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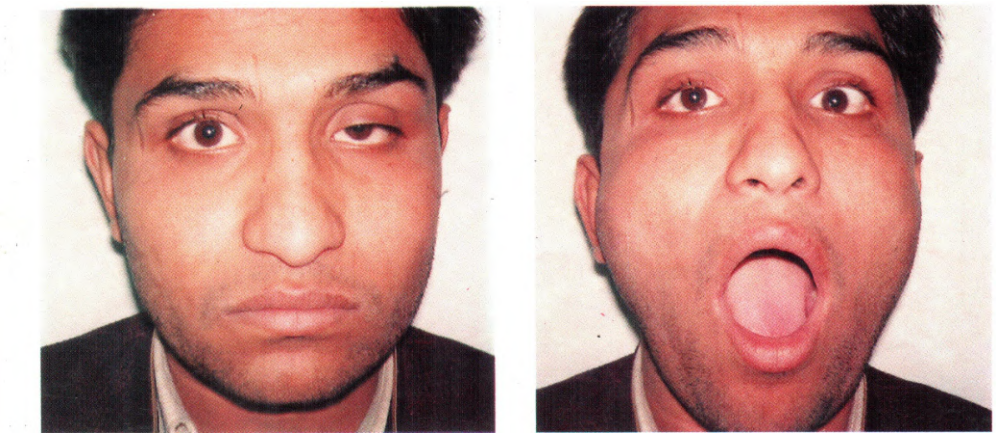

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PAKISTAN JOURNAL OF OPHTHALMOLOGY

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Editorial

Hygeia Versus Chlamydia

See also pp..... 165-168

Whenever calamities of great magnitude confront man, the Homo sapiens does what he does best. As befits his name, the "wise one" starts to think. Even the early man, whenever he felt less fit and able, conceived the idea of "dis-ease", and hence considered his well-being as a desirable state of "health" and the state of being unwell as "ill health". He, thus, started to place a premium on his health. He soon realized that there were some factors responsible for his ill health that he could fathom, and perhaps cope with effectively if he tried, and that there were some others that eluded his genius. These he considered supernatural rather than preternatural, and hence he relegated control of these factors to gods--as was his wont in several other situations when his genius failed to understand them. He, thus, designated Hygeia, daughter of Aesculapius, the god of medicine, as the goddess of health. Thus to her the early Greeks submitted themselves and paid homage, to keep them healthy and free of disease.

But that was not all. They didn't just stop thinking. Rather, they continued to observe the natural phenomena and soon realized that it was also up to them to stay healthy by adhering to certain principles of cleanliness and sanitation. For example they observed that sometimes they were vulnerable if they were close to sick ones of their kind. So, to stay healthy, by and large many preliterate peoples developed such systems of sanitation, in addition to isolation of the sick. Whenever the magnitude of the calamity was large enough to arouse sufficient concern, it received the coercive sanctions of law, as well as the informal sanctions of custom or religion[1]. Religious and health objectives have inextricably intermingled as in dietary laws, the rules of hygiene and contagion, specified in the Old Testament. From this gradually developed the present-day science of Hygiene and Public Health.

Although the world is greatly indebted to the Greeks for the principles of personal hygiene and to the Romans for the development of public sanitation, ruins in the Indus Valley and at Harrapa (4000 B.C) and those in Egypt (2100-1700 BC) reveal elaborate building codes with bathroom facilities, sewerage and sanitation engineering. Once when a great plague broke out in East India and it was noted that the Jewish settlers there seemed not to be affected, the natives became furious, thinking that some special cure known to the settlers was not being shared with them. It was, however, later discovered that it wasn't any special antidote or natural immunity that kept them free of the disease, it was their religious custom of personal cleanliness and daily scrubbing and washing of their homes that helped the Jewish settlers escape the plague.

Greco-Roman medical knowledge spread to the Arab world and later to Europe. The Black Death of 1348 (the bubonic plague) and other similar disasters involving leprosy, smallpox, diphtheria, measles, influenza, etc led to building of leprosaria, sanitaria and other quarantine areas in Europe and elsewhere.

Trachoma, now established to be caused by Chlamydia, was once known as Egyptian Ophthalmia and had been endemic in the Middle East since prehistoric times[2]. It spread to Europe, courtesy the French Armies during the Napoleonic wars. For long, it stayed endemic in areas of Eastern and Central Europe, the Middle East, Central and Eastern Asia, North and Central Africa and Central and South America. It flourished among people in unhygienic and crowded environments, where dirt and flies abounded, and where clean water supply was scarce. In endemic areas children were affected in the first few years of life and its spread from one person to another was observed to take place by transfer of infected conjunctival secretions by way of fomites, like contaminated fingers or community towels and by vectors, like flies. Chlamydia thus offered a great challenge to Hygeia. It caused tremendous suffering

from ocular pain, discomfort and eventual blindness. MacCallan[3], who first offered a classification and stratification of trachoma by clinical intensity, was one of the earliest to study the disease thoroughly. Barrie Jones[4] has contributed tremendously to the study of Chlamydia trachomatis and, in fact, his has been a life-time devoted to the subject. Hygeia, MacCallan and Barrie Jones notwithstanding, trachoma is still the second leading cause of global blindness after cataract, according to the WHO, with 6 million blind worldwide because of its sequelae[5]. Yet, Hygeia and the science named after her, are gradually gaining the upper hand. Scrupulous personal cleanliness and availability of clean running water have practically eliminated Chlamydial ocular infections from the developed world. Similar measures are being advocated to the populations and the governments of the developing world by WHO and it is projected that trachoma will be entirely eliminated from the face of this planet by the year 2020[6]. Amen! If it is so, it will be a resounding victory for Hygeia (or shall we say Hygiene?) over Chlamydia--in the same vein as it has been over smallpox, and hopefully will be against poliomyelitis.

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Jehangir Durrani
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Announcement

At the Ophthalmological Society of Pakistan (OSP) Council meeting held on September 12, 1998, it was resolved that, since Prof. M. Lateef Chaudhri, the current Editor-in-Chief of the Pakistan Journal of Ophthalmology (PJO) was to be invested as the President of the OSP on September 13, 1998, Prof. Jehangir Durrani, the current Editor of the PJO take over the responsibilities of the Editor-in-Chief for the next two years. The General Body meeting on September 13, 1998 unanimously endorsed the resolution and the change has been made effective since.

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Orbital Masses
Incidence and Clinical Presentation

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ABSTRACT

Twenty patients with orbital masses presented in the three- year period of the study. Clinical and ophthalmological examination of all these patients were done along with radiological and histopathological examination. Eleven patients were male and nine were female. The age ranged from 1.5 to 60 years with a maximum number of patients in the first and the second decades of life. Proptosis was present in all the cases (100%) and progressive deterioration of vision in 8(40%) patients. Five patients had complete loss of vision and three had decreased visual acuity. Funduscopy showed optic atrophy in five cases and three patients had papilloedema. Majority of the cases were with non-Hodgkin's lymphoma (25%), the others being inflammatory pseudotumor (15%), tuberculoma (10%), abscesses (10%), mestastatic adenocarcinoma (10%) and haemangioma (10%). Haematoma, osteoma, rhabdomyosarcoma and pleomorphic adenoma constituted 5% each.

INTRODUCTION

Orbital diseases, in view of the special situation and anatomic structure of the orbit, require greater attention and wide interdisciplinary cooperation. In a study carried out by Lukasik[1], analysis showed that orbital tumors and inflammations accounted for 51.60% of the orbital diseases. The number of orbital inflammations has decreased in successive years and the incidence of orbital tumors is increasing. Benign tumors and inflammations of the eye and its adnexa are about twice as frequent as malignant tumors. In a French study spanning over 70 years benign tumors corresponded to 25.9% and inflammations just 7.1% of the histopathological results; papilloma (31.4%) and cysts (28.2%) were the most frequent benign tumors[2]. In another study optic nerve gliomas and meningiomas constituted 3-6% and 5-17% respectively[3]. Cavernous haemangioma is the most common primary benign tumor occurring in the orbit of adults. Dermoid and epidermoid comprise 4 - 6% of the orbital tumors[4]. Bronchogenic carcinoma is the most frequent source of orbital metastasis in adults but neuroblastoma and Ewing's sarcoma are the most common childhood tumors which metastasise to the orbit[4]. Inflammatory pseudotumors are space occupying, round masses appearing in various locations usually as an aftermath of recurrent infections[5]. Among the malignant orbital tumors retinoblastoma is the commonest type (65%), followed by adenocarcinoma (10%) and squamous cell and basal cell carcinoma 8.8% each. Other tumors are rarely encountered[6].

Symptomatology mainly derives from tumor encroachment and compression and/or infiltration of the adjacent structures. In a study by Cristante[7], proptosis, progressive visual loss and visual field defects were the most common presenting features. Misconceptions and socioeconomic problems contributed immensely to late diagnosis, difficulties in management and poor prognosis for both vision and life[8]. Tissue diagnosis of orbital lesions is specially difficult: firstly because of wide range of tissues normally occurring in the orbit, and secondly such lesions are relatively surgically inaccessible for biopsy due to the presence of the bony walls of the orbit and its peculiar shape. This gives rise to a need for effective methods of indirect assessment of the orbit and its contents prior to definitive therapy. This indirect assessment needs certain modalities of radiological imaging such as plain X-rays, ultrasonography, computed tomography (CT) and /or magnetic resonance imaging (MRI)[9]. Radical tumor removal in the region of the anterior skull base with involvement of the orbit requires not only good exposure but also acceptable reconstruction with good cosmesis, no visible scars and no injury to the eye[10].

MATERIALS AND METHODS

This was a prospective study, conducted at the Department of Neurosurgery, Lahore General Hospital, Lahore, which encompassed twenty cases

of orbital space occupying lesions presenting during the study period (January 1995 - December 1997). All patients presenting with proptosis, visual disturbance and having space occupying lesion in the orbit shown by computerized tomography (CT) or magnetic resonance imaging (MRI) of the orbit and brain were included in this study. A detailed history, clinical examination, and ophthalmological and radiological examination were carried out in all these patients.

RESULTS

Age and Sex Incidence

The age ranged from 1.5 to 60 years with a mean age of 26.95 years. The maximum number (60%) of patients were in the first and the second decades of life. Of the twenty patients, eleven (55%) were male and nine (45%) were female, with a male to female ratio of 1.2:1.

Clinical Features (Table 1)

Proptosis

Proptosis was the main presenting feature in all (100%) cases. In twelve (60%) cases it was on the right side and in 8 (40%) cases it was on the left side.

Table 1: Clinical features in 20 patients with orbital masses.

Clinical features	No. of cases	Percentage
Proptosis	20	100
- Right	12	60
- Left	8	40
Visual disturbances	8	40
- Complete loss of vision	5	25
- Decreased visual acuity	3	15
Fundi		
- Optic atrophy	5	25
- Papilloedema	3	15
Eyeache	4	20
Ophthalmoplegia	3	15
Headache	3	15
Fever	2	10

Deterioration of Vision

Deterioration of vision was present in 8 (40%) cases: five (25%) patients had complete loss of vision and three (15%) had decreased visual acuity.

Headache

Headache was present in 3 (15%) patients.

Eyeache

Eyeache was complained of by four (20%) patients.

Fever

History of fever was present in two (10%) cases.

Ophthalmoplegia

Ophthalmoplegia was present in 3 (15%) patients.

Optic Disc Examination

Examination of the optic disc showed optic atrophy in five (25%) cases and papilloedema in three (15%) cases.

TREATMENT

Surgical intervention was carried out in every case. Superolateral orbitotomy was done in 11 cases, transcranial approach was adopted in 8 cases and anteromedial orbitotomy was done in one case only. In only six patients total removal of the lesion was possible. Among them two patients had haemangioma, two had orbital abscesses, one had osteoma and one had haematoma. In five patients with non-Hodgkin's lymphoma, two patients with metastatic adenocarcinoma and two patients with rhabdomyosarcoma and pleomorphic adenoma, gross total resection of the tumor was done and postoperative radiotherapy was advised. In three patients with inflammatory pseudotumor, steroid therapy was given and two patients with tuberculoma were given antituberculous therapy.

HISTOPATHOLOGY

Among the twenty cases with orbital lesions, 5 (25%) patients had non-Hodgkin's lymphoma and 3 (15%) patients had inflammatory pseudotumor. Tuberculoma, haemangioma, abscess and metastatic adenocarcinoma were present in 2 (10%) patients each. The rest of the patients had rhabdomyosarcoma, osteoma, haematoma and pleomorphic adenoma in one (5%) patient each (Table-2)

Table 2:

Histopathology	No. of cases	Percentage
Non-Hodgkin's lymphoma	5	25
Inflammatory pseudotumor	3	15
Haemangioma	2	10
Tuberculoma	2	10
Abscess	2	10
Metastatic adenocarcinoma	2	10
Rhabodomyosarcoma	1	5
Osteoma	1	5
Haematoma	1	5
Pleomorphic adenoma	1	5

DISCUSSION

Neurosurgeons are concerned with orbital masses because these often spread to intracranial cavity. Orbital tumors are uncommon, but the main symptoms they cause are not uncommon. Whenever proptosis or visual disturbance is found, an orbital mass must be considered in the differential diagnosis[11].

Proptosis and visual deterioration are the most common presenting complaints in patients with orbital masses[7]. Our study agrees with this feature of orbital masses. The age ranged from 1.5 to 60 years with a mean age of 26.95 years. The maximum number of patients (60%) were in the first and the second decades of life. In a study by Rose[12] the age ranged between 11 and 84 years. Eleven patients in our study were male and 9 were female with a male to female ratio of 1.2:1. Study by Rose[12] showed a male to female ratio of 1:1.

In our study all patients (100%) had proptosis as the main presenting feature and the second most common presenting complaint was deterioration of vision which involved 8 (40%) patients. These figures are comparable to the study carried out by Cristante[7] which showed proptosis as the main presenting complaint in 80% of patients and visual deterioration in 40% of cases. Surgical intervention was done in all the cases. Superolateral orbitotomy was performed in eleven cases and transcranial approach was adopted in eight patients. In only one case anteromedial approach was adopted. Histopathological examination revealed non-Hodgkin's lymphoma in 5 (25%) cases, inflammatory pseudotumor in 3 (15%) patients, Tuberculoma, haemangioma, abscess and metastatic adenocarcinoma were found in 2 (10%) patients each. In neoplastic lesions, adjuvant therapy in the form of postoperative radiotherapy improved the outcome in the majority of cases.

CONCLUSION

The average age of the patients was 26.95 years with the maximum number of cases (60%) in the first and the second decades of life.

The male to female ratio in these patients was 1.2:1.

Proptosis was the cardinal feature in these patients (100%) and visual disturbances were present in 40% of patients.

Non-Hodgkin's lymphoma and inflammatory pseudotumor outnumbered other lesions.

Superolateral orbitotomy and transcranial approaches were used and gave satisfactory access to the lesions.

Postoperative radiotherapy was given in all the neoplastic lesions as an adjuvant therapy.

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Various Surgical Options for Correction of Marcus Gunn Ptosis

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ABSTRACT

Seven patients were included in this study; four were female and three were male. Frontalis suspension with the transposed levator palpebrae superioris was done in three patients having severe jaw-winking, with a fair result in each but these required more than one procedure. Simple levator resection in two gave a good result where jaw-winking was mild. Inferior rectus recession in one case with double elevator palsy gave adequate correction of the associated pseudo-ptosis and the child being six months of age with a clear pupillary axis was advised regular follow-up. Marcus Gunn ptosis requires intervention on the basis of severity of the synkinetic lid excursion.

INTRODUCTION

Congenital ptosis with associated jaw-winking is known as Marcus Gunn phenomenon and is a complicated surgical problem[1]. Myriad solutions have been suggested including Fasanella-Servat operation[2], levator resection[3], bilateral frontalis sling after levator excision[4,5], total superior rectus transplantation[6] and frontalis suspension with the transposed levator palpebrae superioris aponeurosis[7-9].

PATIENTS AND METHODS

All patients had complete eye examinations. Ptosis was assessed by using the marginal reflex distance or MRD, i.e. the distance between the corneal light reflection and the center of the upper eyelid margin in the primary position of gaze. Ocular movements were examined to look for any associated superior rectus hypoplasia and double elevator palsy. Bell's phenomenon, corneal sensation and the extent of jaw-winking were recorded; the latter being considered mild to moderate when the lid elevation on jaw movement was short of the superior limbus and severe in case the superior sclera was exposed. Three patients had frontalis suspension with the transposed levator palbebrae superioris (LPS) muscle, two had simple levator resection by the combined approach of transconjunctival isolation and transcutaneous resection of the LPS, one had inferior rectus recession of 6mm for correction of hypotropia, while reassurance and regular follow-up was advised to one infant's parents.

RESULTS

Seven patients were included in this study; four were female and three were male. Frontalis suspension with the transposed levator palpebrae superioris was done in three patients, simple levator resection in two, inferior rectus recession in one and another was advised to be kept under observation. The procedure of frontalis suspension with the transposed levator palbebrae superioris muscle was carried out in three patients with variable result; there was slight undercorrection in one patient which was acceptable as a fair result, one patient needed levator tuck to strengthen the initial suspension of transposed LPS to the frontalis and had a fair lid level after the second procedure, while another required reversal of sling because of overcorrection and had a fair result after conventional fascia lata frontalis sling. The levator palpebrae aponeurosis was transposed as a single sheet in two patients; one had a fair result and the other had an overcorrection. The LPS aponeurosis was split into three separate bands in the patient which resulted in an undercorrection needing a tuck procedure to strengthen. Simple levator resection (Figs 1-4) gave good results in two patients and the jaw-winking was further minimised. The patient having double elevator pasly had an associated hypotropia which was managed by recession of the inferior rectus (6mm) and gave a good result as the associated pseudo-ptosis improved and due to very mild nature of the associated jaw-winking, to the extent of being just a flicker, was cosmetically quite acceptable and that component of the problem was considered better left alone. Another patient having severe jaw-winking and

a moderate amount of ptosis was too young, being six month of age, and in view of a clear pupillary axis, was advised to be in regular follow-up.

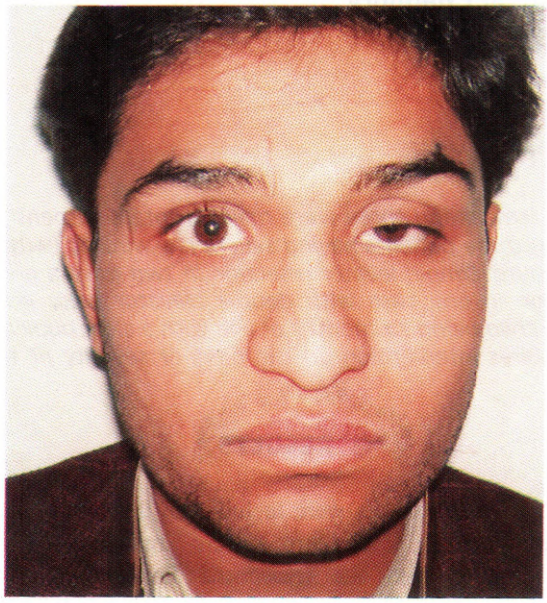

Fig-1
Ptosis (4mm) of the left eye

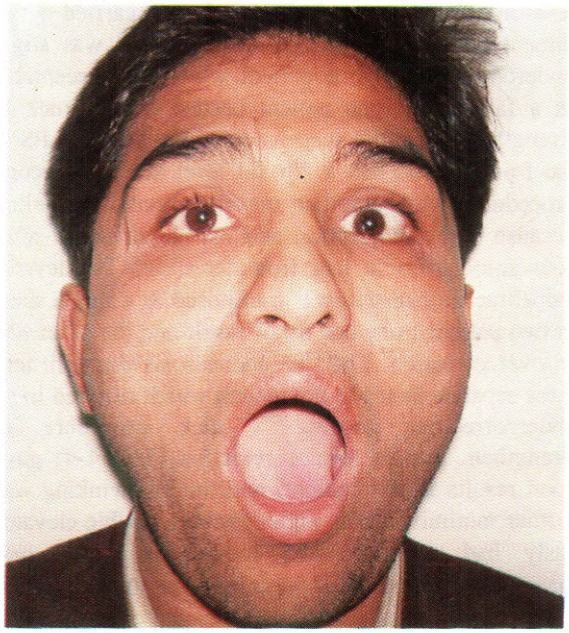

Fig-2
Moderate Marcus Gunn Phenomenon with the upper lid just touching the superior corneal limbus on full jaw opening.

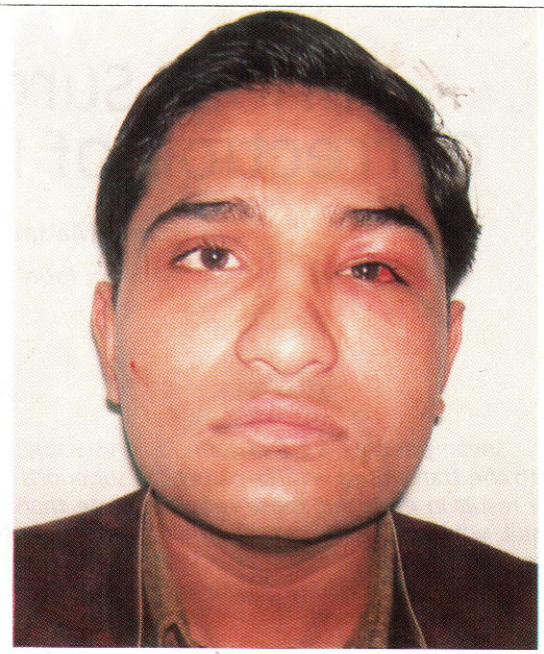

Fig 3
Good postoperative (day one) lid level after 18mm levator resection by combined approach.

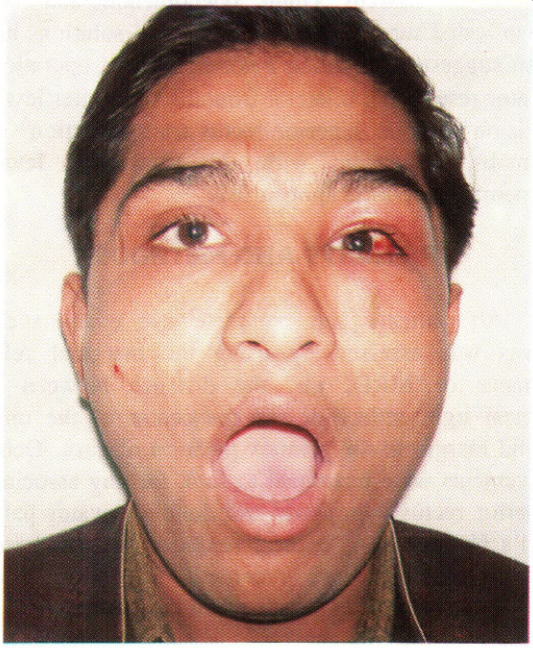

Fig-4
The upper eyelid excursion on jaw opening is practically reduced.

DISCUSSION

Ptosis is a cosmetic deformity which can threaten the functional integrity of the eye if the visual axis is obstructed and the associated jaw-winking is an added challenge to the oculoplastic surgeon. There are additional anomalies of ocular muscle balance,

especially vertical imbalance due to superior rectus hypoplasia or double elevator palsy causing a hypotropia that can actually be the sole cause of the lid drooping, which is considered to be a pseudoptosis. In addition, the impaired Bell's phenomenon in these patients can aggravate corneal exposure due to the postoperative lagophthalmos, which is seen in almost all the patients undergoing corrective surgery for ptosis. One has to rely on the conventional procedures with slight modifications, like Fasanella-Servat operation[2], levator resection[3], bilateral frontalis sling after levator excision[4,5], total superior rectus transplantation[6], or devise a new operative approach as frontalis suspension with the transposed levator palpebrae superioris aponeurosis[7-9].

The extent of jaw-winking can be used as a guide regarding the most suitable surgical option. Severe jaw-winking in which there is obvious and marked lid excursion, to the extent that there is considerable superior scleral show, necessitates an approach to eliminate this element of the deformity in addition to cosmetically acceptable lid lift. To achieve this, one would require a procedure like frontalis suspension with the transposed LPS aponeurosis. In case the jaw-winking is mild, where the lid movement is a flicker or falls much short of the superior corneal limbus, most of the patients are not concerned about this part of the deformity and are happy to have lid level correction achieved by simple levator resection which is a more controlled and predictable procedure. The frontalis suspension with the transposed levator palpebrae superioris aponeurosis is an intelligent compromise between getting rid of the abnormal innervation-related lid movement seen in Marcus Gunn phenomenon and using it as a sling; the transposed LPS is also thought to be reinnervated to some extent by the frontalis innervation. We achieved variable results in the three patients who underwent this procedure; one had a fair result, one had an undercorrection, while another had an overcorrection. Jaw-winking was resolved in all three, but additional levator tuck was done in the undercorrected patient with a fair result and the overcorrection required a release and subsequent fascia lata sling to obtain a fair result. Although good results have been reported elsewhere the procedure requires difficult dissection and the lid lift depends a great deal on the strength of the LPS sling and the single suture support at its new anchorage to the frontalis. Thus the frontalis suspension with transposed LPS gives variable results. One should be prepared to undertake additional surgical procedures in case there is need. Levator resection was carried out in the two patients where ptosis was the overriding concern, the jaw-winking being negligible, and the patient agreed to the correction of the main component of the deformity.

Inferior rectus release in the patient with double elevator palsy gave satisfactory result by resolving the associated pseudoptosis, the jaw-winking again being not a major concern due to its mild nature. When the jaw-winking is not dominating the clinical picture, it can be left alone. Last of all, the extent of parental concern on seeing their child with this problem requires reassurance; the time for intervention can be about five years so as to allow adequate tissue development and to tackle the peer pressure on commencing school.

Table-1: Amount of ptosis.

Ptosis	No. of Patients
Mild to moderate (2-3mm)	5
Severe (>4mm)	2
Total	**7**

Table-2. Extent of jaw-winking.

Jaw-winking	No. of Patients
Mild to moderate*	3
Severe**	4
Total	**7**

*Upper lid moves upto or short of superior corneal limbus.
**Upper lid moves exposing the superior sclera.

Table-3. Operative procedures done.

Procedure	No. of patients
Levator sling	3
Levator resection	2
Levator tuck (re-do)	1
Fascia lata sling (re-do)	1
Inferior rectus recession	1

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Ophthalmic "Pastpourri"

"De Oculis" by Benvenutus Grassus:
[XX: On the Second Form of Paniculus]

THIS disease appears beyond the outer coat of the eye in the shape of fish-scales or lentigo. If such a case, treated at the beginning, is not cured by the methods I have laid down, the patient will not recover his sight. If you operate on such a case with the knife you may entirely destroy the eye. There is no good result to be obtained from treatment of cases of long standing, when induration and carnification of the parts have set in; but if seen early, you may apply the actual cautery to the temples with a round cautery point such as I shall describe when we consider that subject. The fire attracts, dissolves the deposit, and clarifies the whole eye.

After the use of the cautery, put into the eye some of the powder of Benevenutus[1]. Then take four apples, cook them over the fire, remove the cores, pound them in a mortar, and mix thoroughly with the white of one egg. Apply on tow, as a poultice, to the closed eyes, changing it twice a day. Hold all these applications in place night and day, by means of a linen bandage. With God's help, if the case is a recent one, it may be cured, and the sight restored, as I have succeeded in doing in many instances, for which let us praise the omnipotent God.

1. *Pulvis nabetis*: Benevenutus describes the mode of preparation and gives us a catalogue of its therapeutic powers (infra); but it was, I think Guy de Chauliac who first called it *"poudre de Bienven"*.

Jehangir Durrani
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From: De Oculis (translated by Casey A. Wood)
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California. 1929;p47-8.

Results of Large Bimedial Rectus Recessions

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ABSTRACT

Objective: *To study the results of large (6 and 7mm) bimedial rectus recessions in large-angle (50 prism dioptres or greater) congenital esotropes.*
Design: *A prospective study on nineteen patients of congenital esotropia registered from May 1994 to December 1996 for 6 and 7mm bimedial rectus recessions.*
Setting: *Indoor patients of general community at the Department of Ophthalmology, Unit-1, Eye Hospital, Liaquat Medical College, Jamshoro/Hyderabad.*
Main Outcome Measures: *Correction of large-angle esotropes by large bimedial rectus recessions.*
Results: *Nineteen congenital esotropes having deviations of 50 to 80 prism dioptres underwent 6 and 7mm bimedial rectus recessions. The refractive errors ranged from -1.50 to +3.00 dioptres and age at surgery ranged from 2 to 12 years. Of the 19 cases, 15 patients (78.40%) achieved successful alignment within 10 prism dioptres. Four patients were undercorrected and no patient had overcorrection.*
Conclusion: *Large (6 and 7mm) bimedial rectus recessions in 19 congenital esotropes with deviations of 50 to 80 prism dioptres provided successful alignment within 10 prism dioptres of orthophoria in 78.94% of cases.*

INTRODUCTION

The management of congenital esotropia has long been a topic of controversy, not only concerning when to operate but also as to the best surgical approach. Success rates ranging from 30% to 91% have been described with a variety of surgical techniques[1,2]. Traditionally, the maximum recession of the medial rectus has been approximately 5mm[3]. Several investigators have successfully corrected large-angle esotropia with bimedial rectus recessions in excess of the traditional 5mm.

In our country little heed is paid to the subject of strabismus. Therefore, a prospective study was conducted to determine the results of large (6 and 7mm) bimedial rectus recessions in congenital eotropia.

PATIENTS AND METHODS

Forty-six patients of esotropia were registered and they underwent surgery from May 1994 to December 1996, in the Ophthalmology Department, Eye Hospital, Liaquat Medical College, Jamshoro/Hyderabad. Of the 46 esotropes, 19 patients were congenital esotropes and met the following criteria for this study:

i. Esotropia present by one year of age.
ii. Preoperative deviation ranging from 50 to 80 prism dioptres.
iii. Age at surgery ranging from one year to 12 years.
iv. Refractive errors not greater than +3.0 dioptres.
v. No overt evidence of central nervous system abnormalities or organic eye disease.
vi. Availability for follow-up of 3 to 6 months.

Deviations were evaluated by Hirschberg or Krimsky methods or by prism and cover tests at distance, when possible. Cycloplegic refraction and fundus examination were performed after the use of 1% atropine drops for three days. All patients underwent bimedial rectus recession of 6mm for deviations ranging from 50 to 60 prism dioptres and 7mm for deviations of 61 to 80 prism dioptres by Parks' cul-de-sac approach. Recession measurements were made from the original muscle insertion and the suture material was 6/0 vicryl. For this study alignment within 10 prism dioptres of orthophoria at 6 weeks postoperative period was considered successful.

RESULTS

Table-1 shows that eleven of the 19 patients with deviations in the range of 50 to 60 prism dioptres underwent 6mm bimedial rectus recessions. Refractive errors ranged from -1.50 to +3.00 dioptres and ages at the time of surgery ranged from 2.5 to 12 years. Of these 11 patients, nine (81.81%) achieved successful alignment within 10 prism dioptres of orthophoria.

Table-2 depicts that eight of the 19 patients, with

deviations in the range of 61 to 80 prism dioptres underwent 7mm bimedial rectus recessions. Refractive errors ranged from -1.00 to +2.75 dioptres and ages at the time of surgery ranged from 3 to 12 years. Of these 8 patients, six (75%) achieved successful alignment.

Table-3 shows that eleven esotropes with an average deviation of 57.27 prism dioptres, average refractive error of +0.75 dioptres and average age of 6.72 years achieved 81.81% success rate by 6mm bimedial rectus recessions. The remaining eight patients with an average deviation of 73.75 prism dioptres, average refractive error of +0.96 dioptres, and average age of 6.75 years, underwent 7mm bimedial rectus recessions with success rate of 75%. Overall, combined success rate of both groups (6 and 7mm) recessions was (78.40%).

DISCUSSION

A variety of surgical techniques for the correction of congenital esotropia have been described. Two basic schools have emerged: those preaching selective approach and those who advocate uniform or symmetrical surgery. Proponents of the selective approach suggest surgery on two to four of the horizontal rectus muscles, depending on the degree of deviations, whereas proponents of uniform surgery advocate stepwise surgery, the first operation being symmetrical bimedial rectus recessions or monocular medial rectus recession combined with lateral rectus resection on the non-fixating eye. Further surgery, either bilateral rectus resections or monocular medial rectus recession and lateral rectus resection on the fellow eye, is performed as necessary.

In the past, surgeons performing traditional 5mm bimedial rectus recessions for congenital esotropia have encountered an unacceptable incidence of undercorrections in patients with large deviations. But in the recent past, large bimedial rectus recessions in congenital esotropes with large deviations have achieved satisfying results. A successful operation is generally accepted as one which results in an alignment within 10 prism dioptres of orthophoria[1,4-6]

In this study, congenital esotropes with large deviations, i.e 50 prism dioptres or greater, underwent large bimedial rectus recessions of 6 and 7mm. Eleven patients with deviations of 50 to 60 prism dioptres achieved 81.81% success with 6mm bimedial rectus recessions, whereas nine patients with deviations of 61 to 80 prism dioptres achieved 75% success rate with 7mm bimedial rectus recessions. Overall combined success rate of both groups in 19 congenital esotropes was found to be 78.94%. These findings are consistent with those of the developed countries. Ing and Workers[1] reported a success rate for bimedial rectus recessions of only 30% in 40 patients with esotropia measuring 50 prism dioptres or greater. Szmyd et al[2] found 91% success rate of large (6 and 7mm) bimedial rectus recessions in 45 congenital esotropes with deviations of 50 prism dioptres or greater. Nelson et al[7]. reported 83.5% success rate in 97 patients with congenital esotropia with deviations of 50 prism dioptres or greater. Weakley and Parks[8] found 61% success rate with 7mm bimedial rectus recessions in large-angle congenital esotropes averaging 69 prism dioptres. Weakley et al[9] reported 75% success rate with 7mm bimedial rectus recessions in thirty-five patients of congenital esotropia with deviations averaging 74 prism dioptres. Damankis et al[10] found 75% success rate with 8mm bimedial rectus recessions in 16 patients with large-angle infantile (congenital) esotropia with deviations of 80-90 prism dioptres.

Clinical evidence suggests that congenital esotropia surgically aligned within 10 prism dioptres of orthophoria prior to two years of age is associated with some degree of binocular vision and stereopsis[11-13]. Therefore, in the studies of other authors, the age at surgery was below two years, whereas in our study it was above two years when the period for development of single binocular vision had passed. Therefore, this objective could not be achieved in our study due to late presentation of squinting child for management. However, the goal of cosmetically acceptable straight eyes was achieved. This study found that 6 and 7mm bimedial rectus recessions in 19 congenital esotropes with deviations of 50 to 80 prism dioptres achieved 78.94% success rate without limitation of convergence or adduction. This suggests that patients with large-angle esotropia could be successfully aligned with uniform surgery as opposed to three-or four-muscle procedures.

CONCLUSION

The symmetrical approach of large (6 and 7mm) bimedial rectus recessions is an effective procedure for correction of large-angle (50 prism dioptres or greater) congenital esotropia without limitation of convergence or adduction. The advantages of this method as opposed to three-or four-muscle procedures are, that it is quicker, simpler, and a less traumatic procedure which leaves the lateral rectus muscles unoperated for further surgeries if necessary.

Table 1 Results of 6mm bimedial rectus recession.

Sr. No.	Age years	Refractive errors(D)	Preoperative Deviation (PD)	Postoperative Deviation (PD)
1	3	+2.50	60	15
2	7	+0.50	50	0
3	5½	+1.50	55	5
4	12	-1.50	60	0
5	8	emmetrope	60	7
6	2½	+3.00	60	10
7	6	+0.50	55	0
8	10	-1.00	60	13*
9	7	+0.75	50	0
10	4	+2.00	60	3
11	9	emmetrope	60	8

D = Dioptre PD = Prism Dioptre * = Undercorrected

Table-2 Results of 7mm bimedial rectus recession

Sr. No.	Age years	Refractive errors(D)	Preoperative Deviation (PD)	Postoperative Deviation (PD)
1.	5	+1.00	70	0
2.	3	+2.75	80	15*
3.	9	-1.00	75	0
4.	3½	+2.50	80	7
5.	10	emmetrope	65	0
6.	12	emmetrope	75	12*
7.	4	+2.00	80	5
8.	7½	+0.50	65	0

D = Dioptre PD = Prism Dioptre * = Undercorrected

Table-3 Summary of Clinical Data

No.of Esotropes	Bimedial Rectus Recession	Average Age (Years)	Average Refractive Error (D)	Average Deviation (PD)	No. of Successful Esotropes
11	6mm	6.72	+0.75	57.27	9 (81.81%)
8	7mm	6.75	+0.96	73.75	6 (75.00%)
19	6 & 7mm	6.73	+0.85	65.50	15 (78.94%)

D = Dioptre PD = Prism Dioptre

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Ophthalmic "Pastpourri"

"De Oculis" by Benvenutus Grassus:

I wish to describe to you more fully the *pulvis nabetis* and its great value in the treatment of paniculi of the eye, especially of the second and third kinds. It is made of sugar candy, which in the Arabic, Saracenic, and barbarian tongues is called nabet, but which we Christians call sugar of gilbel, sugar of nabet, or Alexandria candy.

This remedy has remarkable qualities because, in the first place, it softens the paniculus; in the second place, it relieves pain; and, thirdly, it reduces the redness of the eye, dissolves films and spots, and soothes the whole organ. It also increases vision and arrests the flow of tears when they arise from a cold humor. Indeed, the powder is a safe one that relives practically all troubles of the eyes. Now let us discuss the fourth variety of paniculus.

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From: De Oculis (translated by Casey A. Wood)
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California. 1929;p49.

Combined Phacoemulsification and Pars Plana Vitrectomy

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ABSTRACT

Twenty-three eyes of twenty-three patients who underwent combined phacoemulsification and pars plana vitrectomy were reviewed. All eyes had clinically significant cataract with coexisting vitreoretinal pathology: proliferative diabetic retinopathy (eleven eyes), retinal detachment with proliferative vitreoretinopathy (five eyes), vitreous haemorrhage secondary to retinal vein occlusion (three eyes), uveitis with significant vitreous opacities (two eyes), vitreous haemorrhage secondary to choroidal neovascular membrane (one eye) and epiretinal membrane (one eye). Sixteen eyes had improvement in visual acuity; in four eyes the vision remained the same and in three eyes the vision deteriorated to NPL. Intraoperative problems related to phacoemulsification were non-sealing wound, iris prolapse, corneal oedema, posterior capsule rupture and failure to implant IOL. Complications related to vitrectomy were removal of posterior capsule (five eyes) and an iatrogenic retinal break (one eye). Phacoemulsification allowed a good view of the retina and the corneal wound remained watertight during vitrectomy.

INTRODUCTION

In patients with vitreoretinal pathology the presence of cataract creates a problem pre-and intraoperatively by restricting our view of the fundus. Postoperatively cataract may progress with further limitation of the fundal view[1]. Surgical removal of cataract and correction of aphakia are problems which can be addressed during the same operation or they can be dealt with separately. Several surgical approaches to deal with coexisting vitreoretinal pathology and cataract are available[2]. Vitrectomy can be combined with pars plana lensectomy removing the lens by ultrasonic fragmentation and/or vitreous cutter and aspiration. The posterior capsule is usually removed and the anterior capsule can be removed or spared. If the anterior capsule is intact a large anterior capsulorhexis can be created and a sulcus-fixated lens implanted at the end of vitrectomy or as a secondary procedure. However, marked opacification of the anterior capsule can commonly lead to an impaired view of the peripheral retina postoperatively. Alternatively, the patient may be left aphakic and a contact lens utilized. Extracapsular cataract extraction can also be combined with pars plana vitrecotomy. The corneal wound may be temporarily sealed with sutures, and at the end of vitrectomy a posterior chamber IOL is implanted and the corneal wound secured. This procedure has the disadvantage of a potentially insecure cataract wound during the vitrectomy with the danger of iris prolapse secondary to intraocular pressure fluctuations.

Combined pars plana vitrectomy and phacoemulsification has the potential to provide a stable peroperative anterior segment with optimal management of lens opacities. We have, therefore, reviewed the indications, technique and results in patients undergoing this procedure.

PATIENTS AND METHODS

Medical records of 23 patients who underwent combined phacoemulsification and vitrectomy at Moorfields Eye Hospital between 1991 and 1995 were available for a retrospective study. The aims of this study were to identify the indications for the operation, the type of cataract, operative and postoperative complications and functional results. Preoperative data collected included patient age, sex, underlying vitreoretinal pathology, type and degree of cataract and visual acuity. All patients had an A-Scan ultrasonography and keratometry to ascertain intraocular lens power. In patients where underlying fundus pathology was not obvious preoperatively the diagnosis was confirmed intraopertively.

Pupils were dilated with cyclopentolate 1% and phenylephrine 5%. All operations were performed under general anaesthetic. A 20 gauge 4mm posterior chamber infusion cannula was inserted through the pars plana 4mm posterior to the limbus in the inferotemporal quadrant and secured. In all except four of the eyes a corneal tunnel was made with 3.2mm keratome followed by injection of hydroxypropyl-methylcellulose 2% (HPMC) into the

anterior chamber (A/C). In four eyes a scleral tunnel was fashioned. A continuous circular capsulorhexis was performed using a bent 27 gauge needle. This was followed by hydrodissection of the lens cortex and phacoemulsification of the lens nucleus. The residual lens cortex was aspirated with a Simcoe irrigation/aspiration cannula. The corneal or scleral tunnel was self-sealing and the A/C was filled with HPMC.

After completing phacoemulsification two further pars plana sclerostomies were created. Vitrectomy and other necessary vitreoretinal manoeuvres were then carried out and the superior sclerostomies were sutured. The corneal (or scleral) tunnel was then enlarged to 5mm. A foldable posterior chamber lens was implanted in the capsular bag and residual HPMC was aspirated. The corneal wound was left unsutured if it was considered to be watertight. Alternatively, a single 10/0 nylon suture was used to secure the wound. The infusion line was then removed and the sclerotomy sutured. A subconjuctival injection of antibiotic and dexamethasone was used. Postoperatively, patients were treated with topical atropine, dexamethasone and chloramphenicol. Patients were reviewed at one day, one week and one month postoperatively. Patients were normally refracted at 2 months postop.

RESULTS

14 of the total of 23 patients were males with a mean age of 60 years, 9 were females with a mean age of 70 years. Age range was from 28 to 96 years. 11 patients were diabetic. Type of cataract is recorded in Table-1.

Of the 23 patients, 11 patients had proliferative diabetic retinopathy with tractional retinal detachment. 5 patients had rhegmatogenous retinal detachment with proliferative vitreoretinopathy. 3 patients had vitreous haemorrhage secondary to retinal vein occlusion. 2 patients had dense vitreous opacities secondary to posterior uveitis. There was 1 patient with vitreous haemorrhage secondary to age-related macular degeneration and one with an epiretinal membrane.

During phacoemulsification one patient had non-sealing corneal wound considered to be due to inadequate wound architecture and developed iris prolapse at the start of the operation. The wound was closed and another corneal pocket was created, the subsequent operation was uneventful. In all except one of our patients the intraocular lens was implanted after vitrectomy. This patient developed corneal oedema during the centration of the lens due to striate keratopathy. Corneal oedema was severe enough to impair our view of the fundus and vitrectomy was abandoned. The oedema resolved in a few weeks and vitrectomy was carried out after 2 months.

One patient had posterior capsule rupture during phacoemulsification with posterior displacement of lens fragments to the vitreous cavity. The lens fragments were removed during vitrectomy. This patient did not undergo intraocular lens implantation.

In further 6 patients no lens was implanted; these patients did no receive the implant because of the nature of the vitreoretinal pathology. One patient had severe proliferative vitreoretinopathy (PVR) and the retina was considered to be inoperable. Two of the six patients had severe PVR and, it was decided during vitrectomy to proceed to retinectomy and intravitreal silicone oil and, therefore, the lens capsule was removed completely and the patient was left aphakic. In 3 of the six patients the lens capsule was removed because of difficulty viewing the peripheral fundus. One of these patients developed an iatrogenic break near the sclerostomy which was treated with cryotherapy and intravitreal gas exchange. One of our patients developed choroidal haemorrhage during vitrectomy which gradually resolved (final visual acuity in this eye was 6/9).

During the postoperative period one of the patients with preexisting PVR developed retinal redetachment for which she underwent further surgery with intravitreal silicone oil. The retina again redetached following this operation and the vision deteriorated to no perception of light. One diabetic patient and a patient with branch vein occlusion developed inferior retinal detachment after combined phacoemulsification and vitrectomy and delamination, for which they underwent further detachment surgery with intravitreal silicone oil exchange. The final visual acuity was hand movements in both eyes. One diabetic patient developed phthisis bulbi and the final vision in this eye was reduced to no perception of light. Macular oedema was noted in only one patient. One patient in our series developed central retinal artery occlusion with a final visual acuity of hand movements. Four of 16 patients who received an intraocular implant developed thickening of the posterior lens capsule.

The pre-and postoperative visual acuities are given in Figure-1.

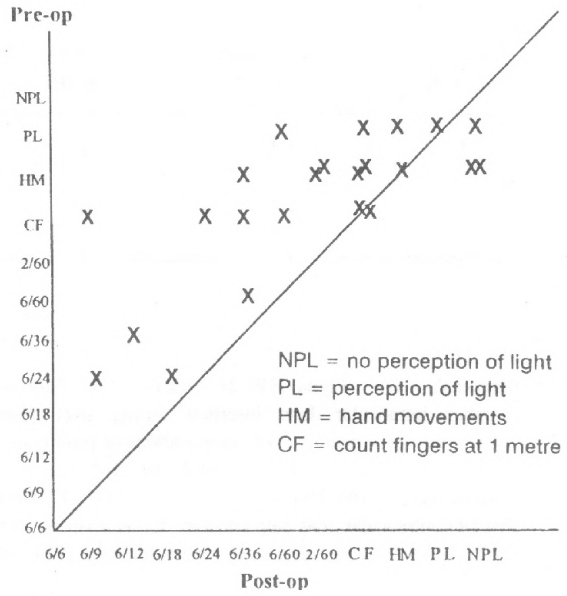

Figure 1: Pre- and post-operative visual acuitis

Three patients in whom the final visual acuity was no perception of light include the two patients with untreatable retinal detachment with PVR and one diabetic patient with rubeotic pthisis bulbi.

DISCUSSION

In patients with a combination of cataract and vitreoretinal disease, pars plana vitrectomy can be successfully combined with cataract extraction. The choice of technique for cataract extraction will depend upon the nature and severity of the underlying vitreoretinal pathology and also upon the expertise and personal preference of the operating surgeon. Previous reports [3,4] have described the combination of phacoemulsification and pars plana vitrectomy. The essential difference in the technique we have described is that we use a small incision for our intraocular lens implant and thus avoid the use of sutures for the temporary closure of the phaco wound. The phacoemulsification technique has the advantage of providing a watertight wound closure during and after surgery with theoretically a stable anterior segment and a lower risk of iris prolapse compared to cataract extraction techniques involving a larger section. The small incision is less likely to open during transient rise in intraocular pressure, for example during scleral indentation and indeed none of the patients in our series developed wound opening during the subsequent vitreoretinal surgery.

Removal of the lens generally provides a good view of the posterior pole for vitreoretinal surgery and this may be critically important when performing macular or epimacular surgery. Following phacoemulsification the view of the retinal periphery is also generally of high quality. However, if a corneal tunnel is employed then subsequent mild oedema around this tunnel may impede viewing of the peripheral retina. A scleral tunnel may, therefore, be the optimal approach for performing phacoemulsification where a pars plana vitrectomy is to be carried out afterwards. Intraocular lens implantation can be carried out at the conclusion of surgery and this sequence of manoeuvres will help optimize the surgical view. However, in some cases it may be desirable to implant at an earlier stage since this will provide increased stabilization of the anterior segment. Earlier implantation may be more suitable for vitreoretinal surgery on the posterior pole.

Phacoemulsification generally carries less risk of miosis during cataract extraction. This is an additional advantage when performing subsequent vitrectomy. Secure in-the-bag placement of the lens implant is also useful, particularly in proliferative diabetic retinopathy where contact between the lens and the iris can be minimized. An additional advantage in proliferative diabetic retinopathy is that retention of the capsular bag will theoretically act as a barrier between the vitreous and the anterior chamber, thus reducing the risk of anterior segment neovascularization.

It is notable that a significant number of cases in our series had poor visual result from combined surgery. This was due to the severe nature of the underlying vitreoretinal pathology. A detailed preoperative assessment should be carried out and where advanced proliferative vitreoretinopathy or other forms of vitreoretinal disease are suspected (direct visualization may be difficult behind significant lens opacity and B-scan ultrasound may be useful here), consideration should be given to an initial lensectomy and complete removal of the capsular bag combined with vitrectomy. This is of particular relevance when it is anticipated that silicone oil will be used as an intraocular tamponade since residual posterior capsule will rapidly opacify in the presence of silicone oil and residual peripheral lens capsule may block an inferior peripheral iridectomy. Aphakia in such eyes may subsequently be corrected with secondary intraocular lens implant or contact lens[5,6].

Combined phacoemulsification and pars plana vitrectomy provides a useful addition to the potential techniques available for dealing with lens opacities

Table 1: Cataract Type

Type	PSC	NS	C	PSC & NS	C & NS	C & NS
Total	8	7	2	4	1	1
Diabetic	3	3	2	3	-	-

PSC = posterior subcapsular, NS = nuclear sclerosis, C = cortical

and vitreoretinal pathology. The exact indications for the technique have yet to be fully defined. However, from our series it would appear that the technique is particularly useful in less severe forms of vitreoretinal disease, for example, macular pathology where a small central or posterior subcapsular lens opacity significantly distorts viewing of the posterior pole or where peripheral lens opacities impair viewing of the peripheral retina. There is also a theoretical advantage of maintaining a barrier to neovascular growth factors in the treatment of diabetic retinopathy. The combined technique appears to be less useful in severe proliferative vitreoretinopathy and specifically where silicone oil is used as an intraocular tamponade.

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Current Status of Trachoma in Pakistan

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ABSTRACT

Trachoma is a major public health problem in Pakistan, but so far no data are available as to the exact prevalence of the disease. A rapid assessment methodology was developed and data collected on active trachoma and its lid complications. The information was generated from district ophthalmologists of randomly selected districts and tertiary centers in order to get a handle on the mode of presentation for identifying the possible ways of intervention.

Active trachoma was found to be the most common presentation (2.4%), followed by trichiasis (1.6%). Very few ophthalmologists were aware of the new WHO grading system for trachoma(48%) and the elements of primary health care (24%).

This study may act as a guide to those wishing to undertake rapid assessments or detailed surveys or evolve strategies for intervention.

*A "SAFE" (**S**urgery, **A**ntibiotics, **F**ace washing and **E**nvironmental change) strategy may be recommended for Pakistan, in order to eliminate trachoma as a cause of blindness in the next decade.*

INTRODUCTION

Trachoma is the leading infectious cause of blindness with an estimate of 500 million people affected worldwide and 7-9 million having lost sight[1]. It is a chronic keratoconjunctivitis due to repeated infections with Chlamydia trachomatis sero types A, B, Ba and C[2]. Areas in which trachoma is prevalent are characterized by families with low socioeconomic status, poor water supply and suboptimal hygienic practices[3,4]. Trachoma was a major disease in North America and Europe but due to gradual but remarkable improvement in general standard of living, as well as personal and community hygiene, the disease has disappeared[5].

There have been different grading schemes for trachoma. MacCallan in 1936 divided it into four stages showing progression of the disease from initial infection to scarring[6].

Dawson and Jones developed a comprehensive scheme for field research based on the degree of severity of five signs of trachoma[7]. More recently, this classification has been simplified to enable all levels of health workers to grade patients with trachoma in a reliable and consistent way[8]. The new classification is the WHO Grading For Trachoma[9] as given below:

Trachoma Follices (TF)

There are 5 or more follicles in the upper tarsal conjunctiva. (For this grading system, follicles must be at least 0.5mm in diameter).

Trachomatous Inflammation, Intense (TI)

Pronounced inflammatory thickening of the tarsal conjunctiva will obscure half the normal deep tarsal vessels.

Trachomatous Conjunctival Scarring (TS)

The presence of scarring in the tarsal conjunctiva. (These scars are easily visible as white lines, bands or sheets [fibrosis] in the tarsal conjunctiva).

Trachomatous Trichiasis (TT)

At least one eyelash rubs on the eyeball. (Evidence of recent removal of inturned eyelashes should also be graded as trichiasis).

Corneal Opacity (CO)

Easily visible corneal opacity is present over the pupil. (This definition refers to corneal scarring which is so dense that at least part of the pupil margin is blurred when seen through the opacity).

MATERIALS AND METHODS

Six districts were chosen randomly from Punjab and NWFP, five from Balochistan and Sind and three form Azad Jammu and Kashmir. These included one tertiary center in each province. Two consultants were then hired and trained at the Pakistan Institute of Community Ophthalmology and sent to each of the districts with a questionnaire to fill. The ophthalmologists were asked about the total number of outpatients they were seeing that were less than 10 years of age and the number suffering from active trachoma. They were also asked about the number of women over 30 years of age and the number having lid complications such as trichiasis and entropion. Their OPD and operating registers were checked to corroborate the statements.

These ophthalmologists were also asked if they were aware of the new WHO grading system of trachoma and the eight elements of primary health care.

RESULTS

Table 1:Population and prevalence of trachoma in Punjab.

Total population	73,348,357
Total population <10 yrs	23,471,474
TF / TI prevalence	1.48%
Total population of women >30yrs	15,256,458
TT prevalence	6.8%
Blindness prevalence	2.17%

Table 2: Population and prevalence of trachoma in NWFP.

Total population	20,985,779
Total population <10yrs	6,715,449
TF/TI prevalence	2.7%
Total population of women > 30 yrs	4,218,141
TT prevalence	2%
Blindness prevalence:	1%

Table 3: Population and prevalence of trachoma in Sind.

Total population	32,585 686
Total population < 10 years	10,427,420
TF / TI prevalence	2.1%
Total population of women > 30 years	6,647,479
TT prevalence	1%
Blindness prevalence	1.14%

Table 4: Population and prevalence of trachoma in Balochistan.

Total population	7,755,909
Total population <10 years	2,481,890
TF / TI prevalence	1%
Total population of women > 30 years	1,450,355
TT prevalence	1%
Blindness prevalence	2.69%

Table 5: Population and prevalence of trachoma in Azad Jammu and Kashmir.

Total population	2,961,100
Total population < 10 years	947,552
TF / TI prevalence	4.6%
Total population of women > 30 years	592,220
TT prevalence	1%

Table 6: Population and prevalence of trachoma in Pakistan.

Total population	140 million
Total population < 10 years	44,043,785
TF/TI	2.4%
Total population of women > 30 years	28,164,653
TT prevalence	1.6%
Blindness prevalence	1.78%

Table 7: WHO grading of trachoma.

Those who knew	48%
Those who did not know	52%

Table 8: Eight elements of primary health care.

Those who knew	24%
Those who did not know	76%

DISCUSSION

Trachoma is a public health problem in Pakistan. It is very easy to assess the extent of the problem as the prevalence of active trachoma in young children is very high. So are the lid complications amongst the females over the age of 30 years. A quick assessment can be made by looking for trichiasis (TT) in females over the age of 15 years and a prevalence of 1% or more would suggest a community with a serious trachoma problem. Alternatively, children aged 1-10 can be examined for inflammatory disease (TF and TI); a TI prevalence of more than 5% suggests a severe trachoma problem in that community.

One sees that there are both active trachoma and lid complications in Pakistan. The lid complications we saw in the women over 30 years of age in the broad spectrum of Pakistan showed a high prevalence of TT (1.6%). A very high prevalence of TT was seen in Punjab (6.8%) and North-West Frontier Province (2%). This is probably because of densely populated areas with a lot of people living below the poverty line. High levels of illiteracy, and poor hygienic conditions may also be contributing factors. A low prevalence of active trachoma overall in Pakistan (2.4%) was probably due to lack of both diagnostic acumen and knowledge of trachoma.

The gradually improving socioeconomic status could also be a contributing factor in actually reducing the prevalence of active disease . One can infer that though the active disease may be gradually on the decline, the lid complications will be seen for quite some time in the future.

The data also showed that trachoma does exist, though in pockets, throughout the country and hence any control strategy must be planned with this in mind.

Limitations of these data are obvious as most of these are based on anecdotal evidence and cannot replace any epidemiological study. However, this will act as a guideline for those wishing to do rapid assessments, more detailed surveys or to evolve a strategy for intervention.

It would be helpful for many ophthalmologists and health workers in the related field if we alluded to the eight essential elements of Primary Health Care (PHC) here. These are[9]:

1. Education concerning main health problems
2. Promotion of food supply and good nutrition
3. Adequate supply of safe water and basic sanitation
4. Maternal and child health, and family planning
5. Immunization against major infectious diseases
6. Prevention and control of local endemic diseases
7. Appropriate treatment of common diseases and injuries
8. Provision of essential drugs

RECOMMENDATIONS

1. National task force on trachoma needs to be formulated with a mandate to carry out rapid assessments in areas of higher prevalence of trachoma and to plan for appropriate intervention strategies.

2. Continuous medical education on trachoma for primary eye care personnel and ophthalmologists should be undertaken.

3. SAFE (Surgery, Antibiotics, Face washing and Environmental change) may be adopted as control strategy for Pakistan.

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Ophthalmic "Pastpourri"

"De Oculis" by Benvenutus Grassus

[XXI: Of the Third Paniculus]

HAVING spoken of the first and second forms of paniculus let us consider the third variety, that appears beneath the ocular tunic like a fallen snowflake. The treatment of this variety is in part similar to that of the second paniculus, viz., the application of the cautery to the temples and dusting the *pulvis nabetis* into the eye in conjunction with the following remedy that is specially indicated in blanching of the eyes. Take two to four ounces of the best wood aloes, and a clean saucer heaped with live coals. Over this arrange a large barber basin so that the fumes and smoke from the burning aloes are kept under cover and cannot escape, and put the aloes on the hot coals. When the smoke rises from the burning aloes, expose half an ounce of *nabetis* powder to it in an iron spoon, and when it is thoroughly impregnated with the fumes dust it into the eye twice a day. Over this and the closed eyes adjust the [apple] plaster described when speaking of the second paniculus. This is the only satisfactory treatment of the third variety of paniculus, a disease more common in Tuscany than in other places.

Jehangir Durrani
MD, FACS, FRC OPHTH.

From: De Oculis (translated by Casey A. Wood)
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Dacryocystorhinostomy - A Clinical Report of 54 Cases

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ABSTRACT

A clinical report is presented of 54 cases of dacryocystorhinostomy (DCR) performed at the Liaquat Medical College Eye Hospital, Unit II, Hyderabad, between August 1995 and July 1997. There were 14 males and 40 females. Ages were between 8 to 60 years, the average being 34 years. Indications were epiphora in 48 cases, mucocele in 5 cases and mucocele with lacrimal fistula in 1 case. All cases but 3 had intubation with silicone tube. Follow-up was between 3 to 15 months, the average being 9 months. 53 patients (98.14%) were completely relieved of watering. Only one patient with mucocele and lacrimal fistula had persistent watering.

INTRODUCTION

Dacryocystorhinostomy (DCR) is indicated where the patient's symptoms can be attributed to an obstruction located distal to the internal opening of the common canaliculus. The aim of the operation is to make that part of the sac which harbors the opening of the canaliculi, an integral part of the nose. Following the operation, the sac should cease to exist and be marsupialized to the nose[1].

The treatment of obstructive lesions in the lacrimal drainage apparatus has a history dating back to antiquity. Galen himself is said to have advocated breaking through the lacrimal bone and introducing a caustic substance to inhibit closure of the newly formed passageway. Following the description of lacrimal syringe by Anel in 1713[2] and introduction of graded lacrimal probes by Bowman in 1857[3], syringing and probing became the conventional method of treatment. Patients with persistent infection were treated by extirpation of the lacrimal sac. This invariably left the patient with a watering eye. Although the case of therapeutic syringing and probing still has its advocates, except in case of congenital nasolacrimal duct obstruction, such maneuvers are largely useless and not infrequently make the situation worse[4].

In 1904 Adeo Toti[5], a French ophthalmologist working in Florence, revolutionized the treatment of obstructive epiphora. He suggested that having made an external approach to the tear sac, that part of it adjacent to the canaliculi should be preserved and absorbed into the nose, from which part of the lateral wall had been removed. He called his operation dacryocystorhinostomy.

Although good initial results were obtained late failures were not infrequent. In 1921 Dupuy-Dutemps and Bourguet[6] concluded that these failures could be avoided by suturing the divided nasal and sac mucosal edges over the bony margins of osteotomy.

The operation, as they described it, is highly successful in patients whose site of obstruction lies beyond the internal opening of the common canaliculus, in which a success rate approaching 100 percent may be anticipated. For more proximally situated lesions, different techniques are appropriate, depending on the level of obstruction. Such obstruction may be located at the level of the common canaliculus or involving the individual canaliculi.

MATERIALS AND METHODS

Consecutive patients who required primary drainage surgery to relieve nasolacrimal duct obstruction (as evidenced by epiphora, mucocoele or a history of acute dacryocystitis) between August 1995 and July 1997 were collected from the Eye OPD of Liaquat Medical College Hospital, Unit-II. Preoperatively a history was taken and routine ophthalmic examination was undertaken. Probing and syringing of the nasolacimal system was performed and patients with common canalicular and individual canalicular occlusion were excluded. Dacryocystography was not done. A complete general physical examination was carried out.

SURGICAL TECHNIQUE

General anesthesia was used in all of the patients. A nasal packing soaked in xylocaine and

adrenaline was used in all patients. Anesthetist was advised to give hypotensive anesthesia to minimize bleeding. A straight vertical incision about 20mm long was made about 8mm medial to the inner canthus on the side of the nose. The incision was deep, down to the periosteum. In thinner patients angular vein was visible and care was taken to avoid it. Periosteum was reflected to expose the bone. The sac was pushed laterally to expose the lacrimal fossa. Thin bone was perforated at the suture between lacrimal and maxillary bones at the floor of the fossa. The tip of a squint hook was passed through this opening and carefully rotated 360° between the bone and the underlying nasal mucosa. This separated the nasal mucosa from the bone and prevented mucosal capture during osteotomy. Osteotomy was performed with a bone nibbler, taking care of the nasal mucosa. Osteotomy was wide enough to allow the tip of the little finger to pass through it. A probe was passed via the canaliculus to identify the lumen of the sac and a vertical incision was made in it. Posterior flap was excised. Silicone DCR tube (Visitec) was passed through both the puncta and the canaliculi and taken out from the excised sac. A vertical incision was made through the nasal mucosa. The posterior flap was excised. DCR tube was passed through this opening into the nasal cavity where it was tied by applying multiple knots. It was not sutured to the nasal mucosa. Anterior flaps of the lacrimal sac and nasal mucosa were sutured with 6-0 vicryl. Then the wound was closed in two layers. The wound was bandaged. The following day the nasal pack was removed, as well as the bandage, and the skin sutures were removed after one week.

RESULTS

Between August 1995 and July 1997, 54 operations of DCR were performed. There were 14 males and 40 females (Table-1). The ages were 8 to 60 years (Table-2), the average being 34 years. Indications for surgery are given in Table-3.

Table 1: Sex distribution.

Sex	No. of Patients	Percentage
Males	14	26%
Females	40	74%
Total	**54**	**100%**

Table 2: Age distribution.

Age	No. of Patients	Percentage
0-10	06	11%
11-20	11	20%
21-30	14	26%
31-40	12	22%
41-50	08	15%
51-60	03	06%
Total	**54**	**100%**

Table 3: Indications for surgery.

Indication	No. of Patients	Percentage
Epiphora	48	88.89%
Epiphora + Mucocele	05	09.26%
Mucocele + Lacrimal fistula	01	01.85%
Total	**54**	**100%**

All cases except one were successful in relieving epiphora. Silicone tube was removed three months postoperatively. All the operations have remained functional with the longest follow-up of about 18 months. The one case in which epiphora was not relieved was that of mucocele with lacrimal fistula.

DISCUSSION

Our experience revealed that females undergoing DCR surgery outnumbered males with a wide margin. This could be due to the narrower nasolacrimal ducts, the commonest site of obstruction, in females[7], whereas class-related cause points towards an obstructive factor caused by injudicious use of cheap and adulterated eye cosmetics applied on the wrong side of the eyelashes. We used bone nibbler for osteotomy in all cases. This saved the nasal mucosa in the majority of cases, and partially damaged it only in a few cases[8]. Posterior flaps were excised in all cases. Only the anterior flaps were sutured. This did not influence the results of surgery[9]. Three cases did not have DCR tubes owing to financial reasons and they were also relieved of symptoms. Only one case with lacrimal fistula was found to have persistent epiphora.

In this case opening of the fistula was involved in the main incision along with its track, but still that track caused persistent epiphora. In such situations it is suggested that complete fistulectomy be performed just before the actual DCR. The success of relieving epiphora in our unit was found to be 98.14% in this study, which is more or less similar to other studies.

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Visual Outcome of Penetrating Injuries Involving Anterior Segment of the Eye

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ABSTRACT

One hundred cases of penetrating anterior segment injuries of all age groups requiring surgical repair were reviewed. Ninety were male and 10 female, with a maximum number, (44%) lying in the working-age group (21-30 years). The next highest (34%), was the paediatric age group (0-10 years). The visual outcome varied according to the involvement of the tissues and age of the patient. Perforations involving just the peripheral part of the cornea, corneoscleral area and minimum corneal injury with or without traumatic cataract in adult age group were associated with good visual results (6/12 or better). Poor visual results were associated with involvement of visual axis resulting in corneal scarring and postoperative astigmatism in adults. In paediatric age group development of amblyopia because of unilateral aphakia or marked astigmatism was the cause of gross visual decline. Better parent education for prevention of injuries and long-term follow-up after repair is recommended. Preventive measures at work place would save the working-age group from considerable visual loss.

INTRODUCTION

The eye is a highly specialized organ and vulnerable to a variety of injuries. In no way the ocular trauma can be compared with the trauma to other parts of the body. A mechanical force, which would inflict a minor cut or bruise elsewhere, may be sufficient to cause severe trauma to the eye which may lead to total or partial blindness.

The eye is well protected superiorly by the orbital rim, medially by the nasal bridge, inferiorly and inferotemporally by the stout maxillary bone. Moreover, the orbital fat and elastic septa act as a protective cushion against mechanical forces[1]. Despite this protection provided by nature, injuries to the eye are quite common. Children are at special risk because of their smaller orbits and lack of awareness of the hazards[2].

Modern life has definitely brought an increase in the incidence of penetrating ocular injuries due to high speed road traffic accidents, industrial hazards and firearm assaults. In our country penetrating ocular injuries are acquiring an alarming proportion and hence require greater attention of not only the ophthalmologists but also other health workers and authorities.

Clinically the penetrating ocular trauma can be segregated into trauma causing damage to the anterior segment and to the posterior segment. The management and the final visual outcome differs in many respects.

The purpose of this study was to analyse a series of patients of all age groups who presented with perforating eye injuries localized to the anterior segment that required surgical intervention. The final visual outcome and prognosis were evaluated with regard to age, involvement of tissues, severity and location of the wound.

SUBJECTS AND METHODS

New cases of all ages and both sexes, suffering from penetrating ocular injury were included in this study. The study was conducted at the Institute of Ophthalmology, Mayo Hospital, Lahore, between January 1990 and January 1995, and is being continued since February 1998 at Sir Ganga Ram Hospital, Lahore. Patients' age, sex, aetiology of injury, extent of injury, preoperative visual acuity, length of follow-up, final visual outcome and complications were recorded for reach case.

The injuries were categorized according to Eagling[3]:

Grade 1: Laceration of the cornea/anterior sclera with or without prolapse of the iris.

Grade 2: Wounds to the anterior segment that have also involved the lens.

Grade 3: Posterior segment perforations. No involvement of the cornea or lens.

Grade 4: Anterior and posterior segment damage.

Patients who fulfilled the criteria of grade 1 and grade 2 injuries only were included in this study. For the purpose of analysis the corneal injuries were subdivided into central 3mm area, designated as zone 1 and the remaining area of cornea as zone 2[4].

RESULTS

One hundred cases of grade 1 and grade 2 injuries were reviewed. Out of these, 90(90%) were male and 10(10%) were female, a ratio of 9:1. The age ranged from 3 years to 50 years with the maximum number of patients (44%) lying in the working-age group (21-30 years). This was followed by 34% in paediatric age group (0-10 years) as shown in Figure-1. All the operative procedures were performed under the microscope using microsurgical techniques including vitrectomy and with viscoelastic material. Healthy uveal tissue in a fresh and clean injury was reposited, whereas it was abscised if it was badly damaged or the wound was contaminated. In some procedures free floating lens matter was thoroughly aspirated and intraocular lens implanted at the time of the primary repair, in others it was done as a secondary procedure.

Table 1: Grade 1 injuries (52%)

Tissue involved	Percentage
1. **Corneal injuries with or without** Hyphaema and iris prolapse/incarceration	26
a. zone 1	22
b. zone 2	04
2. **Corneoscleral injuries**	14
a. with hyphaema	08
b. with iris prolapse	06
3. **Scleral injuries**	12
a. with uveal prolapse	08
b. without uveal prolapse	04
Total	**52**

There were 52(52%) grade-1 injuries and out of these, 26% were restricted to the cornea only. The injuries which involved zone I were 22% and zone II 4% (Table-1). 48% of injuries were categorized in grade 2 with maximum number of cataracts occurring in association with corneal tear (18%) and corneoscleral tear (14%) (Table-2).

Table 2: Grade 2 injuries (48%)

Tissue involved	Percentage
a. With corneal tear	18
b. With corneoscleral tear	14
c. With corneal opacity	08
d. With hyphaema	06
e. With iridodialysis	01
f. With zonular dehiscence	01
Total	**48**

Table 3: Visual results.

Grade 1	Percentage
6/6-6/12	26
6/18-6/36	16
6/60 or worse	10
Total	**52**

Table 4: Visual results.

Grade 2	Percentage
6/6-6/12	24
6/18-6/36	12
6/60 or worse	12
Total	**48**

The aetiology of injury is shown by the pie diagram (Fig-2). Fifty-four percent of injuries occurred at work place, i.e. they were occupational injuries. The other big group (28%) was of household accidents and most of the patients were in paediatric age group.

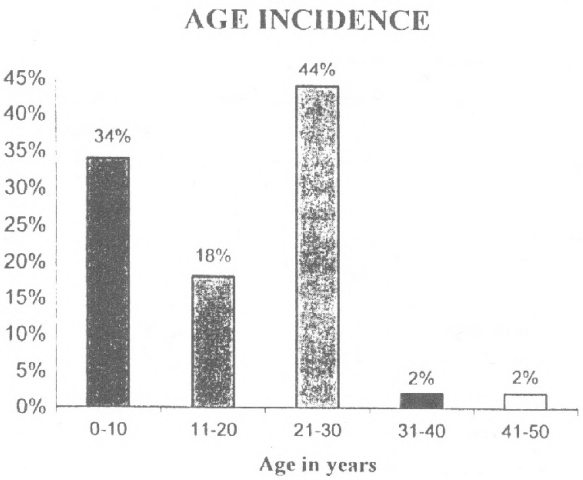

Fig-1

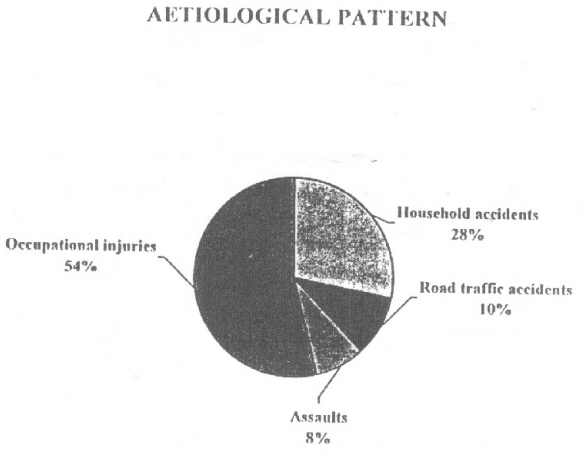

Fig-2

The visual results were analysed according to the grade of injury as shown in Tables 3 and 4.

Out of the total of 52 eyes, which sustained grade 1 injury, 26 eyes regained visual acuity between 6/6 and 6/12. Most of these cases had peripheral corneal tear or limbal tear with insignificant degree of hyphaema. Due to the peripheral position of the injury central visual area was clear and corneal astigmatism was minimal. Sixteen eyes had visual acuity between 6/18 and 6/36. These cases either had corneoscleral tears or corneal tears with uveal prolapse and or subtotal hyphaema. The corneal astigmatism was the cause of visual decline. Rest of the eyes (10) could not regain visual acuity better than 6/60 with maximum possible refractive correction. These cases had relatively central corneal tears and two of these cases had corneal tears exactly in the pupillary area. The irregular corneal scarring and astigmatism were the factors responsible for poor visual acuity.

In grade 2 injuries 24 out of 48 eyes (50%) recovered visual acuity between 6/6 and 6/12. Eighteen of these cases had posterior chamber lens implant after extracapsular cataract extraction. These eyes had intact posterior capsules and zonules. Two eyes had lensectomy, anterior vitrectomy and anterior chamber lens implant. One case had irrigation and aspiration of the cortical lens matter at the primary repair and a secondary anterior chamber lens implant later. The patient could not get a posterior chamber lens implant because of the thick posterior synaechiae. Three cases were prescribed uniocular aphakic contact lenses, in two cases after extracapsular cataract extraction and in the other after lensectomy and anterior vitrectomy. Twelve eyes had visual acuity between 6/18 and 6/36 after a long follow-up. Irregular corneal scarring and astigmatism were the causes of relatively poor vision. In patients under 8 years of age difficulties in occlusion therapy and poor response by the parents were responsible for the development of amblyopia. One of these cases developed aphakic retinal detachment following lensectomy and anterior vitrectomy. This detachment was subsequently operated on and the retina was replaced successfully with external tamponade and retinocryopexy of the retinal tear. The corrected vision till his last visit was 6/36. Twelve eyes could not regain visual acuity better than 6/60. The factors responsible were zone I or zone I/II injury associated with damaged pupil, posterior capsule or zonules, failure of contact lens and of occlusion therapy.

The overall visual acuity in both grades of injury is shown in the bar diagram (Fig-3).

DISCUSSION

In this study 96% of the patients were under thirty years of age and half of them between 21 to 30

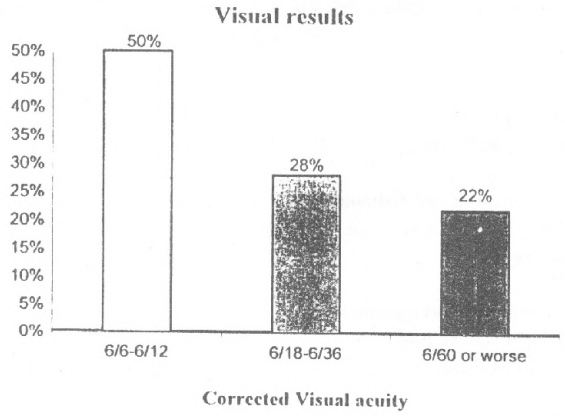

Fig-3

years as shown in Figure-1. The next important category according to the incidence is the age group up to ten years. The same pattern exists in the studies conducted by other workes[5,6]. 90% of the patients were males. This male predominance was found to be quite high as compared to the Western studies. This is because of the greater exposure of males to environmental hazards. The approximate 4:1` ratio of boys to girls has been reported in one study on age group up to 16 years[4]. Similar figures have been reported in other series on ocular trauma[7].

The aetiological pattern in the present series showed the maximum number of injuries occurring at work place (54%) involving the adult age group (21-30 years) predominantly. This calls for urgent attention of ophthalmologists, health authorities and legislators for availability and compulsory use of protective devices and preventive measures at work place.

The next group according to the aetiology is household accidents and injuries during play. The age group affected is between 0-10 years. Better vigilance is required by the parents to avoid these devastating injuries which cause permanent partial or total visual loss.

Grade 1 injuries not involving zone 1 had a better visual outcome (6/18 or better), as compared to those with zone 1 injuries (6/60 or worse). Central corneal scarring and irregular astigmatism were the causes of this visual decline. In grade 2 injuries better visual outcome (6/18 or better), was observed in adult age group especially when zone 2 of the cornea was involved. Poor visual results were observed in paediatric age group because of problems of management of unilateral aphakia. Contact lenses, although reported to have up to 80% acceptance rate in some units[8], were found to be very poorly tolerated especially in paediatric age group in our study.

Intraocular lens implantation has a definite role in grade 2 injuries involving the patients 5 years of age and above. Several groups have tried this even in children under 5 years of age[9,10]. However, there is a risk of severe uveitis. The use of intraocular lenses in this age group is, therefore, not justified[9]. The facilities for epikeratophakia were not available in our centre. Although it provides an alternative[11], it has not been found as successful as was hoped.

The follow-up ranged from 6 months to 30 months with the maximum number of patients (56%) followed-up for one year. The patients were either asked to have one yearly follow-up or they did not bother to come back for their follow-up examination. Patients coming from long distances were the ones who were lost in the follow-up.

CONCLUSION

Better visual outcome was observed in grade 1 and zone 2 injuries in all age groups and grade 2 and zone 2 injuries in adult age group. Poor visual results were observed in grade 1 and zone 1 injures in all age groups and grade 2, zone 1/zone 2 injuries in paediatric age group.

Parents should remain vigilant as many injuries occurred in domestic settings. Preventive measures and safety devices at work place would reduce the high percentage of occupational injuries observed in this study.

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Ophthalmic "Pastpourri"

"De Oculis" by Benvenutus Grassus:

[XXII: Of the Fourth Paniculus and its Treatment]

THIS condition is seen when the whole eye becomes white; not even the dark pupil escapes. It is caused by severe pain in the head with much inflammation of all the parts about the eye, in consequence of which the ocular tissues look like alabaster. From that hour the patient is not able to distinguish anything and complains that the whole world appears white to him. His eyes water and the eye becomes red about the sclera. Now listen to the causes, signs, and symptoms of the fourth paniculus and the treatment of it by our practical method.

First, apply the actual cautery to the top of the head where the saggital suture joins the coronal. Having done this, take the whites of twelve eggs, and, in a new bowl and with a clean spoon, beat them into a froth; then let the mixture stand for a short time, after which remove the froth. Soak up the fluid that remains with cotton and apply it to the closed eyes. Do this ten times daily and throughout the night until the patient is entirely restored to health. Only in this manner can the fourth paniculus be cured. Avoid all other methods. Remember that this infirmity is produced by an excess of the sanguine humor.

Jehangir Durrani
MD, FACS, FRC OPHTH.

From: De Oculis (translated by Casey A. Wood)
Stanford University Press, Stanford University,
California. 1929;p49

Review Article

Immunological Aspects of Human Lens Crystallins

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INTRODUCTION

Human eye is termed as an active organ of the body where different immunological events such as transplantation, immunological privilege of the anterior chamber, tolerance and autoimmunity take place and each of them has a direct effect on the functioning of the most precious of the five senses: the vision. Graft in the anterior chamber was pioneered[1,2] and due to the survival of xenogenic tumor grafts there for a longer period than at other sites the immunological privilege of the anterior chamber has been recognized[3]. Lens components have proved to be potential autoantigens[4].

A remarkable feature of the eye is the lens, which originates during gestation in the embryo by invagination of the head ectoderm and is suspended within an immunologically privileged chamber known as the anterior chamber. It is termed as highly specialized tissue due to many unusual features, such as, transparency, avascularity, ability of forming a clear image, growth throughout life and a paradigm of molecular evolution[5-8]. It can be compared with the erythrocytes, with high protein content, a homogeneous cytoplasm, a property of getting rid of dead material and ability of surviving without nucleus[9].

Being an avascular organ, the lens lacks the supply of blood and, therefore, its nutritional requirements are met indirectly from the blood stream by the aqueous humor through the lens capsule which is a semipermeable membrane[10]. The lens is composed of 65% water (which probably due to dehydration decreases during the advancing age) and 34% proteins. Out of 34% of proteins, 85% represent the water-soluble portion of proteins, of which α-, ß- and τ-crystallin types are high-molecular-mass proteins present as aggregates[11]. Transparency and perfect refraction are due to closely and regularly packed behaviour of these lens proteins[12,13] and a high concentration of these is essential[14], whereas irregularities in refractive index induce light scattering as found in certain types of cataract[15]. Water-soluble lens proteins tend to lose their solubility with age[16] getting conformationally modified during cataract formation[5]. The rest are the insoluble proteins or the albuminoids (15%). These albuminoids are formed after breakdown of the transparent structure of the lens tissue by homogenization in water[17]. Lens crystallins are very well conserved when compared between species and one view of this structural conservation is that to maintain transparency the surfaces of crystalins are under structural constraints to preserve intermolecular interactions[14]. Recent advances have shown that many enzymes have been recruited in the lens, where they serve a structural role[18-20].

In mammalian lenses, α-crystallins are derived from two genes (αA and αB). ß- and τ-crystallins are encoded by at least thirteen genes (ßB1, ßB2, ßB3, ßA2, ßA3, ßA4, τs, τA, τB, τC, τD, τE, τF)[21,22], whereas in mammalian texa there are several lens proteins, recognized as major soluble protein components of these lenses. For example, δ-crystalin is present in the lenses of birds[23], *t*-crystallins in turtles[24,25] and in lamprey[26], E-crystallin in the lenses of ducks[27] and P-crystallins in the lenses of frogs of the genus Rana, which is a major protein distinct from other known crystallins[28].

ANATOMICAL SEQUESTRATION

During the embryonic development the human lens gets developed and isolated from the fetal circulation around the tenth week of gestation and the

lens antigens (lens crystallins) have been sequestered from the immune system and have escaped induction of immunological tolerance[8]. The early sequestration of the lens during ontogeny implies that its crystallins could act as autoantigens if released into peripheral circulation[29]. This leakage of lens antigens has previously been suggested to lead to lens uveitis[30,31]. Lens crystallins due to this unique relationship with the immune system have been a subject of investigation of tolerance and autoimmunity[32]. However, homologous lens antigens are reported to be weakly antigenic[33,34]. Various reports[35,36] on the tested sera from patients with senile or other cataracts for antilens antibodies have confirmed a negative result, whereas some have reported the positive results for the presence of anti-human lens antibodies in patients with senile cataract[37].

SOLUBLE LENS CRYSTALLINS AS ANTIGENS

The presence of antibodies to autologous lens proteins suggests that the lens proteins could leak into the circulation, probably following trauma or degeneration of lens membranes leading to increase in membrane permeability, and the released antigen should then be carried through the canal of Schlemm into the body[38].

Studies have shown anti-crystallin antibodies in the sera of normal persons at variable levels: 49%[9], 50%[39], 57%[8] and 44.4%[38]. In the normal persons the intensity of serum antibodies to lens crystallins is much less as compared to the cataractous patients[38,40-43]. Antibodies to whole lens homogenate in 50% of patients with senile cataract and 57.3% of controls have been reported[8].

The fact that antigens proceeding from the anterior chamber of the eye are able to induce an increase in circulating antibodies is in agreement with the concept of the immune privilege of the eye which appears to basically consist of an altered cellular response but a preserved humoral response[42].

Increased levels of antilens antibodies in cataractous patients have been reported[43] and during maturity of cataract, the immune system is suggested to be exposed to long-standing leakage of crystallins through the damaged capsule[41]. The presence of antilens antibodies in normal persons is generally explained on the basis of the existence of a minimal, probably age-dependant leakage of lens crystallins in the aqueous homor[44] resulting in the induction of ACAID (Anterior Chamber Associated Immune Deviation)[29]. The intensity of serum antibodies to lens crystallins in such individuals is much less as compared to the cataractous patients[38,40,41].

An increased leakage of lens crystallins in cataractous and diabetic subjects leading to increased plasma antibody level has previously been reported[8,9,38-40]. A high percentage (80%) of diabetic subjects with no cataracts, averaging 57.8 years, have shown the presence of lens antibodies[38]. This has been suspected due to degeneration of the lens membrane and increased membrane permeability associated with diabetes mellitus[45,46]. A relationship between diabetes and cataract has been known for many years, and a faster maturation of cataract in diabetes is well documented[47,48].

Lens antibodies have been suggested to be beta-2M-globulin (IgM) type. Being a beta-2M-globulin, and occurring in children as well as in adults shows that beta-2M-globulin is a primitive antibody, ontogenetically and phylogenetically[9] and is a first-step limited response to immunization[49,50].

SUB-CLASSES AND ANTIGENICITY

Besides the leakage of lens material, the leakage of different classes of crystallins has also been studied. The immune response to different classes of crystallins has mostly been studied due to their level of antigenicity and various forms of uveitis, an ocular inflammation caused by them. For example, α-crystallin[51] and α- and τ-crystallins[52] have been detected in the aqueous humor of normal individuals. These two are normally present in the aqueous humor of human individuals above the age of 60 and amounts of these crystallins are further increased in aqueous humor from the eyes with cataracts[39]. The amount of both α- and τ-crystallins in the aqueous humor from the patients with cortical and posterior subcapsular cataracts were relatively low but in cases with mature cataracts both those crystallins increased[39]. While the amount of ß-crystallin in aqueous humor from cortical and posterior subcapsular cataract patients were at the same level as compared with α-crystallin, those from mature cataracts showed extremely high values. Lens antigens have been demonstrated in aqueous humor of near-term human fetuses[53] and in samples obtained postmortem[54,55]. Phacoantigenic uveitis[56] and phacolytic glaucoma[57] appear to depend on the entry of lens substance into the aqueous humor for initiation of the immune reaction.

Alpha crystallin has proved to be the strongest

antigen of lens crystallins[58-63] and is probably essential in phacoantigenecity[53]. However, there is scarce data indicating the immune response to low level stimulation by autologous lens antigens presented in tiny amounts to the immune system through the natural route of aqueous humor[58].

Human plasma samples have shown the presence of anti-α, anti-ßH and anti-ßL crystallins and revealed a quantitative abundance of anti-ßL antibodies as compared to anti-α antibodies[58].

Serum of 50% of cataractous population has been reported to have anti-α crystallin antibodies[39] and leakage of small τ-crystallins through the lens capsule has been suggested to be a possibility for the development of cataractogenesis[64,65]. In normal controls the sequence of anticrystallin circulating antibodies has been found to be anti-τ > anti-ß > anti-α[38,66] confirming α-crystallin as highly antigenic part of the lens proteins[59,60].

Sera from patients with mature cataracts have shown no or only rare and weak reactions against αA, αB and ßB2 crystallins[41]. It is striking that these proteins are the only crystallins which occur extra-lenticularly in mammals[67,69]. Once the lens crystallins enter the body circulation through the intravenous route, they have been detected in tissues, such as, heart, striated muscles and kidney[66-70].

CONCLUSION

The lens serves as an excellent example of anatomical sequestration. Housed within a collagenous capsule, the lens is suspended within an immunologically privileged compartment known as the anterior chamber of the eye. The early sequestration of the lens during ontogeny implies that its crystallins could act as autoantigens if released into the peripheral circulation. The presence of lens antibodies in healthy humans with no evidence of cataract suggests the possibility that most of the patients who develop cataract may have had positive antibodies in their system for several years. It is possible that, consequent to the degeneration of the lens membrane due to advancing age or disease processes, like diabetes mellitus, trauma and irradiation etc., these antibodies eventually reach the lens tissue and lead to the formation of antigen-antibody complexes.

The presence of lens crystallins in ocular tissues other than the lens[71] supports the fact that the lens capsule is not a perfect barrier for proteins[64,72]. Thus a quantitative reduction in the contents of soluble proteins is associated with the loss of transparency[73,74]. It is obvious from the studies undertaken on the subject that no discussion on immunology of the eye and autoantigens is complete without commenting on the autoimmune potential of the lens crystallins.

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Ophthalmic "Pastpourri"

"De Oculis" by Benvenutus Grassus:

[XXIV: Treatment of Ingrowing Eyelashes]

I WILL now speak to you of the treatment of the condition just described, as I practice it. Take two needles as long as the little finger and thread them with the same thread; raise the upper lid and pass the thread through the lid skin, tying the two stitches in such a way that the eye cannot be either opened or closed. Apply no medicines to the parts, but allow the threads to drop off and the needle wounds to heal without any other application except the *pulvis nabetis,* which is to be applied as directed twice a day until the eyes are clear of the disease. In this way I have cured many cases and have for the treatment received many large fees. This trouble is more common in Calabria than elsewhere, and it attacks more women than men.

Jehangir Durrani
MD, FACS, FRC OPHTH.

From: De Oculis (translated by Casey A. Wood)
Stanford University Press, Stanford University,
California. 1929;p51.

Case Report

Acute Myeloid Leukaemia Presenting with Proptosis

Abdul Majeed, M.M. Naseer Raja

Department of Ophthalmology, Combined Military Hospital, Peshawar

INTRODUCTION

Acute myeloid leukaemia (AML) may occasionally present as proptosis in children due to an orbital mass[1]. The extramedullary soft tissue leukaemic masses of AML may be present in certain other tissues and organs and are referred to as chloromas due to their greenish hue. Such a leukaemic proptosis may not be associated with the involvement of peripheral blood or bone marrow at presentation but AML subsequently spreads systemically at any time within the ensuing three years[1].

Case Report

A 7-Year-old girl presented to the Eye Department, Combined Military Hospital, Peshawar Cantt, with rapidly progressive proptosis affecting the left eye and generalized weakness of 15 days' duration. On examination, she had slight pallor and palpable left submandibular and cervical lymph nodes. There was soft, non-tender, 2 cm enlargement of the liver. On ophthalmic examination, the visual acuity was 6/6 and 6/9 (partial) in the right and left eyes, respectively. There was a giant non-pulsatile proptosis of the left eye with 15mm axial, 3mm downwards and 4mm nasal displacement of the eyeball (Figs-1,2). A firm, non-tender mass was palpable at superolateral margin of the orbit, with no bruit and undefined posterior margin. Lid closure was incomplete, except on forceful blinking. Ocular motility was restricted in all directions of gaze. Conjunctiva was chemotic and congested. Rest of the anterior segment was normal. Funduscopy revealed folds at the left macula.

Serial laboratory workup revealed leucocytosis of 1200-1600/ul with relative lymphocytosis (64% lymphocytes). Differential leucocyte count (DLC) revealed 15% neutrophils, 30% lymphocytes and 55% atypical mononulcear cells with monocytoid features. Having such a DLC profile, bone marrow examination was advised which revealed acute myeloblastic leukaemia.

Ultrasonography of the orbit revealed a hypoechoic mass 3.3cm x 1.5cm posterolateral to the eyeball (Fig-3). Computerized tomography (C.T.) scan revealed a left retrobulbar and lateral orbital mass, pushing the eyeball forwards and inwards with no evidence of intracranial extension (Figs-4,5).

The girl is being treated by the oncologist with chemotherapy, using a combination of cytotoxic agents. Proptosis is being managed by bland ointments during the day time and patching at night to avoid exposure keratopathy.

DISCUSSION

Acute myeloid leukaemia (AML) may present with proptosis in some children in the absence of associated systemic features of the disease at the onset. Generally, these children present with bleeding from mucosae and recurrent infections due to thrombocytopenia and neutropenia, respectively. Others present with hepatomegaly and splenomegaly due to leukaemic infiltration of these organs[2]. Diagnosis is confirmed by complete blood picture, white blood cell morphology and bone marrow examination. In some cases radiological investigations (ultrasonography, CT scan) and lymph node biopsy may be required for additional help.

Such a presentation without visual loss may also be due to orbital cellulitis secondary to allergic[3,4] or fungal sinusitis[4,5], but in these cases associated clinical, laboratory and radiological findings rule out any other possibility. Certain tumours may also produce similar proptosis. Rhabdomyosarcoma is the most common primary malignant tumour of the orbit in children which presents with a rapidly progressive

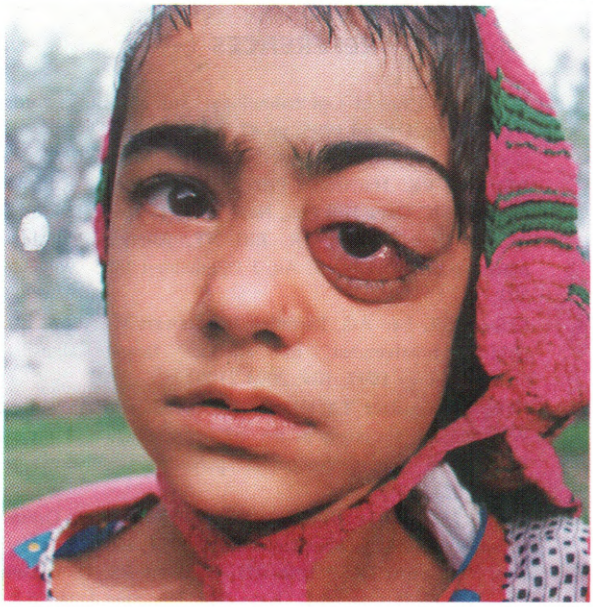

Figure-1
Photograph showing frontal view of the girl with acute myeloid leukaemia, presenting with proptosis-left eye.

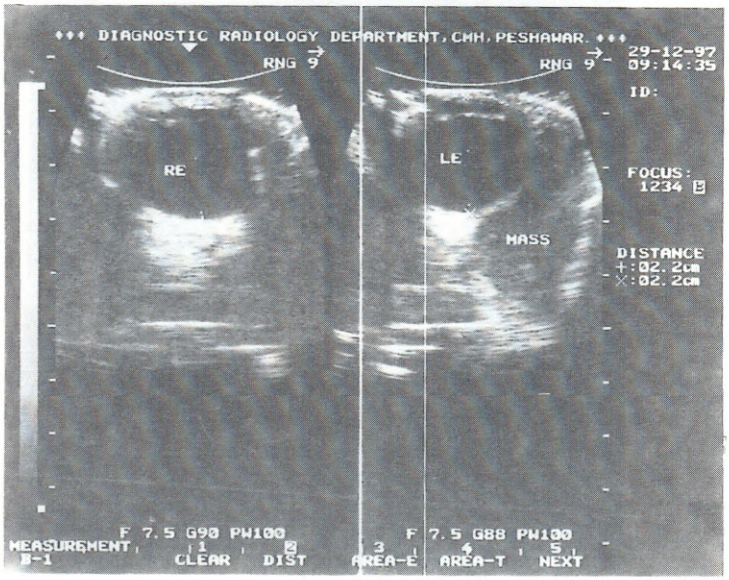

Figure-3
Ultrasound-left orbit, showing a hypoechoic mass (3.3cm x 1.5cm) posterolateral to the eyeball.

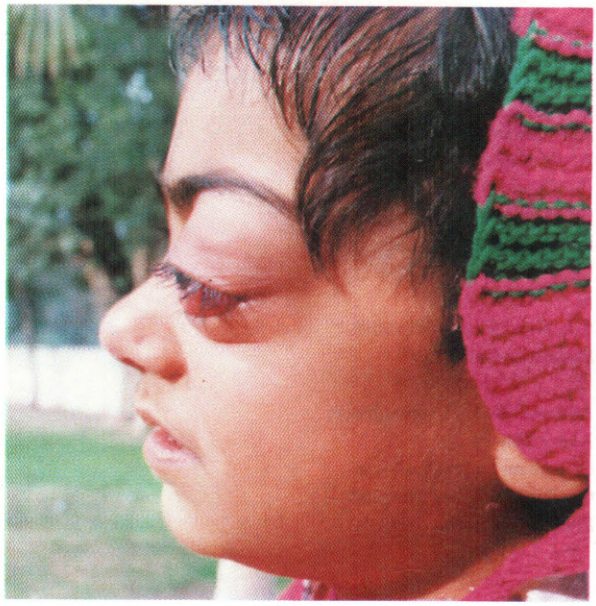

Figure-2
Photograph showing left lateral view of the same patient as in fig-1.

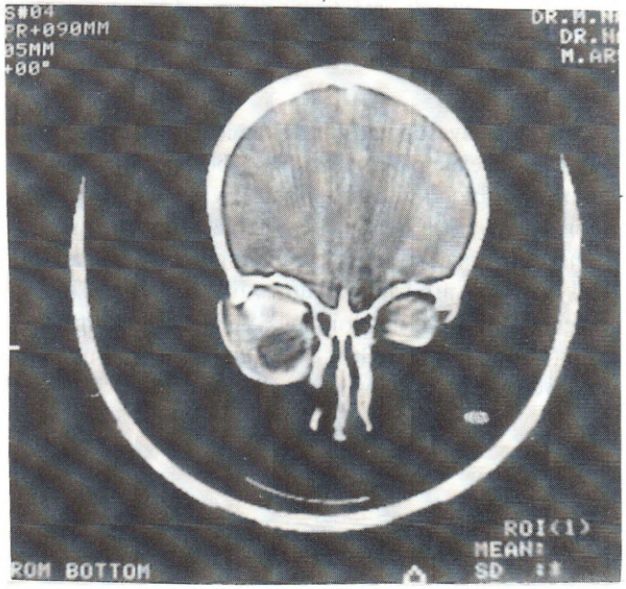

Figure-4
Computerized tomography scan (CT scan), showing a left retrobulbar and lateral orbital mass pushing the eyeball forwards and inwards with no intracranial extension.

proptosis[6,7]. Diagnosis is confirmed by biopsy. Adenoid cystic carcinoma of lacrimal gland may also occasionally present in these children with unilateral proptosis[8]. Metastatic tumours invading the orbit include neuroblastoma, Ewing's sarcoma and AML. Neuroblastoma causes bilateral proptosis, whereas Ewing's sarcoma causes abrupt unilateral haemorrhagic proptosis[1].

Management of AML is best carried out in the oncology unit[2,9]. Proptosis is managed with bland ointments during the day and patching at night. Temporary tarsorrhaphy can be performed in advanced cases to prevent exposure keratopathy.

To conclude, AML should never be missed in the differential diagnosis of children presenting with proptosis of acute onset. These children should be

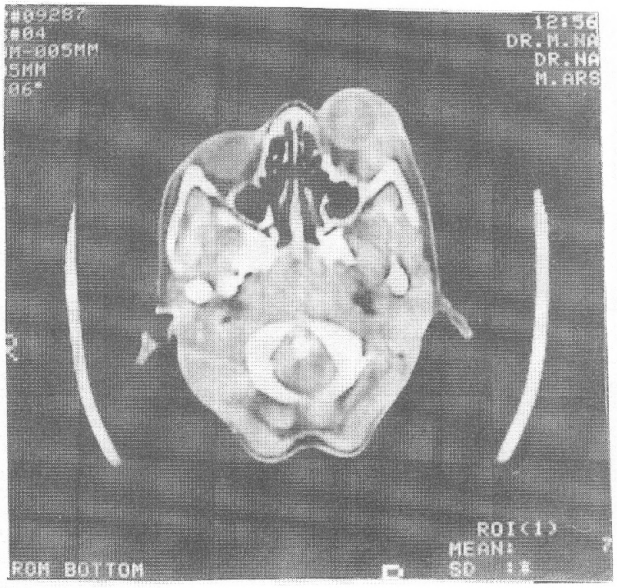

Figure 5
Computerized tomography scan (CT Scan), showing left retrobulbar and lateral orbital mass, pushing the eyeball forwards and inwards, intact optic nerve and no intracranial extension.

thoroughly investigated for systemic causes in the first place, for example by simple laboratory tests, e.g complete blood picture and white blood cell morphology, instead of subjecting them to unnecessary and expensive radiological investigations and invasive surgical procedures like biopsies. Timely diagnosis of acute myeloid leukaemia, presenting with proptosis may not only save a child's life, but may improve visual prognosis as well.

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Abstracts

Edited by Ajmal Nisar

Pressure-dependent Neuroretinal Rim Loss in Normal-pressure Glaucoma

Jonas JB, Grundler AE, Gonzales-Cortes J.
Am J Ophthalmol 1998; 125: 137-44.

The purpose of this study was to evaluate whether, in normal-pressure glaucoma, the level of intraocular pressure is correlated with the degree of glaucomatous optic nerve damage.

Color stereo optic disk photographs of 98 eyes with the focal type of normal-pressure glaucoma, 17 eyes with the highly myopic type of normal-pressure glaucoma, and 36 eyes with the age-related atrophic type of primary open-angle glaucoma were morphometrically evaluated.

In all three study groups, neuroretinal rim area declined significantly ($P < .05$) with increasing maximal intraocular pressure values.

It was concluded that in different forms of open-angle glaucoma with normal intraocular pressure, eyes with relatively high intraocular pressure had more pronounced optic nerve damage than did eyes with relatively low intraocular pressure. This suggested a barotraumatic aspect in the pathogenesis of optic nerve damage in the normal-pressure glaucomas. It implied that therapeutically, an intraocular pressure in the low-normal range may less likely be associated with glaucoma damage than an intraocular pressure in the upper-normal range would be.

Corneal Thickness and Curvature in Normal-tension Glaucoma

Morad Y, Sharon E, Hefetz L, Nemet P.
Am J Ophthalmol 1998; 125: 164-8.

The purpose of this study was to determine whether normal-tension glaucoma, defined as a condition in which glaucomatous optic nerve and visual field changes exist without documentation of intraocular pressure greater than 21 mm Hg or other apparent cause for these changes, is overdiagnosed in patients with decreased central corneal thickness and curvature.

Twenty-one patients with normal tension glaucoma were compared with 25 patients with primary open-angle glaucoma and 27 age-matched healthy subjects. Corneal thickness was determined by ultrasonic pachymetry. Corneal curvature was determined using a keratometer. Eyes with corneal pathology or previous intraocular surgery were excluded.

Mean corneal thickness $\pm$ SD in 21 eyes of 21 patients with normal-tension glaucoma was 0.521 ± 0.037 mm, significantly ($P=.0028$) lower than in 25 eyes of 25 patients with primary open-glaucoma (0.556 ± 0.035 mm) and 27 eyes of 27 healthy subjects (0.555 ± 0.034). Mean corneal curvature in the three groups was not appreciably different: 43.90 ± 1.81 diopters, 43.66 ± 1.68 diopters, and 44.36 ± 1.13 diopters in the patients with normal-tension glaucoma and primary open-angle glaucoma and the healthy subjects, respectively.

It was concluded that the corneal thickness was significantly reduced in patients with normal-tension glaucoma compared with patients with primary open-angle glaucoma ($P=.0028$) and normal subjects ($P=.0037$). This may lead to underestimation of intraocular pressure and misdiagnosis in some of these patients. Corneal curvature was similar in patients with normal-tension glaucoma and primary open-glaucoma and in healthy subjects.

Human Sclera: Thickness and Surface Area

Olsen TW, Aaberg SY, Geroski DH, Edelhauser HF.
Am J Ophthalmol 1998; 125: 237-41.

The purpose of the study was to assess the mean thickness and surface area of human sclera.

Fifty-five formalin-fixed eye bank eyes were hemisected from anterior to posterior. Cross-sectional slides were taken to include a millimeter scale ruler in each photograph. Slide photographs were projected and the scleral silhouette sketched. Mean scleral thickness measurements with standard deviation were obtained. Twenty-five human eye bank eyes were used to determine total scleral surface area by either a

computerized tracing method (17 globes) or volumetric calculations (eight globes) using fluid displacement.

Mean scleral thickness ± SD was 0.53 ± 0.14 mm at the corneoscleral limbus, significantly decreasing to 0.39 ± 0.17 mm near the equator, and increasing to 0.9 to 1.0 mm near the optic nerve. The mean total scleral surface area by surface area computerized tracings was 16.3 ± 1.8 cm2 and, by the volume displacement method, was 17.0 ± 1.5 cm2.

It was concluded that scleral thickness and surface area measurements from cadaver eyes are important for ophthalmic surgeons and have implications for transcleral diffusion.

Cone B-wave Implicit Time as an Early Predictor of Rubeosis in Central Retinal Vein Occlusion

Larsson J, Andreasson S, Bauer B.
Am J Ophthalmol 1998; 125: 247-9.

The purpose of the study was to investigate the predictive value of the cone b-wave implicit time in the 30-Hz flicker electroretinogram for rubeosis in the acute phase of central retinal vein occlusion.

In a prospective study, 25 patients (25 eyes) with a central retinal vein occlusion of less than 14 days' duration were examined with electroretinography and followed up for a minimum of 18 months.

The cone b-weve implicit time in the eyes that developed rubeosis (n=11) was more than 37.1 milliseconds and in the eyes that did not develop rubeosis (n=14), less than 37 milliseconds ($P < .00001$).

It was concluded that the cone b-wave implicit time in the 30-Hz flicker electroretinogram was a good predictor of rubeosis at an early stage in eyes with central retinal vein occlusion.

Corneal Ulcer Associated with Deposits of Norfloxacin

Konishi M, Yamada M, Mashima Y.
Am J Ophthalmol 1998; 125: 258-60.

A case of corneal ulcer associated with deposits of norfloxacin was reported.

A 40-year-old man with right trigeminal and facial nerve palsies and decreased tear secretion developed a corneal ulcer with white deposits in the right eye. The deposits were removed and analyzed by high-performance liquid chromatography.

High-performance liquid chromatography results disclosed that the deposits on the corneal surface had the same retention time as norfloxacin. The patient discontinued norfloxacin ophthalmic solution and recovered successfully.

It was cautioned that the clinicians should be aware that frequent applications of topical norfloxacin in patients with decreased tear secretion may result in deposition of the drug on the cornea.

Corneal Endothelial Cell Changes in Pseudoexfoliation Syndrome After Cataract Surgery

Wirbelauer C, Anders N, Pham DT, Wollensak J.
Arch Ophthalmol 1998; 116: 145-9.

The objective of this study was to characterize possible differences in endothelial cell changes after cataract surgery in patients with pseudoexfoliation syndrome (PSX).

In this prospective, age-matched, controlled clinical study, 25 consecutive patients with PSX and 25 control patients with senile cataracts only were studied. All patients were treated with standardized cataract surgery. Sequential quantitative and qualitative morphometric endothelial cell analyses of the central and paracentral cornea were performed preoperatively and postoperatively at 1 day, 4 weeks, and 6 months using noncontact specular microscopy.

Preoperative endothelial cell counts were 9.9 % ($P<.05$) lower in patients with PSX (2387 ± 266 cells/mm2) than in controls (2648 ± 439 cells/mm2). The mean endothelial cell loss was 11.1% in the PSX group and 10.3% ($P<.001$ for both) in the control group, with no intergroup differences after 6 months. The mean endothelial cell area increased in both groups. Also, qualitative analysis revealed no significant differences in the endothelial repair mechanisms.

It was concluded that the endothelial cell density was reduced preoperatively in patients with PSX compared with age-matched controls. In patients with PSX, cataract surgery induced similar endothelial cell changes without increased endothelail cell loss postoperatively.

The Distance Angle to Target in Surgery for Intermittent Exotropia

Kushner BJ
Arch Ophthalmol 1998; 116: 189-94.

Patients with intermittent exotropia may have an increase in their angle of strabismus in the distance when the angle is measured either after 1 hour of monocular occlusion or while the patients fixate on a distant target outdoors. The hypothesis that surgery should by performed for this larger deviation has been suggested but not tested.

The objectives of the study were to test the hypothesis that surgery should be performed for the increased angle of strabismus in the distance in patients with intermittent exotropia and to investigate the factors that influence the angle of misalignment.

A prospective, clinical trial was conducted of patients with intermittent exotropia in whom the angle of misalignment in the distance increased after 1 hour of monocular occlusion or while the patients fixated on an outdoor target. The study group underwent surgery for the largest deviation measured; the control group underwent surgery for the initial angle measured at 6 m. All patients in whom the angle of misalignment increased while the patients were looking at an outdoor target were additionally measured in indoor illumination at 24 m and also at 6 m under floodlights that simulated outdoor illumination. Ninety patients undergoing surgery were randomized.

Forty-three (86.0%) of the 50 patients undergoing surgery for the largest angle measured had a satisfactory outcome vs 25 (62.5%) of the 40 patients in the control group ($P<.001$). The mechanism for the increase in exotropia while fixating on an outdoor target was studied in 76 patients, and the results were variable.

It was concluded that the angle of strabismus in patients with intermittent exotropia undergoing surgery should be measured while the patients fixate on an outdoor target and after I hour of monocular occlusion. Surgery should be performed for the largest angle measured.

Intraoperative Intracameral Carbachol in Phacoemulsification and Posterior Chamber Lens Implantation

Solomon KD, Stewart WC, Hunt HH, Stewart JA, Cate EA.
Am J Ophthalmol 1998; 125: 36-43.

The purpose of this study was to evaluate the use of intraoperative intracameral carbachol in association with phacoemulsification and posterior lens implantation.

The authors prospectively randomly assigned 41 eyes (41 patients) to receive either placebo or a 50:50 dilution of carbachol 0.01% after intraocular lens insertion and phacoemulsification.

Twenty-one eyes of 21 patients treated with intracameral carbachol showed a statistically significant ($P=.0373$) reduction in intraocular pressure (15.9 mm Hg) at 6 hours postoperatively compared with 20 eyes of 20 patients who had received placebo (20.4 mm Hg). At day 1, the carbachol group measured 15.0 mm Hg vs 17.6 mm Hg for placebo ($P=.0376$), and a 1.5-line improvement in visual acuity in the carbachol vs the placebo group was noted ($P=.0263$), which was maintained on glare testing. On quality of life testing using a modified SF-36 test, cargbachol-treated patients within the first postoperative week more often attempted to descend stairs in both bright ($P=.007$) and dim ($P=.037$) light than did patients treated with placebo. At month 2, no difference was observed between groups except that depth of focus was statistically greater in the carbachol group ($P=.025$). Safety was similar between the two groups in terms of ocular and systemic adverse events.

It was concluded that the patients treated with carbachol intracamerally after phacoemulsification and posterior chamber lens implantation demonstrated lower intraocular pressure within the first day postoperatively. These findings were associated with improved visual acuity and potentially greater ambulation in bright light within the first postoperative week.

Allergic Conjunctivitis as a Risk Factor for Regression and Haze After Photorefractive Keratectomy

Yang H-Y, Fujishima H, Toda I, Itoh S, Bissen-Miyajima H, Shimizaki J, Tsubota K.
Am J Ophthalmol 1998; 125: 54-8.

The purpose of the study was to analyze the relation between allergic conjunctivitis and the results of photorefractive keratectomy performed with an excimer laser in myopic eyes.

Fifty-seven myopic eyes in 57 Japanese patients were classified into three groups: a normal group (30 eyes of 30 patients), a treatment group composed of eyes with allergic conjunctivitis that were treated with

fluorometholone and cromolyn sodium eye drops from month 3 until the end of the 12-to 18-month follow-up period (16 eyes of 16 patients), and a no-treatment group composed of eyes with allergic conjunctivitis that received no allergic treatment until the end of the follow-up period (11 eyes of 11 patients). Preoperative and postoperative examinations included evaluation of corrected and uncorrected visual acuity and grading of corneal haze.

In the no-treatment group, the mean corneal haze score ± SD of 0.8 ± 0.98 was significantly greater than the normal group score of 0.38 ± 0.49 (P=.02). There was no significant difference in the haze score between the treated and normal groups. A refractive outcome of ± 1 diopter was obtained in 30 (100%) of the 30 patients in the normal group, 15 (93.8%) of 16 patients in the treatment group, and four (36.4%) of the 11 patients in the no-treatment group. Visual acuity was 20/40 or better after photorefractive keratectomy in 30 patients (100%) in the normal group, 15 patients (93.8%) in the treatment group, and six patients (54.5%) in the no-treatment group.

These findings suggested that untreated allergic conjunctivitis was a significant risk factor for haze and myopic regression after photorefractive keratectomy.

Randomized Trial of Intraoperative Mitomycin C In Surgery For Pterygium

Panda A, Das G K, Tuli S W, Kumar A.
Am J Ophthalmol 1998; 125: 59-63.

The purpose of this study was to report the efficacy and safety of intraoperative application of mitomycin C in surgery for pterygium.

In a prospective randomized and double-blind study done within a span of 2.5 year in 50 eyes (50 patients) with primary progressive pterygium, mitomycin C in a concentration of 0.02 mg/ml soaked in a sterile 5 x 5-mm sponge was applied over the bare sclera intraoperatively as an adjuvant therapy in 25 eyes after pterygium excision. These cases were compared with another 25 similar eyes that underwent the same procedure but in which gentamicin solution 0.3% was used instead of mitomycin C solution.

Three eyes (12%) in the mitomycin C group showed recurrence within 7 months of surgery compared with eight eye (32%) of the gentamicin control group within 3 to 5 months. Mild side effects, such as pain, photophobia, and delayed wound healing, were observed within the first 1 to 2 weeks postoperatively in both groups. In the mitomycin C-treated group, corneal changes in the form of superficial punctuate keratitis (three eyes) and limbal avascularity (two eyes) subsided within 2 weeks postoperatively. Follow-up time for these cases ranged from 18 to 21 months.

It was concluded that a diluted solution of mitomycin C, 0.02 mg/ml, with an accurate size of sterile sponge applied to bare sclera after primary pterygium excision decreased the rate of recurrence to a greater extent than did gentamicin solution and was not associated with severe complications.

Reduction of Cyclosporine Dosage with Ketoconazole in a Patient with Birdshot Retinochoroidopathy

Silverstein BE, Wong IG.
Am J Ophthalmol 1998; 125: 106-7.

The successful reduction of cyclosporine dosage with adjunctive ketoconazole in a patient with birdshot retinochoriodopathy is reported.

A 55-year-old woman treated woman treated with cyclosporine for birdshot retinochoroidopathy had ketoconazole (200 mg/day) added to her medical regimen. Her cyclosporine dosage was reduced to 40 mg per day from 200 mg per day, an 80% reduction. No toxic effect was observed during 12 months of follow-up nor was there progression of the birdshot retinochoroidopathy.

It was suggested that cyclosporine dosage should be reduced considerably in patients with uveitis who use adjunctive ketoconazole. The regimen appeared to be safe and efficacious.

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News and Events

The Royal college of Ophthalmologists Diploma in Ophthalmology (DRCOphth) Examination

The Royal college of Ophthalmologists has introduced an examination leading to the award of the Diploma in Ophthalmology (DRCOphth). The examination will be held twice a year in June and November. Details are available from:

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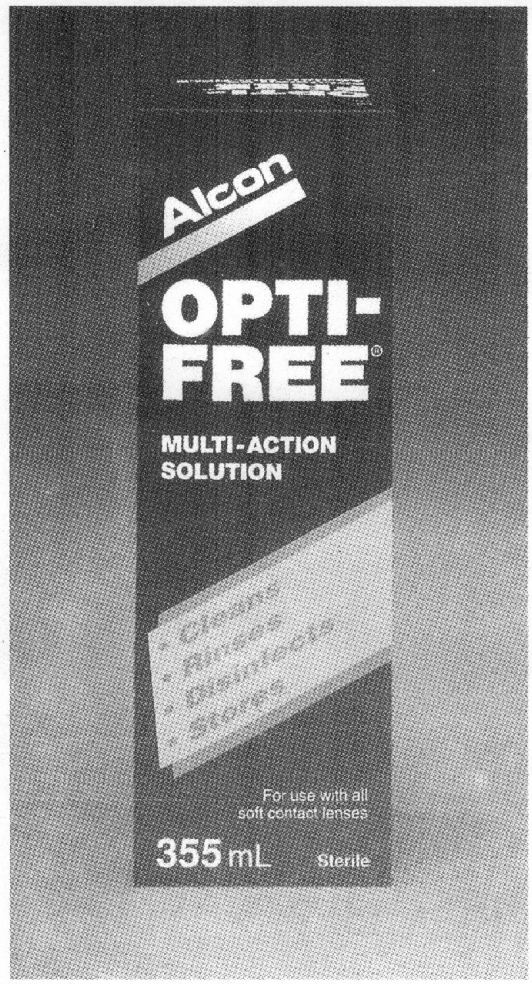

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KONAC	Ophthalmic Solution	Diclofenac Sodium 0.10%	5 ml
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EYFEM	Ophthalmic Suspension	Fluorometholone 0.10%	5 ml
FORTIPRED	Ophthalmic Suspension	Prednisolone Acetate 1.00%	5 ml
MILDOPRED	Ophthalmic Suspension	Prednisolone Acetate 0.12%	5 ml
STEROIDS + ANTI-INFECTIVES			
BIOPRED	Ophthalmic Suspension	Prednisolone Acetate 0.5% Neomycin Sulphate 0.5% (equivalent to Neomycin base 0.35%) Polymyxin B.Sulphate 10,000 units.	5 ml
MYDOSONE	Ophthalmic Suspension	Prednisolone Acetate 0.25% Sulphacetamide Sodium 10%	5 ml
STEROIDS + DECONGESTANT			
FEMICON	Ophthalmic Suspension	Fluorometholone 0.1% Tetrahydrozoline HCl 0.025%	5 ml
ANTI-INFECTIVES			
BACTINOR	Ophthalmic Solution	Norfloxacin 0.3%	5 ml
BIOSTAT	Ophthalmic Solution	Chloramphenicol 0.5% Boric Acid 0.15%	15 ml
NEBRA	Ophthalmic Solution	Tobramycin 0.3%	5 ml
NEBRA	Ophthalmic Ointment	Tobramycin 0.3%	5 gm
ROCIP	Ophthalmic Solution	Ciprofloxacin 0.3%	5 ml
ANTI-ALLERGIC/MAST CELL STABILIZER + DECONGESTANT			
DECON-A	Ophthalmic Solution	Pyrilamine Maleate 0.1% Phenylephrine HCl 0.12% with Antipyrine	15 ml
HISTALYN 2%	Ophthalmic Solution	Sodium Cromoglycate 2%	5 ml
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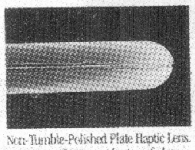
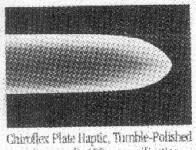


Non-Tumble-Polished Plate Haptic Lens. 100x magnification; side view of plate.



Chiroflex Plate Haptic, Tumble-Polished Lens (patented). 100x magnification; side view of plate.

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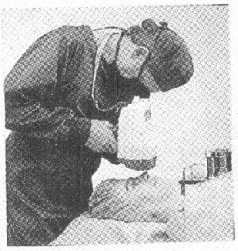

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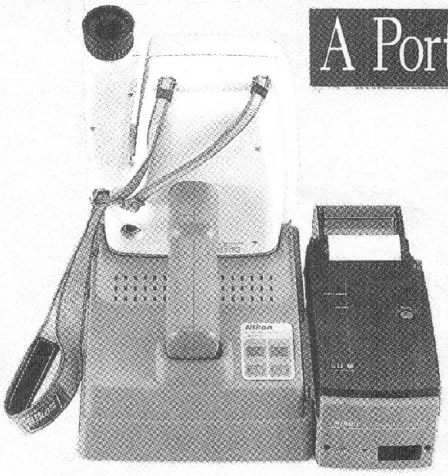

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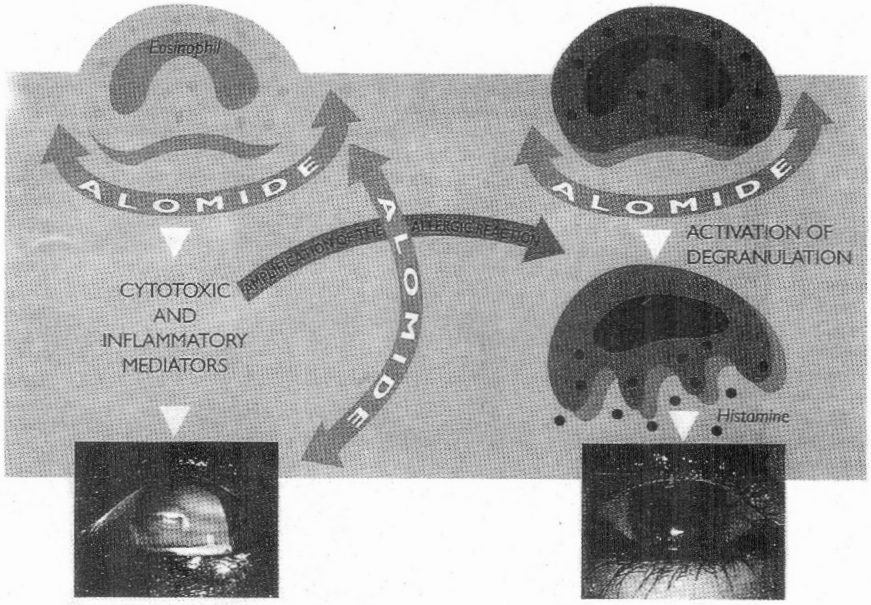

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Conventional therapy like Disodium Chromoglycate (DSCG) only acts on mast cells and leaves the Eosinophils untouched which are responsible for allergic tissue lesions and also collaborates with mast cells in intensifying the allergic reaction, ultimately prolongs the treatment.

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