
<td>.34</td>
<td>-6.71</td>
<td>1.11</td>
<td>.011</td>
</tr>
<tr>
<td>Right posterior Avg K</td>
<td>-6.11</td>
<td>.30</td>
<td>-7.14</td>
<td>1.17</td>
<td>.002</td>
</tr>
<tr>
<td>Left KS</td>
<td>44.19</td>
<td>2.85</td>
<td>52.45</td>
<td>6.78</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Left KF</td>
<td>42.63</td>
<td>2.80</td>
<td>47.80</td>
<td>5.24</td>
<td>.001</td>
</tr>
<tr>
<td>Left Avg K</td>
<td>43.41</td>
<td>2.76</td>
<td>50.13</td>
<td>5.89</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Left posterior KS</td>
<td>-6.25</td>
<td>.33</td>
<td>-7.61</td>
<td>1.32</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Left posterior KF</td>
<td>-5.93</td>
<td>.31</td>
<td>-6.82</td>
<td>1.13</td>
<td>.003</td>
</tr>
<tr>
<td>Left posterior Avg K</td>
<td>-3.76</td>
<td>9.34</td>
<td>-7.21</td>
<td>1.19</td>
<td>.118</td>
</tr>
</tbody>
</table>

*Using independent samples t-test

Table 2 displayed comparison of anterior and posterior KS, KF and average K observations in left and right eye of keratoconus patients with normal subjects. All the parameters in this regards were statistically significantly different in both normal subjects and keratoconus patients (P<0.001).

The comparison of left and right eye KS, KF

Table 2: Comparison of anterior and posterior KS, KF and average K in left and right eyes of normal and keratoconus patients

<table>
<thead>
<tr>
<th></th>
<th>Anterior Normal Mean</th>
<th>Anterior Normal Standard Deviation</th>
<th>Anterior Keratoconus Mean</th>
<th>Anterior Keratoconus Standard Deviation</th>
<th>Posterior Normal Mean</th>
<th>Posterior Normal Standard Deviation</th>
<th>Posterior Keratoconus Mean</th>
<th>Posterior Keratoconus Standard Deviation</th>
<th>P Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right KS</td>
<td>44.66</td>
<td>2.82</td>
<td>51.85</td>
<td>6.40</td>
<td>-6.29</td>
<td>.31</td>
<td>-7.56</td>
<td>1.29</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Right KF</td>
<td>42.97</td>
<td>2.42</td>
<td>46.25</td>
<td>5.99</td>
<td>-5.93</td>
<td>.34</td>
<td>-6.71</td>
<td>1.11</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Right Avg K</td>
<td>43.82</td>
<td>2.52</td>
<td>49.05</td>
<td>5.86</td>
<td>-6.11</td>
<td>.30</td>
<td>-7.14</td>
<td>1.17</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Left KS</td>
<td>44.19</td>
<td>2.85</td>
<td>52.45</td>
<td>6.78</td>
<td>-6.25</td>
<td>.33</td>
<td>-7.61</td>
<td>1.32</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Left KF</td>
<td>42.63</td>
<td>2.80</td>
<td>47.80</td>
<td>5.24</td>
<td>-5.93</td>
<td>.31</td>
<td>-6.82</td>
<td>1.13</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Left Avg K</td>
<td>43.41</td>
<td>2.76</td>
<td>50.13</td>
<td>5.89</td>
<td>-3.76</td>
<td>9.34</td>
<td>-7.21</td>
<td>1.19</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*Using independent samples t-test
Comparison of Corneal Topography in Normal & Eyes with Keratoconus in Pakistani Population

Table 3: Comparison of left and right eyes KS, KF and average K in anterior and posterior areas of normal and keratoconus patients

<table>
<thead>
<tr>
<th>Group</th>
<th>Eye</th>
<th>Normal Mean</th>
<th>Normal SD</th>
<th>Keratoconus Mean</th>
<th>Keratoconus SD</th>
<th>P&lt;sub&gt;eye&lt;/sub&gt;</th>
<th>P&lt;sub&gt;group&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior</td>
<td>KS</td>
<td>44.66</td>
<td>2.82</td>
<td>51.85</td>
<td>6.40</td>
<td>.845</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>KF</td>
<td>42.97</td>
<td>2.42</td>
<td>46.25</td>
<td>5.99</td>
<td>.883</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Avg K</td>
<td>43.82</td>
<td>2.52</td>
<td>49.05</td>
<td>5.86</td>
<td>.959</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Posterior</td>
<td>KS</td>
<td>-6.29</td>
<td>.31</td>
<td>-7.56</td>
<td>1.29</td>
<td>.975</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>KF</td>
<td>-5.93</td>
<td>.34</td>
<td>-6.71</td>
<td>1.11</td>
<td>.102</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Avg K</td>
<td>-6.11</td>
<td>.30</td>
<td>-7.14</td>
<td>1.17</td>
<td>.242</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

* Using independent samples t-test

Table 4: Comparison of different parameters in left and right eye of normal subjects and keratoconus patients

<table>
<thead>
<tr>
<th>Group</th>
<th>Parameters</th>
<th>Right Eye</th>
<th>Left Eye</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Anterior KS</td>
<td>44.5604</td>
<td>44.1885</td>
<td>0.125</td>
</tr>
<tr>
<td></td>
<td>Anterior KF</td>
<td>42.9041</td>
<td>42.6296</td>
<td>0.088</td>
</tr>
<tr>
<td></td>
<td>Anterior Avg K</td>
<td>43.7315</td>
<td>43.4052</td>
<td>0.060</td>
</tr>
<tr>
<td></td>
<td>Posterior KS</td>
<td>-6.2838</td>
<td>-6.2488</td>
<td>0.169</td>
</tr>
<tr>
<td></td>
<td>Posterior KF</td>
<td>-5.9267</td>
<td>-5.9333</td>
<td>0.834</td>
</tr>
<tr>
<td></td>
<td>Posterior Avg K</td>
<td>-6.1033</td>
<td>-3.7633</td>
<td>0.232</td>
</tr>
<tr>
<td>Keratoconus</td>
<td>Anterior KS</td>
<td>51.7475</td>
<td>52.0425</td>
<td>0.862</td>
</tr>
<tr>
<td></td>
<td>Anterior KF</td>
<td>46.7194</td>
<td>47.3750</td>
<td>0.618</td>
</tr>
<tr>
<td></td>
<td>Anterior Avg K</td>
<td>49.2319</td>
<td>49.7081</td>
<td>0.742</td>
</tr>
<tr>
<td></td>
<td>Posterior KS</td>
<td>-7.5500</td>
<td>-7.6156</td>
<td>0.877</td>
</tr>
<tr>
<td></td>
<td>Posterior KF</td>
<td>-6.7856</td>
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<tr>
<td></td>
<td>Posterior Avg K</td>
<td>-7.1688</td>
<td>-7.2444</td>
<td>0.835</td>
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DISCUSSION:

Corneal topography is a non-invasive technique for mapping the corneal surface. There are Placido disk type horatometers and the Scheimpflug type Horatometers for corneal topography (8,9,10). Hashemi et al in 2015, conducted a study that showed greater difference in Ks and Kf in those with Keratoconus (11). This difference can be enhanced in those with greater astigmatism because of poor fixation while the procedure is being conducted (12). The Scheimpflug camera’s results were more accurate as compared to the Placido disk (13).

In our study we compared the Ks, Kf and average K between the normal eyes and also between eyes with keratoconus. The difference between the two sets of eyes was insignificant. But when the comparison was between the normal eyes and those with keratoconus there was difference.

In a study by Hung-Yuan Lin et al in 2017, topography readings by verion and 4 devices were compared. Kf, hs and AVE.K were found to be comparable when recorded by Verion and Lenstar, AL-Scan and KR-8800. But the differed when Verion and OPD III were considered (14). Detecting keratoconus
Comparison of Corneal Topography in Normal & Eyes with Keratoconus in Pakistani Population

is essential as it can be a disaster if refractive procedure is done on such patients. Topography is very helpful in this context. Differences in reading between the eyes on topography or pachymetry can indicate keratoconus. The difference can be at the thinnest points while the other topographic parameters may be normal. This might not be easy to pick (15).

CONCLUSION:
The Ks, Kf and AvK when compared in between the normal eyes came out to be the same. Also when eyes with keratoconus were compared for the same parameters, there was no significant difference except in 3 eyes for Ks and 2 eyes for Kf. Therefore the eyes with keratoconus were predisposed bilaterally. This was reported for the Pakistani population. The sample size is small in this study and we will continue our study to have a larger sample size.

REFERENCES:
Atypical Retinoblastomas

M. Naeem Khan FCPS¹ Afzal Qadir FCPS² Nazli Gul FCPS³
Maria Sultan FCPS⁴, Nasreen Laiq FCPS⁵, Prof Nasir Saeed FCPS⁶.

ABSTRACT
Objective: The aim of the study is to determine atypical and unusual presentation of retinoblastoma seen in our institution.
Study design: A retrospective case series.
Place and duration of study: The study was carried out in the Department of Clinical Ophthalmology, Hayatabad Medical Complex (HMC) Peshawar form January 2010 to December 2016.
Patient and Methods: A retrospective analysis of records of patient having retinoblastoma who were admitted during the study period was carried out. Thorough history points and clinical findings of the patients were recorded in a predesigned comprehensive proforma. Age, gender, presenting features in atypical retinoblastoma patients, laterality and duration of involvement were documented.
Result : Two hundred and twenty seven (227) patients were admitted and were diagnosed as retinoblastoma during this period. Mean age of presentation was 40 months. Fifteen (6.6%) patients out of 227 had unusual presentation and were labeled as atypical retinoblastoma. Among these cases with atypical presentation with orbital and ocular inflammation 2.2% endophthamitis 1.7%, hyphaema 0.9%, complicated cataract (0.45%), glaucoma with hazy cornea (0.45%) and phthisical eye in 0.45% cases.
Conclusion: Retinoblastoma can present in unusual ways, like orbital cellulitis, uveitis; ophthalmologists should have a high index of suspicion for retinoblastoma in cases which are un responsive to conventional therapy.
Key Words: Retinoblastome, Atypical

INTRODUCTION
Retinoblastoma is the most common malignant eye tumor of childhood and the second most common primary intraocular malignancy of the eye¹. Scottish surgeon Wardrop first recognized retinoblastoma as discrete tumor and his astute observations were published in 1809 ². The term retinoblastoma was proposed by Mawas in France in 1924 ³. The Classic presenting signs of retinoblastoma are leukocoria and / or strabismus but it can present in some rare and unusual patterns as well. Atypical retinoblastoma can masquerade as any ocular or orbital disease. It can mimic panophthamitis, endophthalmitis, conjunctivitis, orbital cellulitis or preseptal cellulis due to inflammation secondary to necrosis. At the same time it may present as an anterior segment disease in the form of uveitis, hypopyon, hyphaema, iris neovascularization or secondary glaucoma. Cataract may be present due to lens involvement. Granulomatous uveitis can occur due to diffuse inflammation.

Retinoblastoma can present in unusual ways like orbital cellulitis or uveitis; ophthalmologists should have a high index of suspicion for retinoblastoma in cases which are unresponsive to conventional therapy.

On one hand it can present as secondary glaucoma, neovascular glaucoma and on other it may present as phthisis bulbii. In atypical cases, there is difficulty in diagnosis because of various reasons like poor visibility of fundus due to anterior chamber exudates, vitreous hemorrhage or inflammation. Another factor causing confusion in diagnosis is the fact that most of these diffuse retinoblastomas do not show calcification on X-ray or ultrasound. Histologically these tumors diffusely invade the retina without forming a discrete tumor mass. Atypical presentation of retinoblastoma is a diagnostic dilemma. It delays the diagnosis and treatment and also worsens the prognosis. The aim of this study is to share our experience of unusual presentations of retinoblastoma at our institution.
METHODS:
This is a retrospective study conducted at the Department of Ophthalmology, Hayatabad Medical Complex, Peshawar. Records of patients diagnosed as retinoblastoma were reviewed from January, 2010 to December, 2016. The clinical features (symptoms and sign of patients at presentation were reviewed. Age, gender, laterality, duration of involvement, ocular, systemic and family history were documented. Details of oculomotor examination including visual acuity, lid and conjunctival examination, corneal condition (corneal diameters, corneal clarity or haze) anterior chamber status (hyphaema, hypopyon, cells, flare, exudates), lens clarity, intraocular pressure, fundus visibility, and signs of inflammation were noted. Details of any other pathology like vitreous hemorrhage from the mass, retinal detachment and exudation were documented.

The results of investigations carried out were reviewed. Presence or absence of calcification on ocular ultrasonography, CT scan or MRI was noted. Any extension of tumor on radiological studies was noted. Histopathology results were studied for presence or absence of retinoblastoma, necrosis, calcification within the tumor and involvement of other ocular or orbital structures.

RESULTS
Duration of this study was from January 2010 to December 2016, During this period, 227 patients were admitted for retinoblastoma. Medical record of these patients were reviewed. Fifteen (6.6%) out of these patients had presenting with atypical retinoblastoma, where it was considered as differential diagnosis in 7 cases while in remaining 8 cases it was not suspected at the time of initial examination and admission. Nine (3.9%) patients were male and 6 (2.6%) were female. Age of patients ranged from 13 months to 72 months (mean=40 months). Five patients had bilateral involvement. In bilateral cases, second eye had small lesion which was discovered later during examination under general anesthesia. None of the patients had a positive family history for retinoblastoma.

Out of 227 retinoblastoma patients, 167 (73%) of patients had leukocoria, 26 (11.45%) had proptosis with congested eye and 19 (8.37%) had strabismus with other accompanying sign. All these patients had clinically visible tumor lesion on fundus examination. A provisional diagnosis of retinoblastoma was made in these patients which was confirmed after investigations.

Fifteen patients (6.6%) had unusual presentations. These included orbital and ocular inflammation i.e orbital cellulitis and uveitis in 5 (2.2%), endophthalmitis in 4 (1.7%) of the patients, hyphaema in 2 (0.9%) of the patients, complicated cataract, glaucoma with large hazy cornea, corneal blood staining due to traumatic hyphaema and soft phthisical eye each in one (0.45%) patients. Other unusual accompanying features included secondary glaucoma in 3 (1.3%) patients, pre-septal cellulitis, corneal edema, pseudo-hypopyon each in 2 (1%) patients, while irisi nodules, irisi neovascularization and exposure keratopathy each in one (0.45%) of the patients.

Imaging studies revealed tumours with calcification only in 8 (3.5%) patients while 7 (3%) patients had no definite calcification. All 15 patients under enucleation and histopathology results confirmed retinoblastoma in all the patients. Four (1.8%) patients has optic nerve invasion beyond point of resection and they underwent adjuvant chemotherapy.

DISCUSSION:
Previous studies have shown different figures regarding incidence of atypical retinoblastoma. A study by Materin et al has concluded that such atypical cases constitute less than 15% of all cases. Another study had reported frequency of 3.3%. In our study we found a frequency of 6.6%. Mean age at presentation of our study patient was 40 months, which is higher than the average of 18 months at which most cases of retinoblastoma are diagnosed. This may be due to late presentation or delay in diagnosis due to poor and inaccessible eye care services in our community.

Unusual cases of Retinoblastoma (n=227)

<table>
<thead>
<tr>
<th>Presenting features</th>
<th>n</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>No of cases with endophthalmitis</td>
<td>15</td>
<td>6.6</td>
</tr>
<tr>
<td>Orbital cellulitis and uveitis</td>
<td>5</td>
<td>2.2</td>
</tr>
<tr>
<td>Endophthalmitis</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>Hyphaema</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td>Complicated cataract</td>
<td>1</td>
<td>0.45</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>1</td>
<td>0.45</td>
</tr>
<tr>
<td>Corneal staining</td>
<td>1</td>
<td>0.45</td>
</tr>
<tr>
<td>Phthisical eye</td>
<td>1</td>
<td>0.45</td>
</tr>
</tbody>
</table>

%= percentage, n = no of case
Atypical Retinoblastomas

In our study we encountered orbital and ocular inflammation (orbital cellulitis and uveitis) in 2.2% cases. Its reported incidence is 0.2% to 4.8%. 9 The pathogenesis of retinoblastoma associated with orbital inflammation is not known, but an immune mediated response generated by necrotic tumor by-products, especially in the region of the ciliary body, iris or trabecular meshwork is suggested to trigger the inflammatory response. Feature, a definite correlation has been found between orbital cellulitis and the presence of advanced tumor of the anterior chamber, which support this hypothesis. 9

The presence of extra ocular inflammation in retinoblastoma due to orbital cellulitis may lead to an erroneous interpretation by the radiologist of associated extra ocular spread. Retinoblastoma can also present as endophthalmitis. Previous studies have also documented this fact. A study by Raina et al has 0.4% incidence of such cases. 10 In another study this incidence was 1% and in these cases viterectomy was performed for endophthalmitis ultimately realizing that these eyes were having retinoblastoma. 11 A recently published study has documented 1% frequency among retinoblastoma cases. 12 However in our study we encountered an incidence of 1.7% of cases, who presented with endophthalmitis.

Patients with retinoblastoma can present with hyphaema. Sometimes parents of child will give history of trauma of fall in such cases and makes the diagnosis further confusing. Hyphaema in eye due to retinoblastoma may be due to iris neovascularization or due to tumor itself. In a study by Shields et al, author had suggested that in all unexplained hyphaema cases in children, retinoblastoma should be suspected. 13 In our study, there was hyphaema in 1% cases probably due to mixed mechanisms. Phthisis bulbi is an unusual presenting sign of retinoblastoma and may be due to a delay in diagnosis. Phthisis bulbi is an unusual presenting sign of retinoblastoma and may be due to a delay in diagnosis. 14 The possible cause may be an ocular inflammatory episode related to intraocular infarction. In our study 0.4% cases presented with phthisis bulbi.

From our study and review of literature regarding atypical presentation, it can be concluded that retinoblastoma can present in many unusual ways, apart from its usual signs. 14 15 The treating ophthalmologist should retain a high index of suspicion for retinoblastoma in all children with various intraocular pathologies, even those who present with atypical signs or at a relative advance age which may look unusual for retinoblastoma. To add further all clinical ophthalmologists should entertain the possibility of an ocular tumour whenever they note an ocular entity that is unresponsive to conventional therapy. In such a situation, the appropriate diagnostic investigations should be performed to rule out an ocular tumour.

CONCLUSION:

Retinoblastoma can present in unusual ways, like orbital cellulitis, uveitis; ophthalmologists should have a high index of suspicion for retinoblastoma in cases which are un responsive to conventional therapy.

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Visual Outcome in Cataract Patients undergoing Phacoemulsification with greater than 23 mm of Axial Length

(A study report)

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Ashiq Hussain MBBS3

ABSTRACT

Background: A cataract is a dense, cloudy area that forms in the lens of the eye. About 2 million people are blind in Pakistan. Phacoemulsification is most popular method for treatment of cataract. This technique requires a small incision and surgery is suture less. This equipment is very expensive.

Objective: To investigate the visual outcome for cataract patient undergoing phacoemulsification in eye with greater than 23mm of axial length.

Material and Method: It was a cross sectional study. Cluster sampling technique was used to recruit in the sample. Visual acuity was assessed at a distance of 6 meters of both eyes separately. Then pinhole test was conducted to differentiate the cause of decrease vision. In case of cataract vision was not improved. Keratometric reading of the cornea was measured and the difference of k-reading was taken as astigmatism. Auto Refactor (AR) for total refractive power of the eye was used. Biometry was done for measuring axial length of eyeball. This procedure will be conducted before and after surgery to see the visual outcome after surgery. Data was analyzed with SPSS version 17.

Results: From selected 1-50 patients of cataract 32 patients (64%) have visual outcome of visual acuity is 6/6-6/9 after phacoemulsification. Maximum visual acuity with pin hole after phacoemulsification is 78 % (39) is 6/6-6/9. Maximum astigmatism after phacoemulsification is 44 % (22) 1.00-2.00D. Maximum axial length after phacoemulsification is 24 % (12) 23.00-24.00mm. Maximum IOL power is 22 % (11) have 16.01-17.00D.

Conclusion: it is concluded that axial length 23-25mm do not cause refractive error of asymmetry in eyes.

Keywords: Visual acuity (VA)

INTRODUCTION:

Cataracts have been known to mankind for centuries. A cataract is a white or cloudy patch that develops in the eye lens, reducing the amount of light that passes through it and leading to blurred vision. The word cataract comes from the Latin word “cataracta” meaning waterfall, with the condition possibly therefore named after the white appearance of rapidly running water. The earliest documented case of cataract was reported to be in a museum in Cairo that houses a small statue from the 5th dynasty. The wooden statue of a priest reader clearly has a white patch carved into

the pupil of the left eye, and is thought to represent a cataract.

An increase in axial length like 28mm in phacoemulsification can cause greater asymmetry between eyes and postoperative anisometropia. Axial length range 23-25mm do not cause any asymmetry between eyes or any other issue like refractive error in postoperative eyes.

The evolution of smaller surgical incisions was matched by the development of new lens implants created out of different materials (such as acrylic and silicone) that could be folded to allow the lens to be inserted through a tiny wound. At the present time, commercially available lenses can be inserted through wounds a little over 2 mm. cause the dislocation. The most significant change marked by the modern era was the introduction of phacoemulsification surgery in 1967 by Dr. Charles Kelman[19]. In this technique,
visual outcome in cataract patients undergoing phacoemulsification with greater than 23 mm of axial length

ultrasonography is used to break the lens into minute fragments that can be aspirated. A combined ultrasonographic, irrigation, and aspiration hand piece allows the removal of any lens through a small incision. This revolutionized the performance of surgery, leading to smaller and smaller wounds. Today, routine wounds are <3 mm long, and 1 mm wounds are on the horizon. Lenses are manufactured in a variety of different optical powers. Prior to surgery, patients undergo a series of measurements determining the optical length of their eye and the focusing power of their cornea to determine what will be the optimal intraocular lens power for them. The majority of the lenses currently implanted in North America are monofocal with a power chosen to restore good distance vision. This usually still leaves the patient dependent on glasses for reading. Cataract surgery aim to rehabilitate blind person by restoring their eyesight so that their quality of life and ability to function are return to normal. The outcome of cataract surgery for an individual is best. Outcome can be measured simply as the visual acuity in the operated eye or in the patient and ability to function, quality of life and economic rehabilitation service. (Mohan, 1996)

To review surveys published within the last year concerning the prevalence of cataract blindness, rates of cataract surgical coverage and visual outcomes of cataract surgery in various developing countries, and to review recent studies that compare the different cataract surgical techniques used in developing countries.

Material and Methods
A cross sectional study was conducted at the Department of “EYE OPD FMH College of Medicine & Dentistry, Shadman Lahore. A sample of 50 patients was taken through Cluster sampling technique. Duration of study was 6 months from September 2014 to March 2015.

Inclusion criteria: Cataract, Phacoemulsification surgery, antero-posterior length of eyeball greater than 23 mm Age above 40 years

Exclusion Criteria: Extra capsular cataract extraction, intra capsular cataract extraction, antero-posterior length of eyeball is less than 23 mm, traumatic patients

Visual acuity was assessed at a distance of 6 meters of both eyes separately. Then pinhole test was conducted to differentiate the cause of decrease vision. In case of cataract vision was not improved. Keratometeric reading of the cornea was measured and the difference of k-reading was taken as astigmatism. Auto Refactor (AR) for total refractive power of the eye was used. Biometry was done for measuring axial length of eyeball. This procedure will be conducted before and after surgery to see the visual outcome after surgery. Data was analyzed with SPSS version 17.

Results
From selected 1-50 patients of cataract 42 % (21) had age group is 40-50 years. 36 % (18) had age group is 51-60 years. 12 % (6) had age group is 61-70 years. 10 % (5) have age group is 71-80 years. From selected patients of cataract 60 % (30) had Male. 40 % (20) had female. From selected patients of cataract 10 % (5) pre-operative had visual acuity 6/6-6/9. 8 % (4) had visual acuity 6/12-6/18. 20 % (10) patients had visual acuity 6/24-6/36. 62 % (31) had visual acuity 6/60-<6/60.

Graph:1 Visual acuity of preoperative cataract patients

About 2 million people are blind in Pakistan - estimated Pakistan’s population is112.226 million22. Various conditions responsible for blindness are: Cataract 66.7% 1.33 million (WWW.Madicinet.com, 2012)
Visual Outcome in Cataract Patients undergoing Phacoemulsification with greater than 23 mm of Axial Length

From selected patients of cataract 64.00% (32) having visual outcome post-operative had visual acuity 6/6-6/9.32 % (16) had visual acuity 6/12-6/18.4 % (2) patients had visual acuity 6/24-6/36. Nothing had visual acuity 6/60<6/60.

From selected patients of cataract 50 % (25) pre-operative had astigmatism<1.00D 32% (16) had astigmatism 1.00-2.00D. 12 % (6) patients had astigmatism 2.25-3.00D. 6 % (3) had astigmatism 3.25-4.00D. 40 % (20) post-operative had astigmatism<1.00D. 44% (22) had astigmatism 1.00-2.00D. 12 % (6) patients had astigmatism 2.25-3.00D. 4 % (2) had astigmatism 3.25-4.00D.

In our study minimum age was 44 year and maximum age group is 77 year.

In our study 50 patients of cataract 10 % (5) pre-operative had visual acuity 6/6-6/9.8 % (4) had visual acuity 6/12-6/18.20 % (10) patients had visual acuity 6/24-6/36. 62 % (31) had visual acuity 6/60-<6/60. 50 patients of cataract 64.00% (32) had visual acuity 6/60<6/60.

Post-operative IOL power of Cataract patients:
From selected 1-50 patients of cataract 60 % (30) were male. 40 % (20) were female. Another study was conducted in June 2008 and March 2009 at the Eye & ENT Hospital, Fudan University, China by Fang, Yameen; Lu, Yi; Miao, Aizhu; Luo, Yi. This prospective study included 33 eyes of 22 cataract patients (12 males and 10 females) (Miao, 2014)

In our study minimum age was 44 year and maximum age group is 77 year. Another study was conducted A series of selected outpatients were examined by Malik, A.R; Qazi, Z.A; Gilbert, C. who had undergone cataract surgery in the preceding 24 months. The 181 patients aged 45-82 years were examined. (Malik Q. &., 2003)

DISCUSSION:
From selected 1-50 patients of cataract 10 (5) pre-operative had visual acuity 6/6-6/9.8 % (4) had visual acuity 6/12-6/18.20 % (10) patients had visual acuity 6/24-6/36. 62 % (31) had visual acuity 6/60-<6/60. 50 patients of cataract 64.00% (32) had visual acuity 6/60<6/60. Another study was conducted Malik, A.R; Qazi, Z.A; Gilbert, C. with phaco with IOL in 71.8% (28).(Gilbret, 2003)

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length 23.00-24.00 68% (34) had axial length 24.01-25.00. 6
%(3) patients had Axial length 25.01-26.00. 2% (1) had
axial length 26.01-30.00. 2% (1) had axial length >30.00.
24% (12) post-operative had axial length 23.00-
24.00. 66% (33) had axial length 24.01-25.00. 6% (3)
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study was conducted June 2008 and March 2009 at the
Eye & ENT Hospital, Fudan University, China by Fang,
Yameen; Lu, Yi; Miao, Aizhu; Luo, Yi. Patients were
divided into two groups according to their ocular axial
length. Those with an axial length longer than 28.0mm
were included in the extreme myopia group,(Miao,
2014)

In our study 10 % (5) pre-operative had IOL
power <15.00D. 16% (8) had IOL power 15.00-16.00D.
18% (9) patients had IOL power 16.01-17.00D. 14% (7)
had IOL power 17.01-18.00D.26% (13) had IOL power
18.01-19.00D.6 % (3) had IOL power 19.01-20.00D.10
%(5) had IOL power >20.01D. 10% (5) post-operative
had IOL power <15.00D. 16% (8) had IOL power 15.00-
16.00D. 18% (9) patients had IOL power 16.01-17.00D.
14% (7) had IOL power 17.01-18.00D.26% (13) had IOL
power 18.01-19.00D.6% (3) had IOL power 19.01-
20.00D.10% (5) had IOL power >20.01D

Another study was conducted in London according to
this study The difference in axial length was 0.3 mm or greater in 331 patients (24%). Axial
length asymmetry between eyes increased with an
increase in axial length in the index eye (P<0.001). The
95th percentile of the axial length difference was 0.5
mm when the longer eye was 22.0 mm or less and 4.0
mm when it was 28 mm or greater. There was also
an increase in postoperative anisometropia with
increasing axial length (PZ.003). The median was 0.34
D (interquartile range [IR], 0.25-1.11) when the longer
eye had an axial length of less than 28.0 mm and 0.66 D
(IR, 0.16-0.66) when the longer eye had an axial length
of 28.0 mm or more. In left eyes, there was an increase
in biometry prediction error with an increase in axial
length (PZ.006).

According to another study The reduction in IOP and the decrease in AEL after trabeculectomy
were significant after 6 and 12 months post-surgery (p
< 0.001 each). The decrease in AEL was 0.42±0.11% at
6 months after surgery and 0.40±0.13% after 12 months
from surgery; this decrease in AEL was comparable
between the groups. The refractive outcome was
significantly different between the groups (group A:
0.35±0.75 DPT, group B: −0.05±0.36 dpt, p = 0.018); in
group A, trabeculectomy caused a hyperopic shift of
0.34±0.44 dpt (p = 0.002) at 12 months post-surgery.

CONCLUSION:

It is concluded that an increase in axial
length like 28mm in phacoemulsification can cause
greater asymmetry between eyes and postoperative
anisometropia axial length range 23-25mm do not
cause any asymmetry between eye and any other
issue like refractive error in postoperative eyes.

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Penetrating Pediatric Eye Trauma

M. Naeem Khan FCPS¹ Afzal Qadir FCPS² Nazli Gul FCPS³⁴
Maria Sultan FCPS⁴, Nasreen LaiqFCPS⁵, Prof. Nasir Saeed FCPS⁶.

ABSTRACT

Purpose: To analyze the aetiological factors and management of penetrating ocular injuries in children.

Methodology: A retrospective observational study designed to review the data of the patients admitted with penetrating ocular injury from Jan 2013 to December 2016 in Ophthalmology Department Hayatabad Medical Complex Peshawar.

Results: Out of 329 children with penetrating injuries 221 (67.2%) were males and 108(32.8%) were female. The mean age was 6.8 years; the youngest was of 7 months while the oldest was of 12 years. wooden piece /stick was the common object causing penetrating injuries in 101(30.7%) children and household pair of scissors was the second common object penetrating the globe in 51(15.5%) patients and a rare object i.e. bird beak was causative agent in 7 cases (2.12%). Majority of the patients 169(64.25%) were received with poor visual acuity of CF-NPL, 63(23.5%) children had visual acuity of 6/24-6/60 at presentation and 31(11.78%) patients had a visual acuity of 6/18-6/6, whereas visual acuity could not be assessed in 66(20%) cases. only 8 patients with sealed perforation were managed conservatively and the remaining 321(97.6%) required surgical intervention.

Conclusion: Penetrating ocular trauma is the commonest cause of unilateral low vision in children. It need a multifaceted approach right from the beginning regarding awareness for its prevention and establishment of specialized units for its management.

INTRODUCTION:

Penetrating eye injuries are a leading cause of unilateral non-congenital visual loss. Children account for up to 50% of all ocular traumas¹⁻⁷, thus representing the highest incidence. Most penetrating ocular injuries in adults seem to be preventable with existing protective devices, those in children are often unforeseen and situation of potentially greater risk are less predictable⁸. Identifying underlying an etiological factors, place of injury and the environment in which they sustain injury (supervised/unsupervised) may allow us to take effective preventive measures to reduce the incidence of such injuries in children. Epidemiological data pertaining to childhood penetrating eye injuries in developed countries have been published ⁹⁻¹². But there are a few studies on this situation in developing countries.
Penetrating Pediatric Eye Trauma

verity of wound. Complication as those found on initial examination or which developed later on were recorded. Surgery was performed under general anesthesia.

After exploring the extent of wound, corneal lacerations were stitched with 10/0 nylon sutures and sclera laceration with 6-0 or 7-0 Vicryl sutures. The lens was removed if lens damage with free lens matter in anterior chamber was present but no intraocular lens was implanted at the time of initial repair.

Prolapsed uveal tissue or vitreous was reduced or excised. Secondary procedures such as vitrectomy, lens aspiration or IOL implantation were performed later, when needed. Visual acuity was measured at presentation before surgery and whenever possible with reference to the patient age and collaboration during examination. Final Visual acuity was defined as the most recently recorded best correct visual acuity of patients either discharged from follow up or absent from further examination for more than six months.

RESULTS

Out of 8200 total admissions in this period 329 were children presenting with penetrating trauma to their eyes. The mean age of our patients was 6.8 years ranging from (7 months-12 years). The male to female was nearly 2:1 (Fig.I). At first presentation it was possible to determine the visual acuity of 263 (79.9%), of these (64.25%) had a poor visual acuity of counting fingers to no perception of light. Only 31 patients (11.78%) had a good visual acuity of 6/18-6/6. (Fig-II)

The causative agents were divided into groups where seven or more similar causes were identified. Piece of wood or wooden stick were the single most common object accounting for 30.7% of all causative objects (Table II). Injuries from wooden pieces frequently occurred when children played different games in different communities at different stages of their age.

House hold pair of scissors and toys was also a frequent object causing ocular injuries in 15.5% and 13.5% of children respectively. Majority of them received trauma while mending their broken toys or observing their parents in domestic work. Bird beak was an unusual cause of injury to the eyes of kids (2.12%). It happened with children under the age of 5 years and thus sustained these injuries while sitting in a bed or on ground and looking at pet birds in the absence of a caretaker.

Visual Outcome: At initial examination it was possible to obtain visual acuity in 263 (79.9%) children. 169 (64.25%) of these had a poor visual acuity of <6/60 to no perception of light. The final visual Acuity outcome was over all good. 103 (41.3%) patients showed a visual acuity of 6/18 or better. Small linear and clear corneal penetrating injuries were associated with favorable outcome. Severe mixed corneo-scleral lacerations had the worst outcome due to phthisis bulbi.

Considering severity of penetrating injuries the presence of lens involvement was associated with poor visual outcome (Table I). Out of 58 (17.62%) patients with traumatic cataract only 22% retained good visual acuity of 6/6-6/18. As expected in accordance with severity of injury severe visual impairment and blindness was caused by the presence of retinal detachment and vitreous prolapse. Other complicating factors such as glaucoma (9.42%) and endophthalmitis (4.0%) also contributed to poor visual outcome. Amblyopia was associated with corneal scarring, anisometropia astigmatism and delayed secondary procedure like traumatic cataract, vitreous hemorrhage or retinal detachment.

Table I Complications

<table>
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<tr>
<td>Retinal Detachment</td>
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Table II Objects leading to Trauma

<table>
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<tr>
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<td>7.29</td>
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<tr>
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<td>2.12</td>
</tr>
<tr>
<td>Denied</td>
<td>04</td>
<td>1.21</td>
</tr>
</tbody>
</table>
DISCUSSION

In Pakistan children under the age of 15 years account for 45% of the total population. The male preponderance is a common feature in our study. The male to female ratio is almost 2:1 which is the lowest reported in the literature. In developed countries the ratio is highest i.e.4:1 and 5:1. This difference may relate to differences in the playing environment, playing object and socioeconomic status. In developing countries boys and girls tend to engage more or less in similar outdoor activities, often material from natural environment, such as stones and pieces of wood are used in playing. It is not unusual for small children to be playing in the reach of hazardous objects such as pair of scissors, glass and knives. In particular small children are often allowed to observe adult activities such as wood chopping or when their mothers are sewing, that could pose a risk to them. This suggests a general lack of awareness or even neglect with regard to the dangers that certain objects and activities represent for children.

Vast majority of injuries (>75%) occurred while the children were unattended. The absence of an adult is of great concern and has been reported to occur mainly in lower socioeconomic strata. Adults’ supervision has been found to be of paramount importance in preventing these accidents, so there is an enormous need for Primary Prevention Programs targeting parents and care givers in developing countries. However lack of supervision in not restricted to developing countries as has been pointed in studies from the western world.

The final visual outcome on the whole were encouraging as 103(41.36%) out of 249 eyes whose final visual acuity was recorded, retained a vision of 6/6-6/18. Interestingly, delay of attendance was not associated with an unfavorable outcome if no infection occurred. Initial visual acuity was not found to be a prognostic indicator of final visual outcome in this study as 169(64.2%) out of 263 whose presenting visual acuity was recordable had a poor presenting visual acuity of counting finger no perception of light, while only 53(21.28%) out of 249 had a final poor visual acuity of counting finger and no perception of light. This is in contrast to findings of some previous studies of penetrating eye injuries.

Several factors may account for this difference, including less accurate assessment of initial visual acuity of an anxious child and the presence of marked corneal edema, traumatic uveitis or traumatic cataract with delay of initial presentation. The indicators of the poor visual outcome identified here are similar to those identified by other studies compromising length of wound, mixed corneo-scleral lacerations, involvement of lens and posterior segment. Young children who sustain ocular injury are more prone to developing amblyopia. However poor visual outcome was more related to severity of the injury rather than to the age of the patients or delay in attendance.

CONCLUSION

In this study it was observed that home and play areas in their vicinity are not safe places for children to play in this part of the world, that parental supervision is insufficient and that the games and toys available are fraught with potential dangers. For Prevention, parents and caregivers need education in making the home environment safer for children. Increased and more care full supervision is of great value in preventing eye injuries in children. Observation of dangerous adult work, easy access to sharp objects and potentially hazardous games with wood stick and other sharp object. It will be desirable to introduce less dangerous and cheaper games for the children of under privileged class.

An educational campaign should emphasize specific dangers and avoiding devastating effects of ocular injuries in children and be addressed to parents, teachers, community workers and medical personnel in primary health care units.

REFERENCES

Low Vision associated with Diabetes in Older People

Nizam M. Darwesh, MD, MSc, PhD¹ Prof. Mike Cook, Ph.D².
Irshad Ahmad Ph.D., (Bio)³, M. Naeem FCPS⁴.

Objective: To examine the quality of care given to older people with low vision associated with diabetes.

Material and Methods: Search was started from the latest available papers, we searched Pub Med, Ovid MEDLINE, EMBASE, Allied and Complimentary Medicine Database (AMED) and International Pharmaceutical Abstract databases (IPA), International Diabetes Federation (IDF), Diabetes UK and American Diabetes Association (ADA), only the relevant papers on low vision and diabetes were reviewed.

Results: The results found that many older people had the perception that low vision was a normal ageing process and could not be rectified. The study also found unavailability of training, absence of knowledge and awareness on low vision associated with diabetes.

Conclusion: In order to identify preventable or treatable low vision associated with diabetes, everyone concerned should be able to recognise the signs and symptoms of preventable low vision.

Key words: Low vision, diabetes training, visual impairment, older people.

INTRODUCTION:

Diabetes mellitus is a metabolic disorder¹² also considered to be chronic inflammatory/autoimmune disease ³⁴⁵, diabetes is caused by a deficiency of the hormone insulin which is normally secreted by the pancreatic beta cells ²⁶. The insulin hormone is responsible for the uptake of glucose from the blood, mainly into muscle and fat cells of the body, as well as inhibiting hepatic glucose production⁶⁷.

Low vision associated with diabetes in older people is becoming a growing problem. Value of HbA1c less than 7% is recommended for diabetes care. However, to achieve this goal, pharmacological treatment alone is insufficient; education and awareness is also needed. Availability of training, resources, educational toolkits and teaching materials are vital areas for action. It is also notable that more qualitative and quantitative researches are needed on low vision of diabetes in older people. This silent problem must be taken seriously in order to improve the quality of life.

Diabetes has two main types, Type 1 and Type 2, and there are other specific types including gestational diabetes mellitus¹. 90-95% of the total diabetes population suffer from Type 2 diabetes, followed by Type 1 at approximately 5-10%⁹¹⁰. Type 1 diabetes is categorised by the destruction of β-cells, which is due to a cascade of autoimmune pathways and non-auto-
immune forms leading to absolute insulin deficiency. Individuals with Type 1 diabetes need to be treated with insulin, whereas Type 2 diabetes is depicted by inefficient secretion of insulin. Insulin helps cells in the body to uptake glucose from around the extracellular space to the intercellular space. A large scale, longstanding and randomized sampling study launched by the Diabetes Control and Complications Trial (DCCT) aimed to give diabetes care a clearer goal by showing that lower HbA1c could benefit the prevention of long-term complications. Furthermore, a number of studies have demonstrated

Chart 1 Logmar Eye Chart

“Low vision is defined by WHO as measures of visual acuity and/or visual field. Visual acuity less than 6/18 (20/60) and equal to or better than 3/60 in the better eye with the best correction or visual fields less than 20 degrees in diameter.”

Figure 1 Classification of low vision
and showed similar results finding a convincing relationship between the values of HbA1c and long-term complications for both types of diabetes \(^{47,13}\). Additionally, ten years of data from the UK Prospective Diabetes Study Group found a detailed association amongst elevated levels of blood glucose and other complications, and specified that for each 1% decrease in glycaemia, through the measurement of glycosylated haemoglobin (HbA1C), led to a decrease in mortality of 14%, myocardial infarction 1%, and diabetes related death 37%\(^{14,15}\). Subsequently, each 1% rise of HbA1c is related to a 7% increase in the cost of healthcare. As a result, maintenance of HbA1c levels below 7% has become the gold standard in the care of diabetes \(^9,16\), and several health-care professionals impose stricter thresholds of less than 6%\(^9\). However, as strict regulation of blood glucose levels are adopted, there is a two to three fold increase in the risk of hypoglycaemia compared to those who do not regulate blood glucose levels \(^{10,12}\). Maintaining blood glucose levels in the normal range to prevent hypoglycaemia is challenging. Therefore, the management of diabetes must include pharmacological and non-pharmacological factors such as physical exercise, diet, and smoking cessation \(^{17}\).

Low vision or visual impairment can be considered to be a clinical condition \(^{18,19,20}\). The quality of daily life can be affected by low vision, including day to day tasks such as recognising people’s faces, reading, watching television, walking, and writing. Low vision is described as a drastic reduction in the function of the eyes\(^{21}\) but not complete blindness. Low vision can occur when the eye is unable to function adequately\(^{22}\). Visual function itself can be measured through distance visual acuity, and is conducted through the use of a letter eye chart at a specific distance. Visual acuity (VA) of 20/20 or 6/6 is considered to be healthy vision \(^{23}\) meaning people can see up to six metres or 20 feet. Patients are typically required to read letters from the eye chart. Generally, as the sight of an individual declines, fewer letters can be read from the chart, which leads to an increase in the second number i.e. 6/36\(^{24}\).

These two figures are the authors’ diagrammatic interpretation of the classification of low vision. Diabetes affects the tiny blood vessels of the eye and if they become blocked or leak into the retina, vision may be affected\(^{26,27}\). Diabetes also affects the larger blood vessels in the retina causing them to become blocked which can result in ischemia (deficiency of oxygen) in the retina; due to oxygen deficiency, neo-vascularisation will occur or new vessels will grow. These new blood vessels can grow on the surface of the retina and into the vitreous gel, as they are new and weak, and can bleed very easily over the surface of the retina or into the vitreous gel; this is the proliferative stage of diabetic retinopathy\(^{28,29}\). Uncontrolled blood sugar levels can affect the lens inside the eye and this can result in blurring of vision\(^{30}\). Diabetes also raises the probability of cataracts, which is characterised by clouding of the transparent lens within the eye \(^{29}\).

According to research 17.7% causes of blindness is diabetic retinopathy\(^{29,34}\). Statistics suggest that 4,200 of those individuals classed as blind are blind due to diabetic retinopathy, with the value increasing by 1,280 per annum \(^{32}\). After an individual is diagnosed with Type 1 diabetes, nearly all will develop some sort of retinopathy within twenty years \(^{20}\) with diabetes.

**MATERIAL AND METHODS:**

Search was started from the latest available papers, we searched Pub Med, Ovid MEDLINE, EMBASE, Allied and Complimentary Medicine Database (AMED) and International Pharmaceutical Abstract databases (IPA), International Diabetes Federation (IDF), Diabetes UK and American Diabetes Association (ADA), only the relevant papers on low vision and diabetes were reviewed.

Research on epidemiological data for the United Kingdom suggests that between 12-15% of people with diabetes aged 75 or over has visual acuity of less than 6/18 and they are ten to twenty times \(^{20}\) more at risk of going blind compared to those without diabetes\(^{35}\). Additionally, individuals with diabetes have a doubled risk of suffering from diabetic retinopathy, maculopathy, proliferative retinopathy, cataracts, glaucoma and age-related macular degeneration compared to other individuals, which are the common causes of low vision associated with diabetes in older people\(^8,32\).

**RESULTS**

It is estimated by The Office for National Sta-
tics and Age UK that the number of people who are over 60 is predicted to rise from 24.2% to over 29% by 2035; furthermore the number of people aged over 85 in the UK is predicted to more than double in the next 23 years to over 3.4 million, and nearly one in five people currently in the UK will live to see their 100th birthday. It is estimated that since 2013 the number of people aged 65 and over increased from 11.1 million to over 11.4 million by mid-2014. The number of older people continues to rise.

Due to the greater number of older people, it is challenging to predict the exact number of people affected by sight loss. There is a lack of research in this area and consequently it is somewhat difficult to predict the exact numbers of older people with sight loss. There have been suggestions that these variances occur due to three primary possibilities: general challenge in accessing eye health, a greater likelihood of people with diabetes ignoring vision loss due to lack of knowledge and finally, the co-morbidities associated with overweight people can also affect the associated risk of sight loss due diabetes. These three primary possibilities have a strong relationship with diabetes and there is therefore a 99% chance of low vision associated with diabetes in older people. However, there are a number of people with different levels of sight loss, and many do not have the knowledge or the power to act upon their concerns. The cost of low vision and blindness on society is approximately £4.1-8.8 billion a year, as estimated by the Royal National Institute of Blind People. Furthermore, RNIB have suggested that costs could be slashed by 50% if patients were to undergo regular eye tests to detect problems early. It is estimated that between £2-4.2 billion could be saved per year through routine eye testing. Each year nearly 310,000 patients, many of them who are older people with low vision associated with diabetes, are admitted to hospital with fractures. Furthermore, approximately 80,000 of the 310,000 older people who are admitted to the hospital have suffered a hip fracture.

It is estimated that osteoporotic fractures cost the UK £1.8 billion per year; of this cost £1.5 million is allocated to the Primary Care Trust. The failure to detect vision loss can lead to an increase in the number of falls and the result will be a heavier financial burden on the society. Individuals with vision problems are 1.7 times more likely to suffer from a fall compared to a person without a visual impairment. A policy statement released by the British Geriatrics Society and the College of Optometrists has highlighted the consequences of falls, as well as emphasising the advantages of the improvement of low vision in the people at risk of falling, particularly in older people. The costs for care of these falls is projected to be £269 million, and falls that are directly associated with low vision are estimated to cost in the region of £128 million.

It is widely appreciated that policymakers have implemented critical strategies to ensure that the older generation have access to health and social care when required, for example, the National Service Framework was introduced by the National Health Service, aimed at largely improving the services provided to the general public, with a particular focus on developing national standards and reducing inequalities in care. The strategy outlined the key principle of joined-up care, and the encouragement of interactions between different healthcare professionals within the health service to ensure that the best possible care is given to patients, as well as ensuring them independence, confidence and a good quality of life. Despite these strategies, there is no single strategy focusing on low vision associated with diabetes, which has increased the risk of falls and affecting their lifestyle as well as the costs incurred by the NHS.

Many researchers believe that educating older
Low Vision associated with Diabetes in Older People

people with diabetes is important \(^{46,50}\). We highly agree with this belief. However, we also believe that we may not be able to achieve the goals we want in educating older people. Due to their age and mental capability, they may find it difficult to understand medical terminology to remember information regarding their health problems\(^{10}\).

Our main goal and strength should be in educating the older people, general public, health professionals including health care assistants on low vision and diabetes, as the responsibility of health care transfers from individuals to the institution\(^{25,27,40}\). Being aware and understanding the disease is the key to preparing patients to manage their disease\(^{2,45}\), as poor controlled diabetes is associated with a lack of knowledge of diabetes \(^{10}\). One of the main barriers to providing good care to older people is the lack of knowledge and training for health professionals\(^{8}\). Most residential care home managers have no budget for staff training \(^{42}\). Very limited training is available for HCAs \(^{10,36}\). Within the health related training for HCAs, diabetes was only described in a few sentences and even these courses were not mandatory\(^{1,6,30}\).

**DISCUSSION:**

Many matters as the regions of distress and recognised in this study, are acknowledged as vital areas for action. Better access to eye testing services requires a satisfactory workforce, HCA training, and awareness regarding low vision and diabetes. There needs to be improvement in public accessibility, affordability and further research on low vision associated with diabetes. Improving systems and quality of care for low vision associated with diabetes will need system incorporation, involving the growth of referral paths for diabetes and low vision services, available for residential care homes.

Training and awareness for HCAs regarding low vision and diabetes will likely identify ways to improve early identification of eye afflictions and improve referral of people with low vision to appropriate services. Information regarding low vision associated with diabetes needs to be better communicated between health care assistants and eye health professionals, including residential care home residents.

This study has identified a number of topics that appear to play a contributory role, either alone or as part of a multi-factorial approach to the management and experience of low vision and diabetes in residential care homes residents. \(^{2,16}\)

**CONCLUSION**

Low vision associated with diabetes in older people is becoming a growing problem. With the increasing burden imposed on individuals, families and society, the improvement of low vision and diabetes education and awareness in order to reduce the consequences of low vision and diabetes is necessary. To reduce the occurrence rate of these consequences, a HbA1c value of less than 7% is recommended for diabetes care\(^{31}\). However, to achieve this goal, pharmacological treatment alone is insufficient; education and awareness is also needed.

This literature highlights that there has historically been a lack of awareness and knowledge about the health of the eye and the advantages of routine eye examinations in older people. \(^{10,32,46,29,40,50}\). Taking the above data into consideration, a number of key issues and barriers can be identified:

- Absence of knowledge and awareness of low vision and diabetes related health complications and indicators at all stages, predominantly in HCAs.
- The absence of awareness about eye health, formal sight examinations,
- The unavailability of training and resources for HCAs on eye health and diabetes.

Many of these matters as recognised in the literature as regions of distress, are acknowledged as vital areas for action:

- There are needs to educate the general public, health professionals including health care assistants about diabetes and eye health.
- Better access to eye testing services requires a satisfactory workforce stock, HCA training, and awareness regarding low vision and diabetes.
- Improving systems and quality of care for low vision associated with diabetes.
- To develop educational toolkits and teaching materials.

Training and awareness regarding low vision and diabetes will likely identify ways to improve early identification of eye conditions and to improve referral of people with low vision associated with diabetes to appropriate services. Information regarding low vision associated with diabetes needs to be better communicated between general public, health care assistants and
Low Vision associated with Diabetes in Older People

It is notable that more qualitative and quantitative researches needed on low vision and diabetes in older people, and more data needs to be obtained from focus group studies, interviews and surveys. Low vision associated with diabetes is classed as a silent problem, and must be taken seriously in order to improve the quality of life of older people.

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Comparison of Single Vs Double Gloving in Protection against Intraoperative Needle Stick Injuries

Ayesha Inam (FCPS Surg)\(^1\), Muhammad Shah (FCPS Surg)\(^2\), Shimee Shahzadi MCPS\(^3\), Yousaf Jan (FCPS Surg)\(^4\)

**ABSTRACT.**

**Objective:** Needle stick injuries continue to pose a significant risk to health care workers. Double gloving technique, is one of the strategies introduced to prevent hazards of needle prick injuries in healthcare settings. To compare the frequency of needle stick injuries in single versus double gloving during open general surgical procedures.

**Material And Methods:** This Randomized controlled study was conducted in surgical unit Hayatabad Medical Complex Peshawar from 1 August 2014 to 31 July 2015 after taking consent from research and ethical hospital committee. Only the operating surgeon and 1st assistant were included in the study. The surgical team involved were randomized by lottery method into two groups. Group A comprising of 132 cases, in which surgeons were provided single gloves and Group B comprising of 132 cases in which surgeons were wear double gloves.

**Results:** A total of 256 cases of undergoing different surgical procedure were observed, which were divided in two equal groups. Overall male to female ratio was 1.21:1. The average overall age of the patients was 39.44 years ± 13.60SD. Needle stick injuries in Group A 19 (14.8%) cases while Group B have 37 (28.9%) cases which were highly significant in both the procedure with p-value=0.017.

**Conclusion:** Double gloving is safe as compared to single gloving after different surgical procedures.

**Key words:** Frequency, gloving, needle stick injuries, open surgeries

**INTRODUCTION**

Needle stick injuries continue to pose a significant risk to health care workers. Surgeons and operating room personnel have the highest risk of intraoperative needle pricks and consequently, contact with patients, blood and body fluids\(^1\). There are more than 50 blood borne pathogens that can be transmitted from contaminated needles or sharp instruments, these could be hepatitis B (HBV), hepatitis C (HCV), and human immunodeficiency viruses\(^2\). Needlestick injuries affect 3.2 million individuals per annum on global level\(^1\). With the increasing incidence of hepatitis B and hepatitis C, with the increasing awareness of the prevalence and risk of HIV, it is becoming even more important to safeguard patients and reduce the risk of transmission, by adopting stricter measures Double gloving technique, is one of the strategies introduced to prevent hazards of needle prick injuries in healthcare settings\(^4,5\).

Double gloving is safe as compared to single gloving in different surgical procedure.

In contrast to above mentioned studies, Laine and Arnio has demonstrated a high perforation rate in single gloves than 50% and low perforation rate in double gloves. Multiple reasons may be responsible for this difference in the results of studies detecting high injury rate and low injury rate. These studies differed in the brand of gloves used, duration and type of surgeries and their sample size. This could be the reason of variation in the results.

The rationale of our study was based upon the diversity of data in literature regarding the frequency of needle stick injury in single and double gloves respectively. Besides there is very little work done...
Comparison of Single Vs Double Gloving in Protection against Intraoperative Needle Stick Injuries

on double gloving role in our setup, that’s why this technique could not be recommended nor discarded.

Operational Definitions: Needle Stick Injury: “Cutaneous injuries”, caused by a sharp object contaminated with blood or other body fluids regardless of presence or absence of frank bleeding

Bloodborne Pathogens: Blood borne pathogens are infectious micro-organisms in human blood or body fluids that can cause disease in humans. e.g Hepatitis B, Hepatitis C.

Double Gloving: The use of 2 gloves when performing medical interventions, in which there is contact with biohazardous materials

MATERIALS AND METHOD

This randomized controlled study was conducted in surgical unit of Hayatabad Medical Complex Peshawar from 1 August 2014 to 31 July 2015. The inclusion and exclusion criteria were,

Inclusion Criteria: Open general surgical and urological procedures on the elective list. Surgeries of duration more than 30 minutes and less than 90 minutes. Participants include senior residents, Senior Registrar and consultants. Only good quality latex gloves were used

Exclusion Criteria: Hepatitis B, Hepatitis C and HIV positive cases. Any previous cut or laceration on surgeon’s hands.

The above mentioned conditions act as confounders and if included, introduce bias in the study results

Data Collection Procedure: The study was conducted after getting approval from the hospitals ethical and research committee. The purpose and benefits of study were explained to the surgical team to involved in the study. Informed consent were taken in advance. Only the operating surgeon and 1st assistant were included in the study. The surgical team involved were randomized by lottery method into two groups. Group ‘A’ comprising of 132 cases, in which surgeons were provided single gloves and Group B comprising of 132 cases in which surgeons were used double gloves. To record the presence of preoperative skin abrasions, the spirit wash method were used. After scrubbing for the case, methylated spirit were poured on the surgeon’s hand to cover whole of the hand on both the dorsal and palmer aspect. Presence of burning sensation were indicative of preoperative skin abrasion.

At the end of the surgical procedure, the observer were inspect the participant’s hands closely and record the presence of blood or fluid on their hands. Any change of gloves intraoperatively and whether dominant or nondominant hand is involved, would also be recorded. In the double gloving group, the outer gloves were scrutinized for any perforation using water leak test, immediately after surgery. All the above mentioned information were obtained on a pre designed performa. Exclusion criteria were strictly followed to control confounders and bias in study results.

Data Analysis: The data collected from the patients through proforma were entered in SPSS version 10. Mean ± SD were calculated for continuous variable like duration of surgery. Frequencies and percentages for needle stick injury were calculated for categorical variable like group of surgeons, status of surgeons, dominant hand involvement and type of surgery. Chi square test was applied to compare the difference in both group regarding needle stick injury. P value ≤ 0.05 was considered significant. All the results were presented as tables and graphs.

RESULTS

A total of 264 cases of undergoing different surgical procedure having 30 to 90 minutes of duration of surgeries were observed, which were divided in two equal groups. Patients in one group were operated by double glove and another group of patients were going through single glove.

Gender wise distribution shows that 75(56.8%) were male and 57(43.1%) were female in group A with male to female ratio was 1.24:1 while group B contains 73(55.3%) were male and 59(44.6%) were female with male to female ratio was 1.14:1. Overall Male to female ratio was 1.21:1. Sex distribution among the groups was insignificant with p-value=0.408.

Average age was 38.61 years+ 13.94SD in group A and contains 15(11.7%) patients having less than 20 years, 39(29.5%) patients 21-35 years, 47(35.6%) patients 36-50 years and 32(24%) patients having age more than 50 years. While group B have average age of 40.08 years +13.26SD and contains 12(9.09%) patients in less than or equal to 20 years, 27(20.4%) in 21-35 years, 58(45.3%) in 36-50 years and 34(25.7%) patients have age more than 50 years of age. The overall average of the patients was 39.44 years +13.60SD. The age distribution among the group was also insignificant with p-value=0.352. Types of surgeries wise distribution shows that cholecystectomy was the procedure performed in the majority of cases followed by appendicectomy. The types of surgeries were insignificant in both the groups with p-value=0.745.

Injuries wise distribution shows that Group A shows needle stick injuries in 39(29.5%) cases and 93(70.4%) cases have no needle stick injuries while group B have needle stick injuries in 19(14.3%) cases and not observed in 113(85.6%) cases which shows that needle stick injuries were highly significant in both the procedure with p-value=0.017. similarly dominant hand and outer glove perforation is also significant with p-value of 0.003 and 0.001 respectively. (Table 1).

Duration wise distribution in both the groups shows that needle stick injuries were more common in surgeries lasting from 61 min to 90 min in both the groups respectively. (Table 2)

The first assistant sustained more needle stick injuries than surgeons in both the groups.

DISCUSSION
Comparison of Single Vs Double Gloving in Protection against Intraoperative Needle Stick Injuries

**TABLE NO: 1. Injuries wise distribution in both the groups**

<table>
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<tr>
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<th>Group B(n=132)</th>
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</tr>
<tr>
<td>No</td>
<td>10</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>Outer glove perforation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>---</td>
<td>54</td>
<td>0.001</td>
</tr>
<tr>
<td>No</td>
<td>---</td>
<td>78</td>
<td></td>
</tr>
</tbody>
</table>

**TABLE NO: 2. Duration wise distribution of needle stick injury in both the groups**

<table>
<thead>
<tr>
<th>Duration of surgery in minutes</th>
<th>Group A(n=132)</th>
<th>Group B(n=132)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Needle stick injury</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2(1.5%)</td>
<td>10(7.5%)</td>
<td>0.6121</td>
</tr>
<tr>
<td>No</td>
<td>7(5.3%)</td>
<td>17(12.8%)</td>
<td></td>
</tr>
<tr>
<td><strong>Outer glove perforation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>19(14.3%)</td>
<td>42(31.8%)</td>
<td>0.0328</td>
</tr>
<tr>
<td>No</td>
<td>11(8.3%)</td>
<td>23(17.4%)</td>
<td></td>
</tr>
</tbody>
</table>

Intraoperative surgical glove use was introduced in 1889 by William S. Halsted to protect his scrubbed nurse from exacerbation of previously acquired mercuric chloride dermatitis. Intact surgical gloves are an important barrier in preventing exposure of blood and blood borne pathogens like hepatitis B and C viruses, HIV, and others, to the surgical team during operation. Various precautions have been suggested to reduce the risk of accidents during operation; one of them is use of double gloves. Punctures and tears of the surgical gloves is the cause of most blood contacts of operating personnel and glove perforations frequently go unnoticed by the wearer. Double gloving decreases this by decreasing product failure, exposures and inner glove tears and perforations. The present study was undertaken to compare the incidence of perforation in single gloves with that of double gloves.

Double gloves are being increasingly recommended these days. Thomas et al. conducted a study on intraoperative glove perforations and recommended the use of double gloves in all surgical procedures exceeding one hour or where chances of needle-stick injury are high. Similarly Eroshzlu et al. assessed the frequency of glove perforation during major and minor orthopaedic surgeries and concluded that routine use of double gloves is being recommended. The prevalence of needle prick among operation theater professional reported different in different studies. Maqbool in 2002, which was reported to be 74% which was higher than the prevalence reported by Lee and Hassim in 2005. The prevalence in Nepal was 74%, Hofranipour in Iran 39.4%. Similar results have also been reported by Hadadi et al. The following NSIs incidence rates: Taiwan = 50.5%; Uganda=25.3% and Australia = 13.9%. Medical students had the following needle stick injuries(NSIs) incidence rates: Iran = 73.4%, USA =30-33%, UAE = 23.0% and Germany = 12-41%.

In this study, the perforation rate of single gloves was highest, followed by the outer glove when using double gloves. The perforation rate was significantly lower for the inner glove than for the outer glove (P < 0.001). These findings indicate that use of surgical gloves markedly reduces the volume of the blood inoculums present on suture needles, and double gloving is more efficient than single gloving in this respect. Double gloving has proved to be an effective second barrier with minor disadvantages including discomfort, clumsiness and tightness. Although, the risk to the patient from percutaneous skin exposure after surgical glove perforation regarding HIV transmission is low (0.3%), the risk is higher for HBV, which also makes double gloving highly advisable.

Double gloving is generally adopted by surgical team when operating on high risk cases. There are varying opinions regarding the necessity of wearing double gloves routinely for added protection and the ability to operate when wearing double gloves. Many surgeons are reluctant with double gloving as they feel it may affect their tactile sensation and anxiety. While there have been reports on the effectiveness of double gloving in preventing needle stick injuries, blood contamination.

Studies showing results in favor of double gloving have also been conducted by Thomas et al, Gani JS, Aamio P and Lanie P. In our study the perforations in outer gloves were more common than inner glove perforations and the same has been
confirmed in the studies conducted by Greco R.P.3 and Ganczak M4, thus indicating that double gloving offers significantly better protection to the surgical team than single gloving.

Double gloving is better not only to maintain maximum sterility during surgery, but also reduces the risk of blood-borne diseases. The principal surgeon, chief of the surgical team, is the person most prone to get needle stick injuries. In surgeries lasting for longer duration, intra-operative glove changes is advocated every 90 min. Emergency surgeries and surgeries requiring dissection at depth like laparotomies have a higher risk of glove perforations, hence extra care, while handling of needles and sharp instruments is warranted along with double gloving and intra-operative glove changes.

CONCLUSION

To conclude, the present study shows that double gloving offers significantly better protection than single gloving as the incidence of perforation of double inner gloves is significantly low as compared with single gloves. The inner glove protects the surgeon’s hand from contamination. As majority of glove perforations go unnoticed by the surgeons and other members of the surgical team, routine use of double gloves in all surgical procedures should be recommended.

REFERENCES:

INTRODUCTION

The term urethral stricture refers to anterior urethral disease and involves a scarring process that affects the urethral epithelium and the spongy erectile tissue of the corpus spongiosum resulting in fibrotic narrowing of the urethra. Urethral stricture is a relatively common disease in men with an associated prevalence of 229-627 per 100,000 males, or 0.6% of the risk population, who are typically older men. Patients with urethral stricture disease most often present with obstructive voiding symptoms or urinary tract infections like epididymitis and prostatitis. Urethral stricture can result in life threatening conditions like uremia, fourni-er’s gangrene, detrusor failure and even death.

Optical Urethrotomy is an effective procedure for the treatment of urethral stricture disease, which needs further randomized trials to get a better understanding and effectiveness of the procedure.

The main etiologic agents include trauma, sexually transmitted infections and lichen sclerosis. However, incidence of inflammatory strictures has dramatically decreased over the past few decades due to the readily availability of broad spectrum antibiotics. The management of urethral stricture disease is surgical and includes urethral dilatation, optical urethrotomy, urethral stents and open reconstructive techniques. Optical urethrotomy is a minimally invasive, safe and simple procedure. Yet there are many controversies in the literature regarding the overall effectiveness of optical urethrotomy. The purpose of the study was to determine the exact effectiveness of optical urethrotomy in management of urethral stricture disease.

ABSTRACT

Objective: Urethral stricture is a relatively common disease in men with an associated prevalence of 229-627 per 100,000 males. The management of urethral stricture disease is surgical and includes urethral dilatation, optical urethrotomy, urethral stents and open reconstructive techniques. Optical urethrotomy is a minimally invasive, safe and simple procedure. Yet there are many controversies in the literature regarding the overall effectiveness of optical urethrotomy. The purpose of the study was to determine the exact effectiveness of optical urethrotomy in management of urethral stricture disease.

Materials and Methods: This study is a descriptive study carried out at Department of Urology, MTI, LRH, Peshawar from 1 January 2015 to 31 December 2016. A total of 141 patients were included in the study using Non-probability consecutive sampling technique. All male patients of urethral stricture disease with average urine flow of 5 ml/sec or less and age of 18 years and more were included in the study. Patients with enlarged prostate, bladder calculi and those who have neurogenic bladder were excluded from the study. All the patients were put on next OT list for optical urethrotomy. All the patients were followed up till 1 year with uroflowmetry to determine effectiveness in terms of improvement in average urine flow rate of > 5ml/sec. Data was collected on a pre-designed proforma and analyzed on SPSS version 17. Mean + Standard deviation was calculated for quantitative variables like age and average urine flow rate. Frequencies and percentages were calculated for categorical variables like effectiveness, stratified among age and pre-operative average urine flow rate to see the effect modifications.

Results: During the study period 141 cases of urethral stricture disease were included in the study. The mean age of the study group was 38.30 and with a standard deviation of 11.69. The mean average urine flow rate before the surgery was 3.53 ml/s. The mean average urine flow rate after the surgery was 13.20 ml/s. Internal optical urethrotomy was found to be efficacious in 88.7% of the study group. The mean hospital stay was 3.04 days. We could not find any association between the effectiveness of optical urethrotomy, age of the patient and average pre-operative urine flow rate.

Conclusions: It is concluded from our study that optical urethrotomy is an effective procedure for the management of urethral stricture disease.

Keywords: Internal Optical Urethrotomy, Urethral Stricture, Uroflowmetry, Urethral Dilatation.
MATERIALS AND METHODS
This is a descriptive study carried out at department of urology, Lady Reading Hospital, Peshawar. The study duration was two years i.e. from 1 January 2015 to 31 December 2016. Non-probability consecutive sampling was used to include patients in the study group. All male patients of urethral stricture disease with average urine flow of 5 ml/sec or less and age of 18 years and more were included in the study. Patients with enlarged prostate diagnosed on rectal examination and ultrasonography, bladder calculi and neurogenic bladder were excluded from the study.

The study was conducted after approval from hospitals ethical and research committee. All patients with urethral stricture diseases diagnosed as per operational definitions and having average urine flow rate of < 5ml/sec were included in the study through Out Patient Department. The purpose and benefits of the study along with necessary operation details were explained to all the patients and then a written informed consent was obtained from all patients.

Patients were admitted in the ward for further evaluation. A detailed history was taken followed by detailed physical examination and routine investigations were also done in all the patients. All the patients were subjected to optical urethrotomy. After surgery the patients were catheterized and kept in ward under observations for 48 hours. All the patients were discharged on 2nd post-operative day, unless otherwise indicated, after catheter removal.

All the patients were followed up till 1 year with Uroflowmetry to determine effectiveness in terms of improvement in average urine flow rate of > 5ml/sec. All information was recorded on a proforma. Strict exclusion criteria were followed to control cofounders and bias in the study results. Data was analyzed on SPSS version 17. Mean + Standard deviation were calculated for quantitative variables like age and average urine flow rate before and after surgery. Frequencies and percentages were calculated for categorical variables like effectiveness which were stratified among age and pre operative average urine flow rate to see the effect and documented in the form of tables and graphs.

RESULTS
A total of 141 patients were included in the study, following the selection criteria already laid down. All the patients were followed up to 12 months. No patient was lost to follow-up. The mean age of our study group was 38.30 years with an age range of 19-61 years and had a standard deviation of 11.69. The mean Average urine flow rate before the surgery was 3.53 ml/s. The mean Average urine flow rate after the surgery was 13.20 ml/s. Internal optical urethrotomy was found to be efficacious in 88.7 % of the study group.

The mean hospital stay was 3.04 days. Effectiveness of optical urethrotomy was cross tabulated against age of the patient. Analysis showed that there is no significant association between age of the patient and effectiveness of optical urethrotomy i.e. ‘p’ value of 0.748. Effectiveness of optical urethrotomy was also cross tabulated with the Average pre-op urine flow rate. There was no significant correlation between the two i.e. ‘p’ value of 0.924.

DISCUSSION
Until the mid 20th century urethral dilatation and blind internal urethrotomy remained the gold standard treatment of choice for the urethral stricture. Suprapubic cystostomy was the only alternative. As urethral dilatation was associated with a lot of complications, with time new modalities evolved for the management of urethral stricture. Internal optical urethrotomy is a minimally invasive procedure done to treat urethral stricture disease. As it is performed under direct vision, so it is associated with minimal chance of complications. Optical urethrotomy can be done in both general and regional anesthesia. Now days a lot of discussion is going on regarding the efficacy of internal optical urethrotomy in the literature. Some urologists prefer it as they consider it effective surgery for the treatment of urethral stricture, whereas others consider it as a procedure with a greater chance of stricture recurrence.

In 2011, a survey was done in Netherlands among urologists practicing there and it was concluded that majority of urologists believe that other invasive surgeries be only undertaken after the failure of optical urethrotomy. It is a widely accepted treatment for about 80% of patients with urethral stricture disease. The strength of my study was that this was the first ever study conducted in this institute on this debatable topic. We had a larger sample size as compared to the national literature.

The only drawback of our study that we were unable to assess the long term complications of optical urethrotomy as long term follow up was not possible in our setup. It was a hospital based study and was not a randomized control trial. We included all the patients of urethral stricture disease in this study irrespective of its etiology. The mean age of my study group was 38.30 years. Similar results were reported by Nuss GR and colleagues i.e. mean age of 42.1 years. The age range of my study group was 19 to 61 years. In a study done by Zehri and colleagues it was 17 to 87 years.

Khan A.T did a study in Peshawar on the management of urethral stricture and reported an effectiveness of 79% for optical urethrotomy. These results are similar to ours study but the difference was that they only did optical urethrotomy for the strictures of small caliber of 14 Fr whereas we did optical urethrotomy irrespective of their caliber.

Another local study done by Afridi G.M compared the efficacy of optical urethrotomy alone and in combination with clean self-intermittent catheterization. Their study showed the effectiveness of optical urethrotomy alone to be 42.5% in patients treated with urethrotomy only and 65% in patients treated with optical urethrotomy plus clean self intermittent catheterization. The differences in the results are most probably because of long duration of follow up in their study and
most of the authors agree that the longer the patient are followed, the more recurrence occurs with time and in few studies\textsuperscript{30,37} where patients were followed for more than 5 years the success rate drop to as low as 30\%.

A retrospective study from India by R Mathur et al which analyzed data of more than 500 cases of urethral stricture disease found that optical urethrotomy was effective in treating up to 90\% of patients\textsuperscript{18}. But yet another local study\textsuperscript{39}, done by Islam shows the effectiveness to optical urethrotomy to be 51.42 \%. A study from South Africa conducted by Hayen CF and colleagues\textsuperscript{20} stating the effectiveness of optical urethrotomy to be 30-50 \% after second optical urethrotomy done for urethral stricture. But the contrast in these results with ours are most probably because, the effectiveness assessed in that study was after second optical urethrotomy on the same patient.

In our study, we declared the efficacy on the basis of post-operative average urine flow rate. Uroflowmetry in one of the most commonly done urological investigation\textsuperscript{12,22}.It’s a good indicator for the effectiveness of Optical urethrotomy. It’s also non-invasive and has a very high sensitivity to screen for stricture recurrence\textsuperscript{23}. The long slow protracted flow pattern with a plateau appearance in a man, aged <65 years, is typical of urethral stricture disease\textsuperscript{24}. In the studies done previously the follow up was done by other different criteria’s which may be the probable cause of difference in our results which need further research studies. The effectiveness of optical urethrotomy in my study group was 88.7\%. My result shows that optical urethrotomy is quite effective in the management of urethral stricture disease.

We also tried to see any association between the age of our study group and effectiveness of optical urethrotomy. We were unable to find any relation between the two (p > 0.05). Effectiveness of optical urethrotomy was also stratified against the pre-operative average urine flow rate. No association was found between the two variables (p > 0.05). Implications of this study are on the urologists and general surgeons working in tertiary care hospitals dealing with the problems like urethral injuries, urethral strictures and its complications. There are some questions which remained unanswered in this study, like how to maximize the effectiveness of optical urethrotomy and secondly if the effectiveness of optical urethra has any relation with the etiologic agent responsible for stricture formation.

CONCLUSIONS AND RECOMMENDATIONS

Optical urethrotomy is an effective procedure for the treatment of urethral stricture disease. Further multicenter and randomized control trials are suggested to get a better understanding of how to maximize the effectiveness of optical urethrotomy and see the relationship of other variables on its effectiveness.

REFERENCES

(Endnotes)


Surgical Management of severe Carpal Tunnel Syndrome. What’s the Long-Term Outcome

Manzoor Rashid MS (Ortho)¹  Muhammad Saqib FCPS²
Gajju Khan Medical College & Bacha Khan Medical Complex Swabi   KPK

ABSTRACT
Background: Carpal tunnel syndrome is a common peripheral nerve compressive neuropathic disorder and severe symptoms are managed by surgical decompression. However, long-term outcome data is limited.

Objectives: To study the long-term outcome of surgical decompression in severe carpal tunnel syndrome in terms of improvement in nocturnal pain and numbness.

Methods: This is a prospective quasi-experimental study of 18-month duration conducted at Bacha Khan Medical Complex, Swabi. 30 patients who were operated for severe carpal tunnel syndrome were included in the study and were followed for an average of 18 months (range: 6 – 24 months). Data was collected about preoperative and postoperative pain scores in terms of visual analogue scale (VAS). A patient satisfaction survey using a five-item Likert scale was conducted at the end of 6-months. Outcome was categorised according to pain scores and satisfaction.

Results: All were female patients with mean age of 42.5 ± 8.1 years. The mean preoperative VAS was 6.9 ± 0.9 and mean postoperative VAS was 2.1 ± 1.4. The median satisfaction score was 4 (satisfied) with a range: 1 – 5. Overall 23 (76.7%) patients had favourable outcome while 7 (23.3%) patients had unfavourable outcome. Patients who had symptoms for longer than 12 months were more likely to have an unfavourable outcome as compared to those who had less 12 months of symptoms (p < 0.0001).

Conclusion: Severe carpal tunnel syndrome responds quickly to the open release technique and patient satisfaction is higher. However, longer symptoms duration is a factor which can result in unfavourable outcome in terms of pain relief and relief from numbness.

Keywords: Carpal tunnel syndrome, open surgical release, long-term outcome

INTRODUCTION
Carpal tunnel syndrome (CTS) is common with a prevalence of 1-3% in the general population. It primarily affects young to middle-age women with a constellation of symptoms that are almost diagnostic on presentation. These symptoms include pain at night time, numbness, paraesthesia and in long-standing cases, motor problems such as weak grip. The commonly identified risk factors are increased BMI, life style, co-morbidities and familial association. Though carpal tunnel syndrome is not fatal, it seriously affect the quality of life a patient.¹

Carpal tunnel syndrome, a common disorder affects the female gender in their third and fourth decades. The syndrome responds quickly to the open release technique for patient satisfaction.

According to American Association of Neuro-muscular and Electro-diagnostic Medicine (AANEM) the diagnostic studies required for CTS are sensory and motor conduction velocities, and response amplitudes.² Though the diagnosis can be made clinically, nerve conduction and electro-myographic studies are performed to quantify the damage to the median nerve

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and because physical examination findings are insensitive. Laboratory studies may be used to rule out other co-morbidities such as diabetes, rheumatoid arthritis etc. AANEM recommends grading the CTS according to results of the NCS and EMG studies in mild, moderate and severe forms, because these studies quantify the damage to axons. A sensory latency of more than 5 m Sec and motor latency of more than 10 m Sec are diagnostic for severe carpal tunnel syndrome. Early surgery is advised if median nerve denervation is evident on electrodiagnostics. Treatment options range from conservative measures such as exercise, ultrasound therapy, weight-loss and wrist splint. Other options include carpal tunnel steroid injection and surgical release. In our practice, we delay surgical release for patients with mild and moderate grades on NCS & EMG. Patients with severe CTS are offered surgery. This study was conducted to see the long-term outcome of surgical release in patients with severe CTS in terms of nocturnal pain and paresthesias.

**METHODS**

This is a prospective study of 30 patients who were operated for severe CTS between January 2014 and June 2015 at the department of Orthopaedics, Bacha Khan Medical Complex Swabi. Permission was obtained from the institute’s ethical committee. An informed consent was obtained from all patients before undergoing the procedure according to the declaration of Helsinki.

Severe CTS is defined by AAEM as prolonged motor sensory distal peak latencies with a low or absent sensory nerve action potential (SNAP) or compound muscle action potential (CMAP). Very severe CTS is defined as absent thenar sensory or motor response with a positive or negative lumbar response on electro-diagnostic testing. All patients were females with mean age of 42.5 ± 8.1 years (range: 29 – 60 years). The right side was affected in 14 (46.7%) patients, left hand was affected in 11 (36.7%) patients and in 5 (16.7%) patients both hands were affected. The mean symptoms duration was 9.8 ± 6.6 months (range: 4 – 26 months).

The mean preoperative VAS was 6.9 ± 0.9 (range: 5 – 8). The mean postoperative VAS was 2.1 ± 1.4 (range: 1 – 5). The median satisfaction score was 4 (satisfied) with a range: 1 – 5. Overall 23 (76.7%) patients had favourable outcome while 7 (23.3%) patients had unfavourable outcome due to suboptimal pain relief or persistent paraesthesia. On chi-square analysis it was observed that patients who had symptoms for longer than 12 months were more likely to have an unfavourable outcome as compared to those who had less 12 months of symptoms (p < 0.0001). Similarly, patients with left symptomatic hand were more likely to have a favourable outcome (36.7% vs 40.0%, p = 0.021).

A paired samples t-test was performed to determine the mean difference between preoperative and postoperative VAS scores. It was found that the mean difference was 4.8 ± 1.6 (95% confidence interval: 4.2 to
Surgical Management of severe Carpal Tunnel Syndrome. What’s the Long-Term Outcome

5.4, p <0.0001).

<table>
<thead>
<tr>
<th>Likert Scale</th>
<th>Frequency</th>
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</thead>
<tbody>
<tr>
<td>1 : Not Satisfied</td>
<td>3</td>
<td>10.0%</td>
</tr>
<tr>
<td>2 : Less Satisfied</td>
<td>3</td>
<td>10.0%</td>
</tr>
<tr>
<td>3 : Neutral/Mixed</td>
<td>1</td>
<td>3.3%</td>
</tr>
<tr>
<td>4 : Satisfied</td>
<td>11</td>
<td>36.7%</td>
</tr>
<tr>
<td>5 : Highly Satisfied</td>
<td>12</td>
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</tr>
</tbody>
</table>

Table 1: Patient satisfaction survey after carpal tunnel surgery

DISCUSSION

In a randomised controlled trial, Gerritsen and associates10 (Gerritsen AA et al) from the University Medical Centre in Amsterdam, concluded that open surgical release of carpal tunnel is far more superior to splinting or other conservative measures. They noted an overall success rates of 80% at three months interval for the surgery group and 56% for the splinting group. Similarly, they showed that the success rate of the surgery group increased to 90% while that of splinting group was 75% at 18-months of follow-up. These results are encouraging, because surgery for CTS is cost-effective and is performed as a day care procedure. These results are similar to the current study where an overall success rate of 76% was achieved at 6-months follow-up.

In another retrospective study by De Stefano11 (Destefano F et al) has shown that patients who undergo early surgery for release of the carpal tunnel are six-times more likely to have resolution of their symptoms as compared to patients who did not undergo surgery. In a Cochrane systematic review by Verdugo and colleagues12 (Verdugo RJ et al), the efficacy of surgical versus non-surgical treatment was compared and it was concluded that surgical treatment effectively relieves symptoms in CTS as compared to splinting and conservative measures. In a randomised controlled trial by Hui and associates13(Hui AC et all), efficacy of steroid injections was compared to surgical treatment and it was concluded that surgical treatment is far superior in terms of symptomatic and electrophysiological improvement.

Kaplan and co-workers14(Kaplan SJ et al) have analysed the predictive factors for the success of non-surgical treatment. They identified five factors, the absence of which predicted positive response to non-surgical treatment. These were age over 50 years, duration over ten months, constant paraesthesia, flexor tenosynovitis and positive Phalen’s test in first 30 second. In our study age was not associated with outcome type on chi-square analysis (p = 0.313). However, as described above, duration of symptoms over 12 months was associated with unfavourable outcome. The patients with unfavourable outcome scored lower on the satisfaction survey as well as with symptoms recurrence or failure to subside. In a similar randomised study by Gelberman and co-workers15, 16(Gelberman RH, Gelberman RH et., al), where different techniques of surgical release were compared, patient satisfaction was 84% for the open release group at 3 months. This is in agreement with our study where a satisfaction rate of above 76% was achieved.

This study has a few weaknesses. It included a smaller number of patients as compared to the larger randomised controlled studies done in the past. This study presented experience from a single centre which can be resolved by designing multicentre and larger sample size studies.

CONCLUSION

Carpal tunnel syndrome is common in orthopaedics outpatient practice and most commonly affect the female gender in their third and fourth decades. Severe carpal tunnel syndrome responds quickly to the open release technique and patient satisfaction is higher. However, longer symptoms duration is a factor which can result in unfavourable outcome in terms of pain relief and relief from numbness.

REFERENCES

5. Calotta NA, Lopez J, Deune EG. Improved Surgical Outcomes With Endoscopic Carpal Tunnel Release in Patients With Severe


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Insulin-induced lipohypertrophy

Insulin-induced lipohypertrophy occurs at sites of injection and is thought to be caused by repeated trauma and possibly the anabolic side effects of insulin. Lipohypertrophy typically causes palpable, rubbery growths, which are not typically hyperpigmented.

D.D: Abscess, Dermatofibrosarcoma protuberans, Hematoma, Insulin-induced lipohypertrophy, Nodular fasciitis

Curtesy: Dr. Nizam M.Darwesh Uk

*************************************************************************
Role of Postoperative Antibiotics after Appendectomy in Non-Perforated Appendicitis

Muhammad Shah FCPS1, Yousaf Jan FCPS2, Waqas Khattak MBBS3, Shaukat Hussain MBBS4

ABSTRACT
Objective: Appendectomy is the most frequently performed emergency surgery. The use of antibiotics alone in the treatment of uncomplicated acute appendicitis has been controversial. To determine the role of postoperative antibiotics in reducing the surgical site infections (SSIs) after open appendectomy in patients with non-perforated appendicitis (NPA).

Material and Methods: This randomized controlled trial was conducted at the Surgical unit Hayatabad Medical Complex Peshawar, Pakistan from November 2015 to November 2016 and comprised patients of emergency appendectomy for non-perforated appendicitis who were divided into Group A and Group B. The patients in group A received a single dose of pre-operative antibiotics (ceftriaxone and metronidazole), while the group B patients also received a single pre-operative antibiotic and three more doses of the same antibiotics postoperatively. Patients of both the groups were followed-up for 30 days to assess the postoperative infection complications.

Results: Group A and group B had 84 patients each. The male to female (M/F) ratio was 1.54:1 in Group A and 2.11:1 in Group B respectively. Number of surgical site infections was 44 (4.8%) in Group A and 30 (3.6%) in Group B (p = 0.699). Mean hospital stay of 2.03±0.196 days and 2.18±0.378 days was observed for Group A and B (p = 0.001) respectively. None of the patients developed intra-abdominal complications.

Conclusion: A single pre-operative dose of ceftriaxone and metronidazole had the same efficacy in preventing surgical site infections in cases of non perforated appendicitis as and when the same regimen was repeated postoperatively. So prophylactic antibiotics did not require an appreciable clinical benefit in these patients.

Key Words: Acute appendicitis, Postoperative antibiotics, surgical site infection (SSIs).

INTRODUCTION:
Acute appendicitis is the most common emergent surgical condition1. The life time risk of developing acute appendicitis is up to 20% in general population2. Emergency appendectomy is the usual treatment modality with more than 300,000 performed annually in the United States3.

Surgical Site Infection (SSI) is still the most common post-operative complication despite improved peri-operative care and antibiotics4. In non-perforated cases, however, their usage does not seem to be logical5. Cases of non perforated appendicitis (NPA) and perforated appendicitis (PA) are categorized as clean contaminated and contaminated respectively. Several studies have proved the efficacy of pre-operative prophylactic antibiotics in reducing the postoperative infective complications after appendectomy6,7,8. Therefore, virtually all the patients undergoing appendectomy in our hospital are given pre-operative prophylactic antibiotics.

Pre-operative antibiotic regimes have been shown to be effective in reducing post-operative complications and surgical site infections (SSIs)7,9. Patients with perforated appendicitis after appendectomy are universally treated with a variable course of post-operative therapeutic antibiotics because of heavy contamination of wound and peritoneal cavity10,11. In non-perforated cases, however, their usage does not seem logical9,12.

Single dose of pre-operative antibiotics (cefuroxime and metronidazole) is sufficient in controlling the surgical site infections after appendectomy for non-perforated appendicitis. Postoperative antibiotics did not add an appreciable clinical benefit in these patients. Therefore, there is no need to repeat post-operative antibiotics in these cases.

The role of postoperative antibiotics in reducing infectious complications in NPA is still controversial10,11,12. A lot of studies have been conducted for the purpose of reducing the rate of surgical site infection (SSI), one of the main factors affecting patient outcomes. Post-operative antibiotic treat-
ment modalities for non perforated appendectomy cases vary from centre to centre. However, there are a few studies that analyzed the correlation between single dose administration of antibiotics prior to surgery and the infection rate of patients, and it is still controversial whether the administration of postoperative antibiotics helps reduce the infection rate and improve the prognosis. The current practice in our hospital for non-perforated appendectomies is continuation of antibiotics postoperatively.

Therefore, this study was conducted to determine the role of postoperative antibiotics in reducing the surgical site infections (SSIs) and intra-abdominal abscess formation after open appendectomy in patients with NPA, and to define the uniform guidelines in the management of these patients in our institution post-operatively.

MATERIAL AND METHODS

Between November 2015 and November 2016, this randomized controlled trial was conducted in the Department of Surgery, Hayatabad Medical Complex Peshawar after the approval from departmental research and ethical committee. All the patients who were admitted with the clinical diagnosis of acute appendicitis from outpatient and emergency departments undergoing emergency appendectomy, were considered eligible for this study and they were at the age of 15 or above. Patients who had received antibiotics within 72 hours of admission or who were diabetics, immune-compromised or pregnant, were excluded from the study. In addition, those patients who were found to have complicated appendicitis (gangrenous, perforated, appendicular mass or abscess) or those who were lost to follow up were excluded as well. Informed consent has been taken from all the patients, enrolled for this study.

All the patients received a single pre-operative dose of ceftriaxone sodium and metronidazole at the time of induction of surgery. Open appendectomy was performed by the standard operating technique through right lower quadrant incision on the day of admission. The wound was closed primarily in all the patients after washing with normal saline. Patients whom met the inclusion criteria were randomized by simple parallel group randomization into two groups A and B. After the surgery, patients included in group A were not given any postoperative antibiotics, while the group B comprised of all those patients who received a three doses of ceftriaxone and metronidazole 8 hourly postoperatively. All the appendices were sent for histopathological examination. Patients of both the groups were discharged when they were fully mobilized, afebrile, could tolerate normal diet with evidence of normal bowel activity and had adequate pain control on oral analgesics. On discharge, the patients were booked for follow-up visit in surgical clinic on the 10th postoperative day for removal of stitches and wound assessment. They were also advised to report imme-

Surgical site infection (SSI) was defined as pus discharge from the wound that necessitated wound opening and drainage. Intra-abdominal collection was defined as the fluid collection inside the peritoneal cavity confirmed by ultrasound or computed tomography that required drainage. All the infected wounds were managed by laying open the wound, wound toilet with normal saline, and loose packing of the wound followed by secondary closure or healing by secondary intention.

Data was collected through a proforma. Statistical analysis was done using SPSS 20. Frequency, percentage, mean and standard deviation (SD) were calculated for variables. Comparison of categorical variables was done using chi square. The p-value of < 0.05 was considered as statistically significant.

RESULTS

During the study period, 168 patients fulfilling the inclusion criteria were admitted with acute appendicitis for open appendectomy and randomized into two groups A and B. Out of 84 patients in group A, 60.71% (n=51) were males while 39.29% (n=33) were females. In group B, 67.85% (57) were males and 32.15% (27) were females respectively. Most of the patients in both groups were in between 15 to 25 years of age and the comparison of different age groups was not statistically significant. The mean age was 22.49±7.654 years in group A and 22.70±6.339 years in group B respectively (p=.844) Table 2. Eighty four patients received only a single dose of preoperative antibiotics (group A); while 84 patients received three postoperative antibiotics up to 24 hours after surgery plus preoperative antibiotics (group B).

Statistically there was no significant difference between mean age (p=.844), WBC count (p=.694) and duration of surgery (p=.052) between the groups. However, difference was observed between mean hospital stay (p=.001) and duration of symptoms (p=.013), respectively between the two groups (Table 1). Number of surgical site infections was 4 (4.8%) in Group A, and 3(3.6%) in Group B which was not statistically significant (p=.699) Table 2. None of the patients developed intra-abdominal collection. There was no perioperative mortality amongst our patients during this study period.

DISCUSSION

Appendectomy is a routine surgical emergency procedure with approximately 400,000 done annually in Pakistan. Various studies have shown the rate of post-appendectomy surgical site infections (SSIs) for non-perforated appendectomies to be 0-11%12,13,14. The stage of the disease process at the time of operation and the use of appropriate prophylactic antibiotics signifi-
Role of Postoperative Antibiotics after Appendectomy in Non-Perforated Appendicitis

In our study out of 84 patients in group A, 60.71% (n=52) were males while 39.29% (n=33) were females. In group B, 67.85% (57) were males and 32.15% (27) were females respectively. The mean age was 22.49±7.654 years in group A and 22.70±6.339 years in group B respectively (p=.844) Table 2. Although it has been shown that administration of prophylactic antibiotic lowers the risk of SSIs, debates are underway on whether postoperative antibiotics have any efficacy and for how long they should be administered. Moreover, there is only a few data on this issue. In another study, Mui et al. investigated wound infection rates in 3 groups of patients with non perforated appendicitis; 1 group received 1 preoperative does of cefuroxime and metronidazole, the second group received an additional 3 postoperative doses, and the third group received postoperative antibiotics for an additional 5 consecutive days. This study found no statistically significant difference in the wound infection rates among the 3 groups (6.5, 6.4, and 3.6 respectively). In our study  we also found the similar results (p=.699).

In 2009 a study showed that post-operative infection rates for non perforated appendectomies were similar for patients whether they were given pre-and post-operative antibiotics (9%) or only post-operative antibiotics (10%, p=0.64). In another study in 2012, showed that SSI rates in non-perforated appendectomies were unchanged for patients treated with a single pre-operative dose of antibiotics 9(4.6%) or pre and post-operative antibiotics 8(4.3%), respectively (p=0.91). Similar result was shown in our study with (p=.699) Table 2.

Recently, Coakley and colleagues compared the outcomes of large number of patients (728) treated with antibiotics before and after appendectomy with (P=.699). In another study, Mui et al investigated wound infection rates in 3 groups of patients with non perforated appendicitis; 1 group received 1 preoperative does of cefuroxime and metronidazole, the second group received an additional 3 postoperative doses, and the third group received postoperative antibiotics for an additional 5 consecutive days. This study found no statistically significant difference in the wound infection rates among the 3 groups (6.5, 6.4, and 3.6 respectively). In our study  we also found the similar results (p=.699).

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Recently, Coakley and colleagues compared the outcomes of large number of patients (728) treated with antibiotics before and after appendectomy with

Table 1. Group A and group B comparison

<table>
<thead>
<tr>
<th>Variables</th>
<th>Treatment Groups</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>P Value</th>
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<td>Age of Patient</td>
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<td>7.654</td>
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<td>Group B</td>
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<td></td>
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<td>1.91091</td>
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<td>Duration of Symptoms</td>
<td>Group A</td>
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<td>28.7310</td>
<td>3.43918</td>
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<td></td>
<td>Group B</td>
<td>84</td>
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<td>Hospital Stay</td>
<td>Group A</td>
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<td>Group B</td>
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<td>Surgery Duration</td>
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Table 2. Comparison of surgical site infections (SSIs)

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<td>Count</td>
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<tr>
<td>Group A Count</td>
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<td>84</td>
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<td>% within Treatment Groups</td>
<td>4.8%</td>
<td>95.2%</td>
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<tr>
<td>Group B Count</td>
<td>3</td>
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<td>84</td>
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<tr>
<td>% within Treatment Groups</td>
<td>3.6%</td>
<td>96.4%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>161</td>
<td>168</td>
</tr>
<tr>
<td>% within Treatment Groups</td>
<td>4.2%</td>
<td>95.8%</td>
<td></td>
</tr>
</tbody>
</table>
those, who received only pre-operative antibiotics. They concluded that the addition of postoperative antibiotics did not reduce the infectious complications, rather significantly increased the morbidity in the terms of higher rates of antibiotic-associated diarrhea and Clostridium infection. In addition, postoperative antibiotics had significantly prolonged the hospital stay and increased the treatment cost without affording any appreciable clinical benefit. This is also shown by our present study where patients given post-operative antibiotics had a longer hospital stay 2.18±0.378 days compared to Group A patients who were only given a single pre-operative dose of antibiotics 0f 2.03±0.196 days ( p=.001) Table 1.

Therefore, the use of postoperative antibiotics in uncomplicated appendicitis did not show any clinical benefit in our study. There was no antibiotic related complication in both the groups, because of short course of antibiotics. Intra-abdominal abscess formation has rarely been reported after appendectomy in NPA, but it accounts for 2 – 3% of patients in complicated appendicitis. This complication was not seen in these patients.

In the surgical practice, the supplementary postoperative antibiotics have been used increasingly, because of the fear of developing postoperative SSIs. Postoperative antibiotics cannot be the substitute of good surgical and aseptic techniques. The overuse of antibiotics is associated with the increase risk of antibiotic related complications, bacterial antibiotic resistance and cost of care. For these reasons, the benefits and side effects of antibiotics therapy have to be evaluated carefully.

Two other studies by Hussain MI et al and Rafiq MA et al, also showed no statistical significant difference between two groups regarding surgical site infections, as also shown in our study (p .699) Table 2. Moreover, our results are further strengthened by the recent studies showing that the prolong use of antibiotics even in patients with complicated appendicitis does not reduce the postoperative infectious complication.

CONCLUSION

Single dose of pre-operative antibiotics (cefuroxime and metronidazole) was sufficient in controlling the SSIs after appendectomy for non-perforated appendicitis. Postoperative antibiotics did not add an appreciable clinical benefit in these patients. Therefore, according to evidence-based medicine, there is no need to repeat post-operative antibiotics for these cases.

REFERENCES:
Statins markedly Reduces Atrial Fibrillation in Patients undergoing Valve Replacement Surgeries

Nasreen Laiq1. Shahid Khan,2. Muhammad Naeem Khan3 Roheena Wadood,4

ABSTRACT:
Objective: The primary objective of the study was to determine the strength of evidence for preoperative statin therapy for prevention of AF after cardiac surgery, and to determine the length of stay in Cardiac ICU.

Material and Methods: A randomized clinical trial was conducted from June 2015 to July 2016 with patients in the cardiac ICU of Lady Reading Hospital Peshawar Pakistan. 50 patients were enrolled into either of two groups in a randomized way. Group S received statin while Group N received normal saline. The primary outcome measure was the incidence postoperative AF or atrial flutter. Two other outcome measures, length of stay on ventilator and in ICU were also analyzed. Exclusion criteria included history of atrial fibrillation, history of paroxysmal atrial fibrillation, preoperative heart rate of less than 50 beats /min and repeated surgery. Approval for the study was taken from Institutional research and ethical board, Lady Reading Hospital Peshawar. An informed consent was obtained from each patient enrolled in the study.

Calculations were done using the SPSS, software package, version 17, the student ‘t’ test was performed to compare two data. Results were displayed in figures as mean ± SD. P values of 0.05 or < 0.05 were considered statistically significant.

Results: Patients demographics were almost similar between the two groups. There was no difference in the cross-clamp time and cardiopulmonary bypass times, intra-operative blood gases and haemodynamics were similar between the two groups. (P > 0.05). Time spent on ventilator and length of stay in the intensive care unit (ICU) were significantly reduced in statin versus control group (P < 0.05, Significant). Of the 100 patients in both groups, no serious complications were seen on ventilatory support while discharged from the ICU.

Conclusion: Our study provides evidence that preoperative statin therapy is associated with a reduction in the incidence of atrial fibrillation after cardiac surgery.

Key words: Statin, cardiac surgery, atrial fibrillation

INTRODUCTION
Atrial fibrillation (AF) is a common complication after cardiac surgery and is associated with increased morbidity and prolonged hospitalization with significant economic implications.1,2 Although perioperative predictors of AF are identified and various preventive pharmacologic and surgical strategies have been introduced.3,4 The incidence of AF after cardiac surgery remains high, occurring in 20% to 40% of patients.1,2 Beyond the involvement of a multitude of peri-operative factors including alterations in the autonomic and metabolic response and oxidative myocardial stress, inflammation has been suggested recently to play a pivotal role in the pathogenesis of AF after cardiac surgery.5,6 Statins (3-hydroxy-3-methylglutaryl-coenzyme A reductase inhibitors) exert multiple pleiotropic actions independently of their lipid-lowering properties.

Our study provides evidence that preoperative statin therapy is associated with a reduction in the incidence of atrial fibrillation after cardiac surgery.

We and others have demonstrated that preoperative statin therapy decreases markers of inflam-
Statins markedly reduces atrial fibrillation in patients undergoing valve replacement surgeries.

**METHODS**

A randomized clinical trial was conducted from June 2015 to July 2016 with patients in the cardiac ICU of Lady Reading Hospital Peshawar, Pakistan. Patients of both sexes and ages between 20-50 years, post bypass surgeries for valve replacement and were on mechanical ventilation for more than 48 hours, were included in the study. Sealed envelopes were used for random assignment. 50 patients were enrolled into either of two groups in a randomized way. Group S received statin while Group N received normal saline. The primary outcome measure was the incidence postoperative AF or atrial flutter. Two other outcome measures, length of stay in ICU and in the ward were also analyzed. Exclusion criteria included history of atrial fibrillation, history of paroxysmal atrial fibrillation, preoperative heart rate of less than 50 beats/min and repeated surgery. Approval for the study was taken from institutional research and Ethical Board Lady Reading Hospital Peshawar. An informed consent was obtained from each patient enrolled in the study.

Induction of anaesthesia was done with routine standard techniques in both groups. Patients were monitored routinely, serial blood gas analysis, serum glucose and electrolytes including potassium and magnesium, were recorded continuously from the time of anesthesia induction and every hour to 48 hours after arrival in the ICU. Multiple doses of Cold (4°C) Cardioplegia was infused for myocardial protection, and is supplemented with mild systemic (35°C) hypothermia. Inotropic support given to maintain systolic blood pressure ≥80 mm Hg after load, pre-load, and heart rate were maximized. ECGs were obtained before surgery, immediately on arrival in the ICU for three consecutive days for any ischemic changes. Heart rate ≥60 bpm and a systolic blood pressure ≥95 mm Hg was maintained with β-Blockers.

Time of ventilation was recorded as arrival to ICU till extubation. All patients were placed on standardized “fast-track” protocols. Length of stay in the ICU was defined as time from ICU arrival to transfer to the high dependency unit (HDU). Criteria for discharge included a stable vitals, stable cardiac rhythm, temperature < 99°F, a well-healed incision, and oxygen saturations >90% on room air.

Calculations were done using the SPSS software package version 17, the student ‘t’ test was performed to compare two data. Results were displayed in figures as mean ± SD. P values of 0.05 or < 0.05 were considered statistically significant.

Specific statins used in trials included the following: atorvastatin (20 and 40 mg), fluvastatin (80 mg), pravastatin (40 mg), rosuvastatin (20 mg), and simvastatin (20 mg) daily. This corresponds to an atorvastatin dosing equivalent range of 10 to 80 mg. Preoperative duration of statin used were 2 days (2 days–01 week for trials reporting the postoperative AF end point).

Postoperative AF was defined as any documented AF longer than 5 minutes in duration or AF episodes requiring intervention for symptoms or hemodynamic compromise and assessed patients with telemetric monitoring for a minimum of 6 postoperative days.

**RESULTS**

Patients’ demographics were almost similar between the two groups. There was no difference in the cross-clamp time and cardiopulmonary bypass times between the two groups. Mean serum potassium levels were within normal levels in both groups throughout the perioperative period. (P > 0.05). Time spent on ventilator and length of stay in the intensive care unit (ICU) were significantly reduced in statin versus control group (P < 0.05, significant).

The percentage of minor complications in both groups were lower. The comparisons of gas measurements between the statin group and controlled groups showed no significant differences. Patients of the statin group had a shorter stay on ventilator as well as in the ICU, i.e. 2.95 ±0.78 days versus 7.44+1.12 days for controlled group. Mortality was similar in the two groups. Of the 100 patients in both groups, no serious complications were seen on ventilatory support while discharged from the ICU.

**DISCUSSION**

Our literature review suggests that pre-
operative use of statins significantly reduces the incidence of AF after cardiac surgery. In addition, the observed statin effects are largely based on observational data sets including 8 retrospective studies. On the other hand, the statin-related reduction in the odds for development of any AF were more prominent when considering only prospective trials or studies being rated of good method-logic quality. Consistent with this, the only double-blinded RCTs allocating patients to pre-specified statin doses (atorvastatin 20 to 40 mg/d) and treatment periods before cardiac surgery (3 to 21 days) demonstrated a 61% to 67% reduction in the odds for postoperative AF. Nonetheless, evidence supporting perioperative statin use for prevention of AF remains inconclusive because all randomized trials enrolled only a small number of patients with limited control for perioperative variables or blinding. Furthermore, the AF incidence rates in the placebo arm of the ARMYDA-3 trial6 (statin group 35% vs placebo group 57%; P < 0.003) was higher than the expected 20% to 40% AF rates after cardiac surgery usually reported in the current literature. Mathew et al reported a 75% increase in the odds of developing AF after cardiac surgery for every 10-year increase in age, thereby indicating the relevance of age-associated structural changes in the atrium for AF. Similarly, a-blocker or ACE inhibitor treatment prior to cardiac surgery has been repeatedly reported to be independently associated with reduced AF incidence rates after cardiac surgery. Conversely, neither the status of surgery (i.e., elective vs non-elective surgery) nor the use of anti-platelet agents has been identified as being of predictive value for the development postoperative AF. Nevertheless, the observed treatment bias parallels the findings shown in a recent literature review and indicates a more aggressive peri-procedural risk management with superior cardio-protection in patients receiving statins. Perioperative Management Liakopoulos et al high-dose statin therapy in patients with acute coronary syndromes. Although differing patho-physiologic mechanisms for the development of AF might be primarily responsible for the observed discrepancies between patients having cardiac surgery and patients with acute coronary syndrome, the optimal statin treatment protocol for prevention of postoperative AF remains to be established. Recent trials have shown that postoperative statin withdrawal is independently associated with increased in-hospital mortality and that statins reduce the risk of major adverse cardiac events only in hyperlipidemic patients having CABG. In conclusion, our study has demonstrated a reduction in the incidence of AF for patients pretreated with statins and having cardiac surgery, we observed significant difference in the length of stay on ventilator as well as in ICU in both the studied groups. Patients in the S group had shorter stay time on ventilator as well as in Cardiac ICU.(P value <0.05) However relevant publication bias and heterogeneity of studies mandate future RCTs to define the perioperative role of statins for prevention of AF, especially for normolipidemic patients and patients with valvular heart disease.

CONCLUSION:
Our study provides evidence that preoperative statin therapy is associated with a reduction in the incidence of atrial fibrillation after cardiac surgery.

REFERENCES
Statins markedly Reduces Atrial Fibrillation in Patients undergoing Valve Replacement Surgeries


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Sturge–Weber Syndrome

A 6-year-old girl complained of sudden onset of weakness in the left arm and leg with 2-day history of pain in her right eye. She had a non-palpable red lesion on the right side of her face, and the intraocular pressure was elevated in both eyes. MRI of the head revealed right cerebral atrophy with leptomeningeal enhancement along the right cerebral convexity and abnormal capillary vessels. The MRI findings were consistent with the Sturge–Weber syndrome, a rare congenital vascular disorder characterized by a cutaneous capillary malformation port-wine birthmark (patient’s face), and abnormal capillary venous vessels in the brain and eye that can lead to glaucoma, seizures, stroke and intellectual disability. The weakness on the left side, resolved within 24 hours. An antiepileptic medication was prescribed, as well as timolol, dorzolamide for glaucoma and daily low-dose aspirin treatment to reduce the risk of thrombotic events.

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University of Arkansas for Medical Sciences, Little Rock, AR

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Comparison of Analgesia Requirement in Lichtenstein Inguinal Hernia Repair under Local Vs Spinal Anaesthesia

Muhammad Kalim FCPS (Gen. Surgery)¹, Tariq Ijaz, FCPS (Gen. Surgery)²

ABSTRACT:
Background: Hernia surgery is one of the most frequently performed procedures in general surgery. Pain after inguinal hernia surgery is a common complaint in surgical wards. Many treatment modalities are available for pain relief like use of paracetamol, NSAIDs morphine derivatives and inguinal field block.
Objectives: The objective of this study was to compare postoperative analgesia requirement in Lichtenstein repair under local versus spinal anaesthesia.
Material & Methods: this Randomized clinical trial was conducted at department of surgery Lady Reading Hospital Peshawar, from 15th May 2014 to 15th May 2015.including 200 patients divided randomly in two equal groups. Patients in group A were subjected to local anaesthesia while patients in group B were subjected to spinal anaesthesia. The main outcome measure was pain relief which was measured in terms of analgesia requirement after the procedure. The patients were followed till they felt comfortable to be discharged on oral analgesia. Data was analyzed with the SPSS 11.
Results: Most of the patients were of young age group between 20-30. All patients were male. 80% of group A patients had hospital stay of 1 day while 98% of group B patients had hospital stay of more than one day. 79% patients of group A required opioid analgesics as compared to 99% of group B patients (p-value > 0.05).
Conclusion: Local infiltration for Lichtenstein hernioplasty showed better results and good efficacy as compared to spinal anaesthesia in terms of pain control and opioids requirement.

Key Words: Lichtenstein repair; local anaesthesia; spinal anaesthesia.

INTRODUCTION

The estimated incidence of inguinal hernia is 10-15%. Many exist in the community undiagnosed, undetected, and unreported. Thus inguinal hernia is a major economic problem. Despite the frequency of surgical repair, “perfect results” continue to elude surgeons and the rate of surgical failure (recurrence) is humbling. As a tension-free repair technique, Lichtenstein operation has gained great popularity worldwide during the last decade. In Lichtenstein Tension Free repair, a wall reinforcing the fascia transversalis is created by using a prosthetic mesh. This technique, that does not need a long learning curve, offers surgeons and their patients a short operation time on an outpatient basis, minimal complications rate, early return to work and virtually low recurrence rate even in non-expert hands.

Although Inguinal hernia repair is one of the most commonly performed operations worldwide, however, there is no common consensus among surgeons regarding the best choice of anaesthesia. The long-term outcome of hernia repair is generally assumed not to be affected by method of anaesthesia used.

Local anaesthesia for groin hernia repair was first proposed by Cushing on the basis of a study initiated by Halsted more than 100 years ago. Despite the great fame of its first advocates, the technique has not become generally accepted in general practice. However, local anaesthesia is only used in 5 to 8% of the patients. This is rather surprising because recent studies, retrospective, prospective as well as randomized all bear witness to its advantages over regional anaesthesia (spinal or epidural) and general anaesthesia.

Local infiltration for Lichtenstein hernioplasty showed better results and good efficacy as compared to spinal anaesthesia in terms of pain control and opioids requirement.

The effective management of pain is a vital
component of good practice for surgical patients. Unrelied pain causes a range of physiological, neuro-endocrine, psychological and behavioral consequences that may hinder recovery. Analysis of early post-operative pain assessment resulted in a difference in pain shortly after surgery, with significantly more pain after spinal anaesthesia compared with local anaesthesia. Early post-operative pain is reduced when local infiltration anaesthesia is used. It is documented that the effect of long-acting local anaesthetics like bupivacaine lasts for 4 to 6 hours which is significantly longer as compared to spinal anaesthesia.

Patients undergoing groin hernia repair under local anaesthesia have significantly less pain and only 8% patients needed post-operative opioid analgesics as compared to 22% in spinal anaesthesia, local anaesthesia is considered the anesthetic method of choice in specialized hernia centers. Among the reported advantages are simplicity, safety, extended postoperative analgesia, early mobilization without post-anaesthesia side effects, and low cost. Considering this evidence, proposed study was designed to assess the postoperative analgesia requirement of local anaesthesia against spinal anaesthesia in Lichtenstein repair of inguinal hernia in our setup, so that, if effective, can be used more frequently.

MATERIALS AND METHODS

This Randomized clinical trial was conducted in the Department of Surgery, Lady Reading Hospital, Peshawar during 12 months from 15th May 2014 to 15th May 2015 recruiting 100 cases in each group. The inclusion criteria was patient with 20-60 years having direct or indirect inguinal hernia. Patients having clinically strangulated inguinal hernia, history of recurrent inguinal hernia, bilateral inguinal hernia, medical contra-indication to spinal anaesthesia, allergy to local anaesthetic agent and patient not giving consent to spinal/local anaesthesia were excluded from this study.

All the patients were admitted in the department of surgery throughout patient department (OPD), fulfilling the selection criteria. An informed consent was obtained from them after discussion of risk versus benefit ratio. Patients were divided in two groups with the help of random number table; Group A, comprising of 100 patients, received local anaesthesia. The anaesthetic mixture used for local anaesthetic repair consist of 20 ml of 2% xylocaine with 1:200,000 adrenaline, 30 ml of 0.5% bupivacaine with 1:200,000 adrenaline and 50 ml of 0.9% saline. To buffer the lignocaine, 6 ml of 8.4% sodium bicarbonate was added, giving a pH of 7.0. Anaesthetic mixture was injected along the line of proposed incision, 2 cm above and medial to anterior superior iliac spine deep to external oblique. Further anaesthetic mixture was injected under the external oblique around the neck of sac during operation. In addition, midazolam in a dose of 0.1mg/kg was used for sedation. Group B comprising of 100 patients, received spinal anaesthesia with 2ml of inj. bupivacaine 0.75 % (15mg). Cephradine 500mg I/V was given at time of induction of anaesthesia. In both groups Lichtenstein repair was performed.

The time of arrival in postoperative ward was defined as zero. Diclofenac sodium 50mg twice a day was given to all the patients. Narcotic analgesics (nalbuphine) was given on request and was mentioned as Yes/No. Other variable i.e. total dose of narcotic analgesia in each group was also noted. All the above mention information including name, age, gender and address were recorded in a pre designed proforma. Exclusion criteria will be strictly followed to control the confounding variables.

All the collected information from the proforma was entered into S.P.S.S. version 11 and was analyzed through its statistical package. Mean and standard deviation of age was calculated in both the groups. Frequencies and percentages of sex and opioid analgesia requirement were calculated and were presented in the form of tables. Analgesic requirement was compared between the two groups by using chi-square test. P-value ≤ 0.05 was considered as significant.

RESULTS

The mean age of the patient was 35.67 years ±15.54SD and 37.77 years ±12.34SD in group A and B respectively. All of the patients included in both groups were male. Most of the patients in Group A and B were of young age group between 20-30 years i.e. 40 (40%) and 39 (39%) respectively. Second peak was between age 50-60 i.e. 26 (26%) and 24 (24%) respectively. (Table No.1) 80% of patients in group A had hospital stay of 1 day while 98% of group B patients had hospital stay of more than 1day (i.e. 88 % 2 days and 10 % 3days). (Table 2). 79% patients of group A with local anaesthesia required opioid analgesics as compared to 99% of group B patients with spinal anaesthesia (p-value > 0.05). (Table 4)

TABLE-1 Age Distribution of patients with inguinal hernia

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Group A</th>
<th>Group B</th>
<th>P value</th>
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<tr>
<td>20-30</td>
<td>40 (%)</td>
<td>39 (%)</td>
<td>0.678</td>
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<td>31-40</td>
<td>20 (20%)</td>
<td>17 (17%)</td>
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<tr>
<td>41-50</td>
<td>16 (16%)</td>
<td>20 (20%)</td>
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<tr>
<td>51-60</td>
<td>26 (%)</td>
<td>24 (%)</td>
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TABLE-2 Hospital stay of the patients

<table>
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<th>Hospital stay (days)</th>
<th>Group A</th>
<th>Group B</th>
<th>P value</th>
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<tbody>
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<td>Number</td>
<td>Percentage (%)</td>
<td>Number</td>
<td>Percentage (%)</td>
</tr>
<tr>
<td>1</td>
<td>80</td>
<td>02</td>
<td>02</td>
</tr>
<tr>
<td>2</td>
<td>16</td>
<td>88</td>
<td>88</td>
</tr>
<tr>
<td>3</td>
<td>04</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>
TABLE - 3 Distribution according to opioid analgesia requirement

<table>
<thead>
<tr>
<th>Opioid Analgesia Requirement</th>
<th>Group A</th>
<th>Group B</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>79 (79%)</td>
<td>99 (99%)</td>
<td>0.050</td>
</tr>
<tr>
<td>No</td>
<td>21 (21%)</td>
<td>01 (1%)</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION:

Inguinal hernia repair is one of the most common surgical procedures. It can be performed under general anaesthesia, spinal anaesthesia and local anaesthesia. The incidence of intra-operative, postoperative pain, morbidity, hospital stay and cost is related to the type of anesthesia employed. The studies are therefore focused on finding the appropriate anesthesia to reduce all of the above. Surprisingly there is little consensus today on the choice of anesthesia. Current data reflects a large variation in the anesthesia practices, which are mainly based on the preferences of the surgeon and the anesthetist rather than evidence based.

The use of local infiltration anesthesia (LIA) varies from 7% to 79% depending on the country and whether it is carried out in a specialist centre or general surgical unit. In the UK 60% to 70% percent of cases are still being performed under general anesthesia, with regional anesthesia employed in only 10-20% of cases. Specialist Hernia centers employ LIA in almost all cases to achieve 100% day case rates.

Several studies indicate that that LA for inguinal hernia repair effectively blocks surgical stress, provides extended post-operative analgesia and it is simple to execute. It is safe even in high risk patients. Additionally it enables early mobilization and discharge without the need for extended monitoring. In this study, as well as others, LIA did not shorten the operative time. It was, however, associated with shorter stay in recovery room and was significantly less demanding on post-operative monitoring.

The reason why a shift to LIA is not on line with RCS guidelines is perhaps because anesthetists are more comfortable with the techniques of GA and SA than LIA. This also explains why only 15% of surgeons offer the majority of their patients LIA repair. The commonly perceived problem with LIA in hernia repair is the pain of infiltration which can be extreme enough for the patient to decline further surgery in LIA forcing conversion to GA. Our own experience, which is shared by others, is that buffered LA solution is associated with a high level of patient satisfaction. Discomfort with LA can be further minimized by pre warming the LIA solution and a slower rate of infiltration. We achieved excellent patient satisfaction with LIA using these measures, with none of the patients requiring conversion to GA. A potential problem of toxicity of LIA in obese patients was avoided by LIA mixture used in this study where large volumes were necessary for such patients.

The benefit of LIA before hernia surgery has been investigated by Tuerskoy et al. They found both constant and incident pain to be less severe for up to forty-eight hours post-operative compared to those who received no LIA. Callase & Kehlet also found decreased post operative pain and analgesia usage in LIA. These findings were confirmed by our study showing lower analgesic usage. This decreased post operative nausea and vomiting leading to shorter hospital stay in group A. In a review by Sanjay 52% cases of LA had hospital stay of < 1day while 58% of SA and GA had hospital stay of > 1day. In our study, amongst the patients of group A, 80% had hospital stay of <1day while 98% of group B patients had hospital stay of > one day.

With increasing life expectancy the number of elderly patients with inguinal hernia repair are increasing. This group is more likely to have concurrent diseases and therefore more susceptible to SA or GA related complications, especially cardiovascular complications as well as urinary retention and spinal headache. All these increase hospital stay and cost of treatment. In our study nine patients in group B developed urinary retention and 4 of them required catheterization. Incidence of retention can be as high as 27% with SA leading to prolonged stay. There was no incidence of urinary retention in group A.

This study provides evidence that LIA is feasible in most cases of inguinal hernia repair and is superior to SA. Besides being cost effective, LIA provides highly satisfactory intra-operative analgesia, less post operative pain, no urinary retention and faster mobilization and recovery. It also reduces burden on anesthesiologist and other OT staff. The reluctance of surgeons to offer LIA can be overcome by increasing awareness of and demonstrating the techniques of LIA administration in workshops.

CONCLUSION

The results of using local anaesthesia with mixture of xylocaine and bupivacaine were insignificant but with advantage of better postoperative pain control after inguinal hernia repair than spinal anaesthesia. It also showed that fewer dosages of postoperative narcotic analgesic were required after Lichtenstein repair of inguinal hernia, to keep the patients pain free in local versus spinal anaesthesia.

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Ophthalmology update Vol. 15 No.4, Oct- December 2017
Comparison of Analgesia Requirement in Lichtenstein Inguinal Hernia Repair under Local Vs Spinal Anaesthesia


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Seesaw Nystagmus
A middle aged patient presented with a 1-year history of generalized headache, diminished vision, (20/120) with abnormal eye movements. Fundus revealed pallor disc with normal pupillary reflex and bitemporal hemianopia. Further examination revealed rhythmic, torsional, and vertical movement in which the eye rotating inward while moving up and the other eye moving downward, typical in seesaw nystagmus, increased in amplitude during downward gaze. MRI revealed a giant pituitary adenoma with suprasellar extension, compressing the optic chiasm. It is a type of pendular nystagmus in giant suprasellar lesions. This form of nystagmus has been attributed to maladaptation of the vestibulo-ocular reflex and a dysfunctional ocular counter-rolling response, coexisting with hypothyroidism and hypogonadism. He underwent a transsphenoidal hypophysectomy resulting in complete resolution of the nystagmus. On follow-up at 3 months, the visual acuity in both eyes improved to 20/40.

Curtesy: Dr. K.V.S. Hari Kumar, & Dr. Pritam Singh,
Army Hospital, Delhi, India
ABSTRACT:
Objectives: To determine the relative incidence and types of congenital anomalies in the offspring of females suffering from medical problems during the course of pregnancy.
Methodology: The study was conducted in Kulsoom Maternity Hospital Peshawar from Jan; 2016 to Jan; 2017. Study sample comprised of 1000 cases admitted for the purpose of delivery. Data collection form was used to collect information of different variables of interest. The cases contributing to congenital anomalies were studied. After the delivery all the newborns they were thoroughly examined for any obvious congenital anomalies. Cases suspected of having cardiovascular congenital anomalies were subjected to echocardiography.
Results: 69 cases were found to have medical problems. 20.28% cases were suffering from hyperpyrexia due to various bacterial and viral infections. Others in the descending order of frequency were cases of TORCH infections 17.39%, i.e., Hypertension 14.49%, Diabetes mellitus and Cardiovascular problems 13.04 % and Psychosocial problems 11.59% and Epilepsy 10.14%.
Out of 69 cases with medical problems, 12 were found to have congenital anomalies. 25% of congenital anomalies were detected in patients suffering from TORCH infections. Others in descending order of frequency were Diabetes mellitus and Cardiovascular 22.22% each, Epilepsy 14.28%, Psycho-social problems 12.50%, Hypertension 10% and Hyperpyrexia 7.14%.
Various types of congenital anomalies detected in the study population were Cleft lip/Cleft palate, Club feet and Ventricular septal defect (two cases each), Meningocele, Hydrocele, Polydactyly, undescended Testis, Congenital cataract and Intracranial calcification (one case each).
Conclusions: Many of the possible risk factors can be avoided if necessary precautions are taken in time. Pregnant ladies suffering from various diseases like diabetes, cardiac diseases, hypertension, epilepsy, hyperpyrexia, and various psychosocial problems should be properly and timely treated with safe drugs, having no teratogenic effects on the fetus.
Key words: Incidence/Types, Congenital anomalies (CAs), Medical problems

INTRODUCTION
Medical problems in pregnant females can have drastic effects on the pregnancy outcome. In normal conditions the married females have 25–30 percent chance of getting pregnant during each menstrual cycle. The concept may fail to implant or may not survive. There are number of medical problems, which in the affected females can have very bad effects on the pregnancy outcome. The risk of congenital heart diseases in the fetus is increased, from twice to 20 folds, depending on the nature of the mother’s lesion. Complete clinical examination of all the pregnant ladies is therefore mandatory, in order to detect any other medical problem besides pregnancy in time. In the developed countries, CAs lead to 20-30% of perinatal deaths, while 50% of the babies die in infancy.

Many of the possible risk factors can be avoided if necessary precautions are taken in time. Pregnant ladies suffering from various diseases like diabetes, cardiac diseases, hypertension, epilepsy, hyperpyrexia, and various psychosocial problems should be properly and timely treated with safe drugs, having no teratogenic effects on the fetus.
It also leads to severe mental and physical handicaps in 50% of the affected children.\textsuperscript{4} 80–90% of the congenital anomalies occur in infants without any risk factor.\textsuperscript{5} It is therefore recommended to have ultrasonographic screening of the whole obstetric population for early detection of congenital anomalies especially in cases suffering from various medical problems.\textsuperscript{4,5} Main purpose of this study is to emphasize the relative incidence and nature of human congenital anomalies in the offspring of pregnant females suffering from various medical ailments in this region. This can play a reasonable role in the prevention of these congenital anomalies and decreasing both social and economic burden on the concerned families in particular and community in general.

**MATERIAL AND METHODS**

This cross sectional study was carried out to assess the incidence and types/nature of congenital anomalies in the offspring of mothers suffering from various medical problems during pregnancy. A total of 1000 females admitted in Kulsoom Maternity Hospital Peshawar for the purpose of delivery (both O.P.D/emergency cases) during the study period were included in the study population. The live born babies of 69 pregnancies with various medical problems were examined for gross congenital anomalies. The following procedure was adopted:

A detailed history was taken from all the admitted cases on a printed performa regarding the total duration and progress of pregnancy. History of infections, medical ailments, drugs intake, exposure to radiations (X-Rays etc.) or rise of temperature during pregnancy was taken. All the cases were inquired, examined and investigated for any suspected medical problem during or before the present pregnancy. The number and outcome of previous pregnancies (if any) was recorded. All the cases were subjected to prepartum ultrasonography in order to look for any fetal congenital anomaly.

**RESULTS**

In the present study, all cases with still births were excluded from the study population. Out of 1000 cases, 69 (6.9%) were found to be suffering from medical problems during pregnancy. The following results were obtained during the study of congenital anomalies in live born babies of the affected cases: Among 69 pregnancies with known medical problems, 12 (17.39%) were found to have congenital anomalies in their offspring at the time of birth. Among the whole study population of 1000 gravid females, a total of 69 (6.9%) cases were found to have medical problems. Majority of the cases 14/69 (20.28%) were suffering from hyperpyrexia. Others in the descending order of frequency were cases of TORCH infections 12/69 (17.39%), Hypertension 10/69 (14.49%), Diabetes mellitus and Cardiovascular problems 9/69 (13.04 %) Psycho social problems 8/69 (11.59%) and Epilepsy 7/69 (10.14%), (Table: 1).

**TABLE: 1**  Percentage of medical problems in 1000 cases

<table>
<thead>
<tr>
<th>S. NO</th>
<th>MEDICAL PROBLEMS</th>
<th>NO OF CASES</th>
<th>%AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hyperpyrexia</td>
<td>14</td>
<td>1.4</td>
</tr>
<tr>
<td>2</td>
<td>TORCH Infections</td>
<td>12</td>
<td>1.2</td>
</tr>
</tbody>
</table>
Congenital Malformations in the Offspring of women with Medical Problems during Pregnancy

Various types of congenital anomalies detected in the study population were Cleft lip/Cleft palate, Club feet and Ventricular septal defect (two cases each), meningocele, hydrocele, polydactyly, undescended testis, congenital cataract and intracranial calcification (one case each).

Table: 3 Types and frequency of congenital anomalies in 69 cases with medical problems

<table>
<thead>
<tr>
<th>S. No</th>
<th>Congenital Anomalies</th>
<th>No. of cases</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cleft Lip/Cleft Palate</td>
<td>02</td>
<td>02.89</td>
</tr>
<tr>
<td>2</td>
<td>Club Feet</td>
<td>02</td>
<td>02.89</td>
</tr>
<tr>
<td>3</td>
<td>Ventricular Septal defect</td>
<td>02</td>
<td>02.89</td>
</tr>
<tr>
<td>4</td>
<td>Meningocele</td>
<td>01</td>
<td>01.44</td>
</tr>
<tr>
<td>5</td>
<td>Hydrocele</td>
<td>01</td>
<td>01.44</td>
</tr>
<tr>
<td>6</td>
<td>Poly dactyly</td>
<td>01</td>
<td>01.44</td>
</tr>
<tr>
<td>7</td>
<td>Undescended Testis</td>
<td>01</td>
<td>01.44</td>
</tr>
<tr>
<td>8</td>
<td>Congenital Cataract</td>
<td>01</td>
<td>01.44</td>
</tr>
<tr>
<td>9</td>
<td>Intracranial Hemorrhage</td>
<td>01</td>
<td>01.44</td>
</tr>
</tbody>
</table>

DISCUSSION
The risk factors involved in causation of CAs included both maternal and fetal components. The maternal factors which had adverse effects on the fetus in particular and outcome of pregnancy in general, included, in descending order of frequency, TORCH infections, diabetes mellitus, cardiovascular diseases, hyperpyrexia, hypertension, psychiatric problems and epilepsy.

Many viral and bacterial infections in the mother during pregnancy can have drastic effects on the outcome of pregnancy. In the study group 25% of females suffering from some component of TORCH infections gave birth to babies with congenital anomalies. Most important being cytomegalovirus, toxoplasmosis and rubella infections. Inderjeet Gandhoke et al in 2006 reported in their study high incidence (18.75%) of only CMV related congenital defects. While, in another study, conducted by M.J. Golalipour and his colleagues in 2009, congenital anomalies detected in 6% of pregnant females, were seropositive for toxoplasma gondii, CMV and rubella.

Maternal diabetes, both insulin dependent and non insulin dependent (type-1, and type-2), is well known for its harmful effects on the pregnancy outcome. 22.22% of the pregnant women in the study population, having diabetes, gestational or otherwise, gave birth to babies with CAs. The incidence of CAs is higher in uncontrolled diabetics with no preconception care than controlled cases with good preconception care. J.G. Ray and his colleagues in 2001 have mentioned the same fact in their article by stating “The pooled rate of major anomalies was lower among preconception care recipients (2.1%) than non recipients (6.5%) (RR 0.36, 95% CI 0.22-0.59)”. The higher incidence of CAs was also described in two other large studies conducted by Verheijen EC et al in 2005 and Dunne F et al in 2003 (12years data). In a study conducted by Y T Chia et al, the congenital malformation rate was 15.7%, with cardiac malformation and cleft lip and/or cleft palate, being the 2 common malformations in all the patients. Eriksson UJ conducted a study in 2009 and stated that congenital malformations were more common in infants of diabetic women than in children of non diabetic women. The results of the clinical and basic studies support the view of early gestational induction of the malformation in diabetic pregnancy.

Cardiac diseases in mother can have adverse effects on the growing fetus. In our study, 22.22% of the pregnant females suffering from cardiovascular diseases were having congenital malformations in their offspring. Similarly, Lupton et al in 2002 noted an increased risk of congenital heart disease in the fetus from twice to 20-fold, depending on the mother’s lesion. In another study conducted by Paul Khairy et al in 2006, it was noted that the primary maternal cardiac events complicated 19.4% of ongoing pregnancies. Samuel C and his colleagues in 1997, concluded in their study...
that the pregnancy in woman with heart disease is associated with significant cardiac and neonatal morbidity.\textsuperscript{15} Similarly Presbitero P et al in 1994, noted a 4.9\% higher incidence of congenital heart disease in the fetuses of mothers with cardiac problems, than that found in the normal population.\textsuperscript{16} The use of NSAIDs during first trimester of pregnancy can have unwanted and serious consequences in the growing fetus. In our study 7.14\% of the pregnant females using NSAIDs during first trimester, for hyperpyrexia and other symptoms, ended up in congenitally abnormal babies. These finding was consistent with the facts noted by Ofori B et al in 2006.\textsuperscript{17} In their study, 8.8\% of the pregnant ladies had congenital anomalies, compared with 7\% of women who did not use NSAIDs. Psychological problems in 12.50\% of the cases who were taking anti depressants and other anti psychotic drugs during pregnancy, presented with congenital anomalies. These findings are in accordance with the study conducted by Carmichael et al in 2000.\textsuperscript{18} Maternal epilepsy is another important factor affecting pregnancy outcome. 14.28\% of the females in the study group, suffering from epilepsy and taking valproic acid, gave birth to babies with congenital anomalies. The findings are consistent with the results of a case control study carried out by Jentink J et al in 2010, in which the key findings were increased risk with valproic acid exposure for 6 of the 16 malformations. The findings are more pronounced when the drug is used in the first trimester.\textsuperscript{19} Canger R et al in 1999 concluded, that anti epileptic drugs, are one of the primary risk factors for an increased incidence of congenital malformation.\textsuperscript{20}

CONCLUSION.

Many of the possible risk factors can be avoided if necessary precautions are taken in time. Pregnant ladies suffering from various diseases like diabetes, cardiac diseases, hypertension, epilepsy, hyperpyrexia, and various psychosocial problems should be properly and timely treated with safe drugs, having no teratogenic effects on the fetus.

REFERENCES

Awareness about Consumption of Energy Drinks Pattern & its Perceived Adverse Effects amongst Medical Students in Lahore

Matlub Murtaza MBBS.1 Yousaf Zahoor MBBS2 Adeel Mushtaq MBBS.3

ABSTRACT:
Objective: Energy drink has been increasing its popularity especially among adolescents and young adults in Pakistan and there are safety concern regarding energy drinks alongside marketing claims of behavioral and psychological benefits. There is no recent policy regarding energy drink in Pakistan.

Methods: A cross sectional study was conducted in Lahore among medical students. Four hundred two (402) students were interviewed through structured questionnaire. Data were analyzed by SPSS version 19.0. chi square test was used to know the proportion of male and female pattern of consumption and adverse effects of energy drink

Results: The results shows that total 402 students were included in the study in which 91.2% were energy drink user and 9.8% were non-user. Mostly students had irregular routine of energy drink consumption students and the pattern of consumption was not much high in students. Mostly people use energy drink just because it is a refreshing. Majority of Students do not know about side effects of energy drinks and ingredients of them

Conclusion: The study concluded that mostly students knew about energy drink brand names but they did not know about their ingredients. 91% told that they use energy drinks off and on and not as routine in life. The study showed that mostly students did not know about side effects of energy drink and the pattern of consumption is not much high in students. Nutrition programs and awareness campaigns about healthy and unhealthy diet will bring positive effects.

Key words : Consumption, awareness, stimulator

INTRODUCTION:

The term “energy drink” is a popular term used to refer to some beverages that typically contain 294mg of caffeine as well as other ingredients, such as taurine, guarana, and B vitamins, for the purpose of providing an extra energy boost up.1 Energy drinks most often contain taurine, caffeine and glucose along with a variety of other substances like guarana and ginseng. These drinks vary widely in caffeine content. As much as 80 to 300 mg of caffeine and 35 grams of processed sugar per 8-ounce serving are commonly present in most energy drinks.2

In 1960 Taisho Pharmaceuticals (Japan) makes the first drink specifically targeted at increasing energy. First introduced as medicinal tonic drink. The drink (Lipvitan-D) contains a mixture of essential vitamins and also taurine and niacin which are metabolic agents proven to boost things such as energy and concentration. Four Loko introduced in 2005 by Phusion. Pharmaceutical. It was alcoholic drink at that time. In 2010 it reintroduced to American market after removing Caffeine, Taurine and Guarana as ingredients. This was a result of legal, ethical and health concerns about the product. Washington state begins energy drink legislation to ban energy drinks to persons under 18 years old.3

Most of the students did not know about their ingredients, 91% use energy drinks of and on, and they do not know the side effects of these drinks. Yet the pattern of consumption is not much high in students. Nutrition programs and awareness campaigns about health and unhealthy diet can bring positive effects in our society, especially the students.

Caffeine is widely consumed as part of many drinks all over the world, not knowing its most common side effects on health. The common one of these being electrolyte imbalances such as hypokalemia leading to arrhythmias and endothelial cell dysfunction which impairs coronary blood flow especially during exercise hence leading to ischemia and cardiac arrest. Energy drinks have also been shown to alter neural functions mediated by acetylcholine. Neurological effects include increased attention, agility and reduced anxiety on acute use but after withdrawal there is lack of attention, irritability and depression, resulting from prolonged use of drinks. Co-administration of ingredients like

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1. Medical Officer BHU Jehan Pur 2. Medical Officer, Bhu Bheen 3. Medical Officer, Aziz Bhatti Shaheed Hospital, Gujrat
Taurine and Ginseng which are found in energy drinks can also cause stomach upset and bowel irritability. The rapid rise in popularity of energy drinks (EDs), particularly among adolescents (aged 10-19) and young adults, has serious implications for cardiac health. In an article published in the Canadian Journal of Cardiology, researchers focus on the pharmacology of EDs, adverse reactions to them, and how the marketing of these drinks as a means to relieve fatigue, improve physical and cognitive performance ignoring its real dangers. Sales of energy drinks have soared in recent years. In the US, sales increased by 60% between 2008 and 2012. It is estimated that 68% of adolescents, 30% of adults and 18% of children under the age of 10 consume the beverages all over the world. Although “energy drinks” like Red Bull and Sting by PepsiCo are an emerging industry in Pakistan. Energy Drinks are consumed by all age groups but the most vulnerable to its use and ill effects are adolescents. But increasing consumption of energy drinks having caused an increase in adverse health effects. Last year, a report from the Substance Abuse and Mental Health Services Administration (SAMHSA) revealed that the number of emergency department visits involving energy drinks have doubled between 2007 and 2015, from 10,068 visits to 20,783 all over the world. The purpose of this study is to know about energy drink pattern of consumption and its associated side effects.

**Taurine:** It is a Brazilian herbal fruit, commonly used in energy drinks. It contain high amount caffeine and is used as aphrodisiac with stimulating properties, headache, fatigue and muscle pains.

**Guarana:** (sulfonic acid). It is an organic compound present in the bile, human tissue, breast milk and fish. It is an oxidant and play an important role in the development and functioning of CVS, muscular tissue, retina and CNS. Since it is present in the breast milk it is added in the infant milk as an important constituent. It is also used in contact lens solution as well as in cosmetics. Its presence in energy drinks, stimulates hypothalamus and modify neuro-endocrine functions.

**Gin Seng:** It is plant with fleshy roots and widely grown in China and USA, popularly used in tea, drinks and dietary supplement which elevates the memory, fatigue and helps the menopausal ladies and the mild diabetics. Overuse of Gin Seng may cause hypertension and blurring of vison.

**MATERIAL AND METHOD:**

A cross-sectional study was conducted during 2015 among medical college students in Lahore. Convenient sampling was used to calculate the sample size. The sample size was calculated according to the following established formula for sample size determination:

\[ n = \frac{z^2 \times p \times (1-p)}{d^2} \]

\[ n: \text{the minimum sample size, } Z= \text{ constant (1.96 as } 95\% \text{ CI). } \]

**RESULTS:**

**Graph.1 Gender of participants**

Results shows that there were 285 female (70.4%) and 119 (29.6%) males students who were included in this study.

<table>
<thead>
<tr>
<th>User %</th>
<th>Non user %</th>
<th>Total user</th>
</tr>
</thead>
<tbody>
<tr>
<td>93.7</td>
<td>6.21</td>
<td>402</td>
</tr>
</tbody>
</table>

The result shows that highest amount of consumption was 1-3 times in a month among students, in between this 95 were females and 53 were males.

**Table 2 . Pattern of consumption in relation to gender**

<table>
<thead>
<tr>
<th>Value</th>
<th>Df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>26.211a</td>
<td>4</td>
</tr>
<tr>
<td>Likelihood ratio</td>
<td>26.216</td>
<td>4</td>
</tr>
<tr>
<td>Linear-by-Linear association</td>
<td>12.692</td>
<td>1</td>
</tr>
</tbody>
</table>

The chi square test of association with \( \chi^2 (I) = 26.21 \), \( p = 0.00 \) (less than 0.05) indicates that there is association between gender and pattern of consumption of energy drinks.
The chi square test of association with \( \chi^2(1) = 2.68, p = 0.611 \) (not less than 0.05) indicates that there is no association between gender and perceived adverse effects of energy, which means that the proportion of female energy drink perceived adverse effects were not significantly different as compared to proportion of male perceived adverse effects of energy drinks.

**DISCUSSION:**

The result shows that 402 students were interviewed during the study, out of them 119 (29.6%) were male and 283 (70.4%) were female. In between these 91.2 were user and 9.8 were non user. The results show that the consumption of energy drink is not very common and people use energy drinks on and off not frequently. 38.1% students use energy drink 1-3 time in a month. 32% had irregular routine. The result shows that female consume energy drink more as compared to male although both use energy drink on and off but female consume energy drink more as compared to male. The result shows that 195 (48.5%) student told that energy drink had no side effects, while 131 (32.6%) students told that energy drink had side effects.

A study in Saudi Arabia was conducted on energy drink perceived benefits, perceived side effects and pattern of consumption according to that study 412 students were interviewed and results show that male are 4.5% more energy drink user as compared to female. People had no regular routine history and according to that study female use more than one can per day as compare to male. According to that study the most commonest reason to use energy drink was to give company to friends. the next most commonest reason was to keep themselves awake. According to that study the most commonest benefit of energy drinks according to students was to keep themselves awake second commonest benefit according to people was to improve physical and mental activity. Increase urination was 1st commonest symptoms in males and insomnia was 1st commonest in females. Abnormal heart beat, blood pressure, psychological disorders and vision blurriness were also reported due to energy drinks. According to this study another observation was noticed that very few students knew about energy drink ingredients.

Another study was conducted on energy drink awareness and pattern of consumption of energy drinks. Two main reasons of not using energy drinks by non-users were “awareness from its side effects” 247 (47.8%) and “have no specific reason” 265 (51.3%). Most common side effects reported by users were fatigue 111 (31.7%) and weight gain 102 (29.4%).

This study was conducted on patterns of caffeinated energy drinks consumption among adolescents and adults in Hail, Saudi Arabia. According to this caffeinated energy drinks have become more popular in the last decades, especially amongst adolescents and young adults in different parts of the globe. The study aims to investigate the frequency of energy-drink consumption and associated factors in an arbitrary group of adults and adolescents living in Hail/Saudi Arabia. The current study revealed about 46% had taken energy drinks, while about 54% did not ever used energy drinks. Out of the energy drinks consumers, 37% started drinking during the primary school, 64% consumed energy drinks on a daily basis, and 44% consumed two or more cans per day. Awareness of community about the ingredients and potential hazards of energy drinks should be raised and encouraged by designing and implementing educational programs.

It is estimated that 31% of 12- to 19-year old adolescents regularly consume EDs. These beverages often contain high amounts of labeled caffeine. However, they can contain “masked” caffeine, in the form of Guarana, for example, which comes from a Brazilian plant and is identical to caffeine found in coffee beans, but at twice the concentration. The addition of Guarana and other substances such as Ginseng and Taurine in variable quantities may generate unknown interactions.

Although caffeine is widely used and generally regarded as safe, serious adverse effects have been reported, especially when consumed in larger doses. With a range of readily available sources, such as EDs, gums, inhalers, and orodispersable sheets. Adolescents and young adults can easily overdosed. It is estimated that as many as 46% of the 5,448 caffeine overdoses reported in the United States in 2007 occurred in adolescents younger than 19 years.

A study was conducted on energy drink ingredients according to this Energy drinks are usually a mixture of Caffeine, Guarana, Taurine, Carbohydrates, B-Complex and Gluconolactone (a food additive in powder form in cheese used to preserve pickles also as an alternate to sugars). These as well as coffee beverages have become very popular with children and youth in recent years. Caffeine itself is not a harmful substance,
however, taken in large amounts it can be considered dangerous.

Research is finding that caffeine-laden drinks could be stopping children’s brains from developing properly. By preventing deep sleep, caffeine interferes with the development of the brain during adolescence. This is a critical time for the brain, when problems in development can lead to schizophrenia, autism, anxiety, drug use, and personality disorders.

Health concerns may include: Dental erosion, high blood pressure, gastrointestinal disorder, shakes, tremors and chills, nausea and vomiting. 

Another study was conducted on issues regarding energy drink that these energy drinks increase energy? There is limited evidence that consumption of energy drinks can significantly improve physical and mental performance. A recent literature review determined that consumption of up to 400 mg caffeine daily by healthy adults is not associated with adverse effects. However, groups that are at risk, such as women of reproductive age and children, should limit their daily consumption of caffeine to a maximum of 300 mg for the former and 2.5 mg/kg body weight for the latter; thus they may need to avoid consuming energy beverages with a higher caffeine content. Adolescents should limit caffeine consumption, as intakes greater than 100 mg/day has been associated with elevated blood pressure. Based on these findings, consumption of energy drinks by pregnant or nursing women, adolescents, and children is not recommended. Caution is warranted even for healthy adults who choose to consume energy beverages. Consumption of a single energy beverage may not lead to excessive caffeine intake. Other stimulants such as Guarana and Ginseng are often added to energy beverages and can enhance the effects of caffeine. Guarana, in particular, contains caffeine (1g of guarana is nearly equal to 40 mg caffeine) and may substantially increase the total caffeine in an energy drink. Adverse effects associated with caffeine consumption in amounts of 400 mg (Nutrition and Health Info-Sheets) more include nervousness, irritability, sleeplessness, increased urination, abnormal heart rhythms (arrhythmia), decreased bone levels, and stomach upset. Furthermore, it should be noted that energy drinks contain added sugar. According to the USDA Dietary Guidelines, sugar should be limited in the normal daily diet.

CONCLUSION:
Most of the students did not know about their ingredients, 91% use energy drinks of and on and they do not know the side effects of these drinks. The pattern of consumption is not much high in students. Nutrition programs and awareness campaigns about health and unhealthy diet can bring positive effects.

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ABSTRACT

Background: Anostomy is a surgically created opening between a hollow organ and the body surface or between any two hollow organs. Stoma-related complications like infection, prolapse, parastomal hernia, retraction, and high output occur in up to 30% of patients with a stoma. This study is designed to compare efficacy between linear and purse-string skin closure after a loop ileostomy reversal.

Objectives: To compare efficacy between linear and purse-string skin closure after a loop ileostomy reversal in terms of infection.

Material and Methods: This randomized controlled trial of 12 months duration has been conducted on 204 patients at department of surgery Khyber Teaching Hospital Peshawar by randomly allocated in two groups by lottery method. Patients in group A were subjected to conventional linear closure of ileostomy reversal wound after laparotomy and patients in group B were subjected to purse string closure. Patients were followed for development of surgical site infection after 1 month of surgery. Data was analyzed by SPSS version 10.0. Chi Square test was applied and P-value ≤ 0.05 was considered significant.

Results: In study A- group, 78 (76.47%) patients have normal wound healing and 24 (23.52%) patients developed surgical site infection (SSI) with effectiveness of 76.47%. In study B- group, 91 (89.21%) patients had normal wound healing and 11 (10.72%) patients developed SSI with effectiveness of 89.21%. The difference between two groups was statistically significant in terms of surgical site infection (p value0.016).

Conclusion: Purse-string skin closure is more effective than conventional linear closure in terms of surgical site infection.

Key words: Efficacy; Linear and purse-string skin closure; ileostomy

INTRODUCTION

A loop ileostomy is a surgically designed intestinal stoma and is most often used temporarily for fecal diversion. In this modern era of major advancement in the field of intestinal surgery, construction of loop ileostomy is still a common and frequently performed operation.

Ileostomy is a social trauma to the patient due to fecal waste and its smell, thus requiring good quality of management which is possible when highest degree of technical ability and compassion are displayed. Thus one should adapt those surgical techniques that have proved consistently reliable and rewarding. Nowadays ileostomy is very common in cases of enteric perforation so it’s making with proper surgical technique, its care and its complications are very much important.

Stomas may be classified accordingly to their anatomical location and segment of intestine used as ileostomies or colostomies and surgical design as loop or end. The clinical scenario determines that which type of stoma needs to be construct. Temporary loop ileostomies are easier to construct but their closure require close attention and is not a simpler procedure. The proximal stomas tends to produce more abundant effluent or loose stool with higher electrolyte losses than distal ones, factors that influence clinical management. Fecal diversion carries a significant lifestyle adjustment for patients, factors requiring recognition when educating patients in the care of the stoma and appropriate pouching to minimize pitfalls.

Purse string skin closure is better than linear skin closure and more effective in preventing superficial surgical site infection after loop ileostomy reversal and the morbidity associated with it.

Complications such as wound infection / hematoma, leakage from the anastomosis following reversal, small bowel obstruction at the site of ileostomy closure, iatrogenic bowel injury, local abscess and post reversal peristomal dermatitis leakage, prolapsed, parastomal hernia, retraction and stenosis are the consequence of its poor construction.
readmission is a relatively common situation in patients undergoing major colorectal procedures that required an ileostomy creation. The main factors causing re-admission in ileostomy patients are high output stoma and dehydration from it. An occurrence of Superficial surgical site infection (SSI) is the single most important factor for hospital re-admissions. A loop ileostomy has an adverse outcome on the quality of life, which is further aggravated if stoma related complications occur. Hence it should be done by an experience surgeon who understands the potential metabolic and mechanical problems associated with ileostomy. Complications related to ileostomy stoma may occur early or late, intermittently or progressively and may be acute or chronic in nature. These complications can be prevented by adequate preoperative preparation and sound surgical technique and a better rehabilitation to prepare the patient psychologically. Enteric perforation in Typhoid and Tuberculosis are the most frequent indications in our country. Ileostomy is a lifesaving procedure in late moribund, septic cases with fulminant enteritis and peritonitis and remains a necessary procedure on temporary basis. The role of stoma therapist / nurse is also important to decrease the incidence of stoma complications and to prepare the patients mentally.

MATERIAL AND METHODS

This was Randomized controlled trial which was conducted at department of surgery Khyber Teaching Hospital Peshawar. Study duration was 12 months from 1st August 2013 to 1st August 2014. Sample size was 204 with 102 patients in each group. Sampling technique was consecutive non probability. All patients for ileostomy reversal having age of 14 years and above were included in this study while patients with DM, patients on steroids or having chronic liver disease, HIV/AIDS patients diagnosed on medical records were excluded.

The patients meeting the inclusion criteria were included in the study and admitted through OPD. The purpose, risks and benefits of the study were explained to all patients, they were assured that the study was purely conducted for research and data publication and a written informed consent was obtained if agreed upon.

The patients were randomly allocated in two groups by lottery method. Patients in A-group were subjected to conventional closure of ileostomy reversal wound after laparotomy and patients in B-group were subjected to purse string closure group. All patients were subjected to detailed history followed by complete physical examination and routine investigations. All patients in both groups were put on operation list for the next OT day and all the surgical procedures were performed by single experience general surgeon having minimum of 7 years of experience. Post operatively all patients were kept in ward under observation for 5 days and were discharged on 6th post operative day if indicated. Follow up visit were advised to all patients on 14th and 30th post op day to detect effectiveness in both groups in terms of wound infection or surgical site infection. Additionally all patients were advised at the time of discharge to report to OPD in case they feel some problem with the wound. All the above mentioned information including name, age, gender, address were recorded on a predesigned proforma. Strictly exclusion criteria were followed to control confounders and bias in the study results.

All the data was entered and analyzed in SPSS 10 (version 10). Frequencies and percentages were calculated for Gender and effectiveness. Mean ± SD was calculated for age. Chi-Square test was used to compare the effectiveness in both the groups. P value of < 0.05 was considered significant. Effectiveness in both groups was stratified among the age and gender to see the effect modifiers. All the results were presented as tables.

RESULTS

In Group A age range was 14 - 62 years with the mean age of 30.34 years ± 10.24SD while in group B age range was 14 - 66 years with the mean age of 29.29 ± 9.03SD. There was no significant difference of age in two groups i.e. p value = 0.676.

In group A, 63 (61.76%) patients were male whereas 39 (38.23%) patient were female with male to female ratio of 1.61:1. In group B, 43 (42.15%) patients were male and 59 (57.84%) were female with male to female ratio of 1:1.37. The age groups of group A and B are shown in Table No. 2.

In study group A, 78 (76.47%) patients have normal wound healing and 24 (23.52%) patients developed SSI with effectiveness of 76.47%. In study group B, 91 (89.21%) patients had normal wound healing and 11 (10.72%) patients developed SSI with effectiveness of 89.21%. The difference between two groups was statistically significant in terms of surgical site infection i.e. P value = 0.016. (Table No.1)

The gender and age wise stratification of efficacy of two techniques in ileostomy closure is shown in Table No. 2 and 3 with insignificant p value.

Table No1. Frequency of surgical site infection in group A and group B

<table>
<thead>
<tr>
<th></th>
<th>Wound infection OR Surgical site infection</th>
<th>EFFICACY</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO SSI n (%)</td>
<td>SSI n (%)</td>
<td></td>
</tr>
<tr>
<td>Group A</td>
<td>7 (76.47%)</td>
<td>8</td>
<td>24/23.52%</td>
</tr>
<tr>
<td>Group B</td>
<td>9 (89.21%)</td>
<td>1</td>
<td>11/10.78%</td>
</tr>
</tbody>
</table>

Ophthalmology Update Vol. 15 No.4, Oct- December 2017 449
remains a very useful procedure. Stoma closure is a "minor" operation but it is associated with significant morbidity and mortality. The morbidity of stoma closure includes wound infection, intra-abdominal abscess, stomal site anastomosis leak/fistula/stricture, gut obstruction, sepsis, and parastomal herniation because of its technical simplicity, effluent, lack of odor, decrease rate of prolapse and parastomal herniation and offers excellent fecal diversion. Moreover loop ileostomies in comparison with colostomies had lower rates of morbidity and mortality associated with the stoma reversal however ileostomy closure also has morbidity. Overall reported complication rate after ileostomy reversal ranges between 10% to 17%, and it may reach up to 30% when performed for diversion purposes. Despite major advancement in operative techniques and less use of stomas, stoma formation remains a very useful procedure. Stoma closure is considered as a "minor" operation but it is associated with significant morbidity and mortality.

The morbidity of stoma closure includes anastomosis leak/fistula/stricture, gut obstruction, wound infection, intra-abdominal abscess, stomal site hernia and intestinal hemorrhage. The commonest complication of stoma closure is wound infection / sepsis which prolonged the hospital stay and increased cost of treatment. This is the most common nosocomial infection accounting for 28% of all such infections. Stomas created at Patan Hospital, Nepal 39% of patients had complications after stoma reversal, out of which 26% were superficial wound infections. Many studies were done to investigate better technique to prevent wound infection/SSI after ileostomy take down. It is a surgical principle that contaminated wounds be left open to heal. On this basis, previous studies reported benefit of delayed primary closure or purse-string skin closure is an effective technique for reducing wound infection after ileostomy reversal. Lahat et al. reported that infection occurred more frequently, 20% in primary linear wound closure group than in purse-string skin closure group which is 10%. Whereas Akiyoshiet al. and Lee et al. reported that purse-string skin closure after ileostomy reversal showed comparable outcomes, in terms of wound infection rate, 5.6% to 16.7% than linear skin closure. In addition, Reid et al. demonstrated that wound infection rate of purse-string skin closure group was 6.7%, which was significantly lower in comparison with the linear skin closure group, 38.7%. In a retrospective study; Marquez et al. compared primary closure with purse-string closure (PSC). They reported a lower rate of SSI in the PSS group compared with the DS group. In contrast, in their retrospective study, Vermulst et al. found no difference between the rates of SSI following different skin-closure techniques. Milanchi et al. published prospective, non-randomized data comparing surgical site infection following different stoma-closure techniques and demonstrated SSI rates of 40% in a DS group and 0% in a PSS group. N. Dusch et al in 2011 prospectively, reports 10% of SSI in conventional linear skin closure and 0% of SSI in PSS group following stoma takes down.

Purse-string skin closure after an ileostomy reversal is a secondary skin closure. The advantages are that until granulation tissues forms and the skin is epithelialized and small skin defect areas becomes natural pathways for drainage, thus preventing wound infection. A shortcoming of purse-string skin closure is that because it requires a crescent-shaped or circular view for suturing the fascia of the rectus abdominis muscle especially in obese patients with large amount of subcutaneous fat.

The limitations of this study are the time required for wound healing and the cosmetic satisfaction level of patients about surgical scars, which are important discussion points for purse-string skin closure, which could not be assessed accurately. As in this study wound closure by purse-string skin closure showed a much lower wound infection rate comparable to that of conventional linear skin closure. Therefore, if cosmetic effects are considered, then this study suggests that the purse-string skin closure is a new alternative technique.

### Table 2 Age groups in groups A & B

<table>
<thead>
<tr>
<th>Age Groups (years)</th>
<th>A-Group n (%)</th>
<th>B-Group n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-20</td>
<td>18 (17.64%)</td>
<td>13 (6.37%)</td>
</tr>
<tr>
<td>21-30</td>
<td>44 (21.15%)</td>
<td>40 (19.60%)</td>
</tr>
<tr>
<td>31-40</td>
<td>20 (9.8%)</td>
<td>21 (10.29%)</td>
</tr>
<tr>
<td>41-50</td>
<td>14 (6.86%)</td>
<td>16 (7.84%)</td>
</tr>
<tr>
<td>51-60</td>
<td>5 (2.45%)</td>
<td>10 (4.9%)</td>
</tr>
<tr>
<td>60 and above</td>
<td>1 (0.49%)</td>
<td>2 (0.98%)</td>
</tr>
</tbody>
</table>

### Table 3 Stratification of efficacy in group A & B according to gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Efficacy</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>53 (51.97%)</td>
<td>34 (33.33%)</td>
</tr>
<tr>
<td>Female</td>
<td>25 (24.50%)</td>
<td>57 (55.88%)</td>
</tr>
<tr>
<td>Total</td>
<td>78 (76.47%)</td>
<td>91 (89.21%)</td>
</tr>
</tbody>
</table>

### Table 4 Stratification of efficacy in groups A & B according to Age

<table>
<thead>
<tr>
<th>Age Groups (years)</th>
<th>Group A n(%)</th>
<th>Group B n(%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-20</td>
<td>13 (12.74%)</td>
<td>10 (9.80%)</td>
<td></td>
</tr>
<tr>
<td>21-30</td>
<td>34 (33.33%)</td>
<td>37 (36.27%)</td>
<td></td>
</tr>
<tr>
<td>31-40</td>
<td>18 (17.65%)</td>
<td>19 (18.62%)</td>
<td></td>
</tr>
<tr>
<td>41-50</td>
<td>10 (9.80%)</td>
<td>15 (14.71%)</td>
<td>0.676</td>
</tr>
<tr>
<td>51-60</td>
<td>3 (2.94%)</td>
<td>9 (8.82%)</td>
<td></td>
</tr>
<tr>
<td>60 and above</td>
<td>1 (0.98%)</td>
<td>1 (0.98%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>78 (76.47%)</td>
<td>91 (89.21%)</td>
<td></td>
</tr>
</tbody>
</table>

### DISCUSSION

Since the first report of Weakley and Turnbull in 1966 loop ileostomies becomes much more popular because of its technical simplicity, effluent, lack of odor, decrease rate of prolapse and parastomal herniation and offers excellent fecal diversion. Moreover loop ileostomies in comparison with colostomies had lower rates of morbidity and mortality associated with the stoma reversal however ileostomy closure also has morbidity. Overall reported complication rate after ileostomy reversal ranges between 10% to 17%, and it may reach up to 30% when performed for diversion purpose. Despite major advancement in operative techniques and less use of stomas, stoma formation remains a very useful procedure. Stoma closure is considered as a “minor” operation but it is associated with significant morbidity and mortality.

The morbidity of stoma closure includes anastomosis leak/fistula/stricture, gut obstruction, wound infection, intra-abdominal abscess, stomal site hernia and intestinal hemorrhage. The commonest complication of stoma closure is wound infection / sepsis which prolonged the hospital stay and increased cost of treatment. This is the most common nosocomial infection accounting for 28% of all such infections. Stomas created at Patan Hospital, Nepal 39% of patients had complications after stoma reversal, out of which 26% were superficial wound infections.

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A shortcoming of purse-string skin closure is that because it requires a crescent-shaped or circular view for suturing the fascia of the rectus abdominis muscle especially in obese patients with large amount of subcutaneous fat.

The limitations of this study are the time required for wound healing and the cosmetic satisfaction level of patients about surgical scars, which are important discussion points for purse-string skin closure, which could not be assessed accurately. As in this study wound closure by purse-string skin closure showed a much lower wound infection rate comparable to that of conventional linear skin closure. Therefore, if cosmetic effects are considered, then this study suggests that the purse-string skin closure is a new alternative technique.
To Compare Efficacy between Linear & Purse-string Skin Closure after a Loop Ileostomy Reversal

CONCLUSION:
There was significant difference in SSI between conventional linear skin closure and purse string skin closure group after loop ileostomy reversal. Purse string skin closure is better than linear skin closure and more effective in preventing superficial surgical site infection after loop ileostomy reversal and the morbidity associated with it.

REFERENCES
Clinical Presentation & Morbidity of H1N1, Influenza like Illness in Swabi, KPK

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Department of Medicine, Bacha Khan Medical Complex & Teaching Hospital Swabi KPK

ABSTRACT:
Objective: to study clinical presentation and morbidity of H1N1 and influenza like illness in Swabi
Material and Methods: This observational study was conducted in Bacha Khan Medical complex Swabi in 2015-2016. A total no of 154 patients were included using WHO criteria. Influenza like illness (ILI) was defined as sudden onset of fever >38 degree centigrade, cough, sore throat, in the absence of other diagnosis. A case confirmed influenza H1N1 is defined as the presence of ILI symptoms sign plus a positive RT-PCR or viral culture whereas SARI case was defined as patient having all the above symptoms signs that require hospital admission.
Result: Age of the patient was between 15 to 100 years. 96 patients were female and male were 54. History of contact with lab confirmed cases were 17. Co morbid conditions were found in 56 (36.4%). Hypertension was documented in 12.9% cases. Diabetes mellitus in 15.6% cases. Malignancy in 1.9% and COPD in 8.4% cases. Influenza A was confirmed in 36.4% cases, out of which seasonal influenza (H1N1) PDM were 34.4%. Negative cultures were found in 7.8% cases. In 50.1% cases samples were not sent because of limited resources. Analysis of the symptoms show that fever and cough was present in 76%. Temperature varied between 98 degree to 104 degree F.
Conclusion: Influenza outbreak occurs yearly during winter in KPK but they are treated as bacterial infections resulting in wastage of resources. More studies are needed to increase awareness in doctors and community.
Key words: Influenza, influenza like illness (ILI)

INTRODUCTION.
The first influenza epidemic of 21st century was reported in March 2009 in Mexico. There were 18449 death of human beings who had confirmed influenza worldwide. Later on it was proved that the human death were actually 200,000. These include those patients who died from influenza like illness or from diverse complication of disease. There disease was not confirmed because they do not have access to viral RT-PCR or viral culture. Another epidemic occurred in same city in 2011.¹ So the clinical judgment of attending physicians become a major factor in timely diagnosis and identification of new influenza cases.²⁻⁴

There is a little awareness regarding influenza infection in our community. Lack of vaccination sometimes causes fatal complications. Laboratories confirmation of cases is also one of the issue. Immunization of immune-compromised patients is mandatory before winter season. More studies are needed to increase the awareness in doctors and community.

Influenza is a common contagious disease in our area Swabi city of KPK, in winter from October to February. It is responsible for a lot of morbidity and mortality each year.¹⁰ This disease is not properly diagnosed nor properly reported. This is because of lack of knowledge, poor access to health care facilities, lack of viral culture facilities and RT-PCR and availability of Tami flu which is an anti viral drug used for treatment of influenza.⁴
MATERIAL & METHODS
We carried out a cross sectional study at Bacha Khan Medical Complex, Swabi. We included adult patients between 15 years and older having influenza like signs and symptoms who belonged to various union councils of Swabi or nearby districts. Cases were selected according to WHO criteria. Influenza like illness (ILI) was defined as sudden onset of fever >38 degree centigrade, cough or sore throat, in the absence of other diagnosis. A case of confirmed influenza A H1N1 is defined as the presence of ILI symptoms plus a positive RT-PCR or viral culture where as SARI case was defined as patient with sudden onset fever (>38 degree centigrade) cough or sore throat that required hospital admission within 7-day. Avian influenza was excluded by history of contact with birds and poultry. History of influenza confirmed case was taken like history of attendance of social gathering or any event of umra, hajj, international travel, festival urs, sports, wedding, or funeral was taken. Socio demographic variables comprised of age, gender, place of residence. As a clinical variable we included respiratory signs and symptoms as well as smoking, days of hospitalization, vaccination against influenza antibiotic use for the disease, and hospital deaths.

We measured complete blood count, urea, creatinin, Alt and Cpk level chest radiograph, ECG, O2 saturation levels, throat swabs which were sent to NIH Islamabad for viral RT-PCR. Throat swabs were not collected from all cases because of limited availability of transporting media. We also did not collected throat swabs from multiple individuals from same union council. Throat swab was collected in medium provided by NIH Islamabad. This was latest tube containing reddish fluid. Throat swab was collected by straw with wrapped cotton swab on its one end. The patient would be asked to open his mouth and gently sterilized swab was rubbed against his tonsiller pillars and pharynx. of the patient. The straw was then placed in sterile medium in tube and was transported to NIH Islamabad.

Co morbidities were recorded which included, hypertension, Diabetes, Ischaemic heart disease, congestive cardiac failure, chronic obstructive air way disease, interstitial lung disease, pulmonary TB.

RESULTS
The total number of patient included in the study was 154. Age of the patients was between 15 and older patients more than 100 years. Mean age of the patients was 43.3(_+19.39).0ut of this 96(62.3 %) were female. 79(51.3%) belonged to house wives and the remaining ladies were of the working class. Patient with history of travel were 14(09.1%).History of contact with laboratory confirmed cases 17(11.0%). Co morbid conditions were found in 56(36.4%) patients. Hypertension was present in 20(12.9%), Diabetes mellitus in 24(15.6%) Hypothyroidism in 01 (0.6%) cases, malignancy in 03 (01.9%) cases and COPD in 13 (8.4%) cases.

Influenza A was confirmed in 56(36.4%) out of which seasonal influenza (H1N1)pdm2009 was confirmed in 53(34.4%). H3N2 was reported in 03(01.9%) cases. Influenza B was confirmed in 08(05.2%) cases. Negative cultures were found in 12(07.8%) cases.

In 78 (50.1%) samples were not sent for culture to the lab because of limited resource. Antiviral therapy that is oseltamivir was given to 70(45.5%) cases who responded well to treatment. 8 patients (5.2%) died during hospital stay because of severe illness.6 patient (3.9%) were discharged after recovery. On the whole 140 (90.9%) cases recovered completely and stable at the time of discharge.

Analysis of the symptoms show that fever and cough was present in 76% of patients. Temperature varied between 98 degree F to 104 degree F in our cases. Nasal congestion was found in 70% of cases, sore throat in 81% cases, chest wheezing in 72% cases, tachypnoea in 54 %cases, sputum production was present in 62% cases, chest pain in 70% cases, shortness of breath in 54 % cases, chest X-ray showed infiltrates in 29 %cases.

DISCUSSION
The influenza outbreaks occur yearly in October to February winter season with significant number of patients requiring hospitalization. There is significant increase in hospital deaths during this season. Seasonal influenza variations has been linked to changes in environmental factors such as solar radiation, humidity and decreased temperature. These factors might effect influenza circulation in Pakistan. This can help local and regional public health official to improve pandemic preparedness.

Our study showed that the disease was more prevalent in female population. This may be due to
poor nutrition, low resistance and especially long reproductive life of our female population which starts from teen age till menopause. Repeated pregnancies, poor nutrition, menopause, poor hygienic condition, overcrowding and frequent exposure to infected people make them vulnerable to infection.

Our study also showed that the high infection rates in young adults and middle age individuals as compared to other age groups. This fact was
also observed during the influenza A(H1N1)2009 pandemic[3,9,10] and also by Badar N et al, 2013 in influenza virus surveillance in Pakistan during 2008-2011. [10]

Individuals with influenza like illness(ILI) having negative PCR may be due several factors. These include delay in sample collection, poor technique of sampling ,upper airway sampling as compared lung secretion sampling and circulation of other respiratory virus like respiratory syncytial virus and adeno viruses and human metapnuemovirus which also cause ILI and influenza like symptoms. Although we did not sample all our patients because of various reasons still 38% of our patients were confirmed on culture having H1N1. This is comparable to 42% positive RT-PCR shown by Patrius Santillan Doherty et al 2013-2014.[1]

In our study 38% of our patients had co morbidities which include diabetes, hypertension, hypothyroidism, Asthma, Atrial fibrillation, ischaemic heart disease, Allergic Bronchopulmonary Aspergillosis, Steroid therapy, Rheumatoid Arthritis on DMDs, acute lymphocytic Leukemia, Ca Breast, pregnancy, Bronchiectasis, Pulmonary TB, Mixed connective tissue disease. These immune-compromised patients should be vaccinated before the start of winter season. Our study also good response and symptomatic improvement of patient with Oseltamivir 75 mg twice a day dose for five days.[2][4]

In our study 6 patient died because of severe influenza. they developed severe pneumonia, ARDS. They were having co morbidities like Diabetes, COPD, Asthma. Deaths were because of lack of facilities in hospital, lack of ICU and serious nature of the disease.

CONCLUSION

Influenza outbreaks occur yearly during winter season in Khyber Pakhtoon Khwa Pakistan but they are usually treated as bacterial infection with antibiotics resulting in wastage of our resources. There is little awareness regarding influenza infection in our community. Lack of vaccination causes loss of valuable lives. Confirmation of cases is also an issue. Immunization of immune-compromised patients is mandatory before winter season. More studies are needed to increase awareness in doctors and community.

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Laparoscopic Cholecystectomy Vs Mini Open Cholecystectomy in terms of Post-operative Pain

Hayatabad Medical Complex, Peshawar

Shehla Faridoon (FCPS Surg)1, Muhammad Shah (FCPS Surg)2, Ainul Hadi (FCPS Surg)3, Mushtaq Ahmad (FCPS Surg)4, Yousaf Jan (FCPS Surg)5

ABSTRACT
Objective: To compare the severity of post operative pain following laproscopic versus mini open cholecystectomy.

Material and Methods: This cross sectional (comparative) study was conducted in Surgical unit Hayatabad Medical Complex Peshawar, from November 2016 to April 2017. Sixty patients were admitted as elective cases through OPD and were divided into “A” and “B” groups. Surgeries were performed by experienced surgeons. Post operative pain severity was assessed for 24 hours through visual analogue scale (0-10). Patients were followed up in OPD. Data was analyzed through SPSS 17. A P-value less than 0.05 was considered significant.

Result: Out of 60 patients, 11(18.33%) were males and 49(81.67%) were females with male to female ratio of 1:4.45. Mean age of patients was 44.3 years (±9.41SD). Following laproscopic cholecystectomy, 90% patients had pain relief while 70% patients after mini open cholecystectomy were pain free.

Conclusion: Laproscopic cholecystectomy is a better option than mini open cholecystectomy in terms of post operative pain.

Key words: Laproscopic cholecystectomy, Mini open cholecystectomy, Post cholecystectomy pain.

INTRODUCTION
Gall stone is a common disease with a prevalence of 10-15% in USA and about 16% in Pakistan1. Gall stones induced acute and chronic cholecystitis and complications like mucocele, empyema, gangrene and perforations require prompt surgical interventions2. Cholelithiasis being the commonest biliary pathology is dealt through cholecystectomy either open or laproscopically and less commonly by mini open cholecystectomy1. Carl langenbuch, a German surgeon performed the first successful cholecystectomy in 18822-3. Mini open cholecystectomy performed through a small 3-5 cm muscle splitting was introduced for the first time by Dubais and Berthelot in 1982, to reduce the post operative morbidity4.

Laparoscopic cholecystectomy being the commonest abdominal procedure was performed in Germany in 1985 and then in France in 19875,6. Laparoscopic cholecystectomy was called the gold standard for the first time in 19895. After 1995 till now the number of laparoscopic cholecystectomies performed has reached upto 80% of all cholecystectomies6. Laparoscopic cholecystectomy is considered to have advantages over open procedure like small incisions, less post operative pain, short hospital stay and early return to normal activities.7 Post operative pain is the most frequent complaint after cholecystectomy resulting in longer hospital stay in 17-41% of patients.8

In literature there is existing some controversy regarding early post operative pain which leads to increased hospital stay in both mini open and laparoscopic cholecystectomy. It is also reported that there is no difference in the post operative pain following any of these two procedures.9

Laparoscopic cholecystectomy is a better option than mini open cholecystectomy in terms of post operative pain.

MATERIAL AND METHODS
This descriptive study of 60 cases was conducted at the department of surgery Hayatabad Medical Complex Peshawar from November 2016 to April 2017. In this study, patients with documented proof of gall stone, belonging to either sex, and more than 18 years of age were considered. Patients having empyema gall bladder, mucocele of gall bladder, acute gall...
stone induced pancreatitis, hepatitis due to any cause and peptic ulcer disease, were excluded. Similarly patients having systemic diseases like hypertension, diabetes mellitus, COPD and ischemic heart disease were also not considered.

Patients were admitted through outpatient department. An abdominal ultrasound scan was performed in all cases to evaluate biliary tract anatomy and pathology. In the ward, a detailed history of the patients was taken and physical examination performed. Baseline investigations including full blood count, blood urea, liver function test, blood sugar, x-ray chest and ECG in patients having age more than 40 years or any history of chest pain was recorded. Hepatitis B and C screening was also performedAll 60 patients were randomly divided in two groups A and B by lottery method. Each group contained 30 patients of either sex.

Group “A” patients were subjected to laparoscopic cholecystectomy and group B patients underwent mini open cholecystectomy. Surgeries were performed by surgeon having experience in laparoscopic and open biliary surgery. Post operatively patients were monitored in the ward and their vitals were strictly recorded. A standard analgesic regimen of the same type and equal dose was administered post operatively to all patients under study. The degree of pain was assessed for 24 hours after surgery by using visual analogue scale (0-10). It was considered effective if a score of 0-3(mild pain) was achieved after 24 hours of surgery.

Patients were discharged from hospital on first and second post operative day based on the general condition of the patients. Patients were advised to attend OPD for their follow up visits. At first visit ( 10 days after surgery) wound examined, stitches removed and looked for any post operative complications. Second visit was done one month after surgery. Post operatively data was collected in the surgical ward and OPD on a preformed pro forma and analysed through SPSS 17. P-value was calculated. A P-value less than 0.05 was considered significant.

RESULTS
In this series, a total of Sixty patients were considered which included 11(18.33%) males and 49(81.67%) females with male to female ratio of 1:4.5. The age of patients ranged 18-60 with mean age of 44.3 years (±9.41 SD). Sixty patients were divided into group A and B each comprising of 30 patients. In group “A” out of 30, 5(16.66%)were males and 25(83.3%) were females (MF=1:5). Similarly in group “B” 6(20%) were males and 24(80%) were females (MF=1:4). Post operative pain assessed through visual analogue scoring system and was considered effective after recording a score of 0-3.

In group “A” following laparoscopic cholecystectomy, 90% (27) cases had pain relief. While only 10% (3 cases) had pain after 24 hours of surgery. In group “B” 70% (21 cases) were pain free following mini open cholecystectomy and 30% (9 cases) were still complaining of pain even after 24 hours following the procedure. Table : post operative pain (n=60)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Effectiveness</th>
<th>P-value</th>
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<tbody>
<tr>
<td>A (n=30)</td>
<td>27(90%)</td>
<td>03(10%)</td>
</tr>
<tr>
<td>B (n=30)</td>
<td>21(70%)</td>
<td>09(30%)</td>
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DISCUSSION
Open cholecystectomy has been the gold standard of treatment for cholelithiasis for more than 100 years with morbidity rate of 0-1% and the major complications rate of approximately 4.5%. Similarly with mini open cholecystectomy using a 5cm subcostal incision, the surgeons are likely to face more comfortable by adopting to mini open cholecystectomy rather than LC because of familiarity for surgeon operating directly on biliary tree rather than using indirectly a two dimensional image in video monitor. Despite favorable data for open cholecystectomy LC become popular and standard method for removing gall bladder.

Less post operative pain, shorter hospitalization, early resumption of activity, reduction in hospital cost and improved cosmesis are major advantages of this procedure. The principal variable of current series is post operative pain which help to analyze the efficacy of each procedure which in turn affect the early mobilization, recovery and return of normal activities of the patients. In our series of 60 cases, the mean age was 44.3 years (±9.41SD) this is comparable to 47.2 years presented by Daradkeh S et al and 40 years by Binger Casey J et al.

In western world the prevalence of gall stones is almost twice than in male population. In our series the male female ratio was 1:5 for group A (LC) and 1:4 for group B (mini open cholecystectomy).The overall sex ratio was 1:4.45 which is almost similar to 1:6 reported by Channa et al but not comparable to 5:5:1 recorded by Murshid et al. This variation in sex distribution may be due to dietary factors related to that particular region.

Post operative pain following open or laparoscopic cholecystectomy is one of the most important factor determining the efficacy of a procedure. Patient with open cholecystectomy look more ill, feel more pain and have delayed recovery as compared to laparoscopic cholecystectomy where they have minimum surgical stress and less post operative pain. More over Bisgaard T et al and Cheah WK et al have reported that reduced number of ports and smaller size of the port further contributes to reduced post operative pain. In the current study in group A, 90% patients had mild to moderate pain after 24 hours of laparoscopic cholecystectomy assessed by visual analogue score while only 10% were still complaining of pain. Similarly in
group B following mini open cholecystectomy, 70% were pain free and 30% had still post operative pain. In literature the reported studies present different figures. Shaikh U et al recorded that 88% patients had moderate to severe pain following open cholecystectomy and only 31% had mild to moderate pain after laparoscopic procedure. Talpure AH et al had 85.5% patients having moderate to severe pain following laparoscopic surgery. Ingaram AM et al reported 3.22% and 17.5% of post operative pain following laparoscopic and mini open cholecystectomy respectively. Rappaport et al concluded that laparoscopic cholecystectomy is associated with less post operative pain, earlier discharge from hospital and a more rapid recovery. Ahmad et al also showed that post operative pain following laparoscopic cholecystectomy is less in intensity than open cholecystectomy. Keus et al concluded that patients having cholecystectomy with small incision require more analgesia of pain relief as compared to those undergone laparoscopic procedure. Yuksel et al clearly mentioned the advantages of laparoscopic cholecystectomy such as less pain and short hospital stay and declared it a treatment of choice for gall stones.

CONCLUSION:
Laparoscopic cholecystectomy causes less pain than mini open cholecystectomy, it helps shorter hospital stay withearily mobilization and early resumption of activities.

REFERENCES
Genetic Testing for Rare & Inherited Diseases

Dr. Hina Qamar, Pharm-D (JUW), 1 Prof. Iqbal A. Memon, FRCP., D.A.B.P & F.A.A.P 2
Prof. Tahir Sultan Shamsi MRCPath & FRCPath(UK)3

Genetic Counseling to Families in Terms of Antenatal or Prenatal Testing of Lethal Inherited Disorders

INTRODUCTION:

Mendelian Recessive disorders appear to be uncommon, but when reviewed as a group, these diseases appear within a significant portion of the population. In fact, Mendelian diseases collectively account for ~20% of infant mortalities and ~18% of pediatric hospitalizations. There are ~7,000 known rare inherited diseases. Many of these are severe recessive, pediatric disorders. The number of germ-line-mutations associated with these inherited diseases now exceeds 100,000 and the mutations are focused in multiple gene regions. The Inherited Disease panel is a targeted sequencing panel that focuses on 552 genes to identify the underlying mutations associated with severe, recessive pediatric onset diseases, regardless of Syndromic physiological conditions.

Testing Rationale:

The NGS Inherited Disease Gene Panel was designed to cover the most commonly requested Clinical diagnostic assays and allows diagnosis with one comprehensive test. The NGS Inherited Disease Panel can aid in genetic consultation of familial disorders. It can also aid in providing option of Genetic counseling to families in terms of Antenatal or Prenatal testing of lethal inherited disorders. Testing could prove beneficial not only for the affected patient, but also for related family members.

The NGS Inherited Diseases Panel is run on high throughput next generation sequencing (NGS) technology. It can be used for rare and undiagnosed diseases research to discover causative variants of inherited disorders by assessing many genes at the same time. NGS can reduce costs compared to traditional methods, which are often expensive and inconclusive while requiring extensive testing.

Why Adopt NGS for Rare Disease Testing?

i) Improve detection: Advanced technology offers more sensitive and accurate detection capabilities than traditional methods

ii) Cost-effective solution: High-throughput capabilities reduce per sample cost and can cover larger gene sets to eliminate the need for multiple tests

iii) Streamlined workflow: Pre-designed, expert-selected content, and use of proven NGS technology increases productivity and decreases overhead

iv) Accurate Results: Deep uniform coverage enables highly accurate variant calling, suitable for the genomics research laboratory

v) Reporting Results: NGS Inherited Disease Gene Panel report includes a detailed explanation of all

Deliberations of the Seminar on “Genetic Testing for Celiac & Rare Inherited Diseases” held at Jinnah Auditorium CDA Hospital, Islamabad on 26th August 2017. The Seminar was quite informative and the primary goal was to increase understanding of innovative genetic testing, which has lately been introduced in Pakistan by National Institute of Blood Disorders & BMT. The above two main topics were covered during the Seminar and the presenters did an outstanding job of sharing their expertise with the participants.................................Chief Editor

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clinically relevant variants.

vi) **Test specifications:** Test Name: NGS Inherited Disease panel, Turn-Around-Time, Approximately 4-5 weeks (Expedited service available), Specimen Requirement: 2-5ml whole blood in two separate EDTA tubes at room temperature.

The NGS Inherited Diseases Panel test can aid in genetic consultation of familial disorders. This is an important part of hereditary diseases risk evaluation and identification of specific genetic variants provides important information for at-risk patient.

**Inherited Diseases Systemic Classification:** Hematological Disorders, Renal Disorders, Hepatic Disorders, Neurological Disorders, Leukodystrophy Spectrum Disorders, Comprehensive Glycogen Storage Disorders, Congenital Cardiomyopathies, Lysosomal Storage Disorders, Endocrine Disorders, Mitochondrial Complex Deficiencies, Immunodeficiencies, Dermatological Disorders, Muscular Disorders, **Ocular Disorders**, Skeletal Disorders, Respiratory Tract Disorders, Connective Tissue Disorders, Otic Disorders.

**Partial List of Inherited Diseases Coverage:** Diagnosis of over 200 Rare inherited disorders via Next generation Sequencing (NGS) is available. Below is a list of a few diseases the panel covers. 

- Griscelli Syndrome
- Cystic Fibrosis
- Wiskott-Aldrich Syndrome
- Congenital Adrenal hyperplasia (CAH)
- Congenital Muscular dystrophy
- Alport Syndrome
- Tay-Sachs Disease
- Glycogen Storage Diseases (I, IIa, IIb, IIc, III, and IV)
- Wilson Disease
- Mucopolysaccharidosis (IIa, IIc, VI, VII, VIII)
- Nieman-Pick Disease
- Osteopetrosis
- Duchene Muscular Dystrophy
- Hemosiderosis
- Bloom Syndrome
- Gaucher Disease
- Hurler Syndrome
- Fabry Disease
- Usher Syndrome
- Angelman Syndrome
- Shwachman-Diamond Syndrome
- Ataxia Telangiectasia
- Krabbe Disease
- Rett Syndrome

Note: Complete Gene & Disease list can be provided upon request at E.Mail> genetic counselling@nibd.edu.pk

**Changing face of celiac disease: A Challenge in diagnosis**

Prof. Iqbal A. Memon

One person out of every 100 suffers from Celiac disease (99%) remain undiagnosed partly because clinicians are seeing varied symptoms of the disease. Establishing a diagnosis becomes really challenging when blood tests are ambiguous, equivocal, or discrepant. The difficulty is compounded when biopsy results are equivocal, or when biopsy is inconvenient or very difficult or not possible at all. In view of these difficulties and since almost 95 per cent of the patient with Celiac disease carry HLA–DQ2 while remaining patients carry HLA-DQ8, genetic test has assumed greater significance in the diagnosis of Celiac disease. Additionally, a negative HLA gene test is useful for the lifelong exclusion of Celiac disease.

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**Clinical Implementation of Next Generation Sequencing (NGS)**

Prof. Tahir Sultan Shamsi

Gene mutation predisposes a person, and mutated genes are identified through DNA sequencing which determines the precise order of the nucleotides, the four building blocks (called bases) that make up the DNA molecule. The advanced technology of NGS makes it possible to sequence a panel of 552 genes at the same time to identify the underlying mutations associated with inherited disorders. Test result of NGS inherited diseases panel can aid in genetic consultation of familial disorder. It can also aid in providing option of genetic counseling to families in terms of antenatal or prenatal testing of lethal inherited disorders. Testing could prove beneficial not only for the affected patient but also for related family members. Diagnosis of over 200 rare inherited disorders via NGS is available.

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