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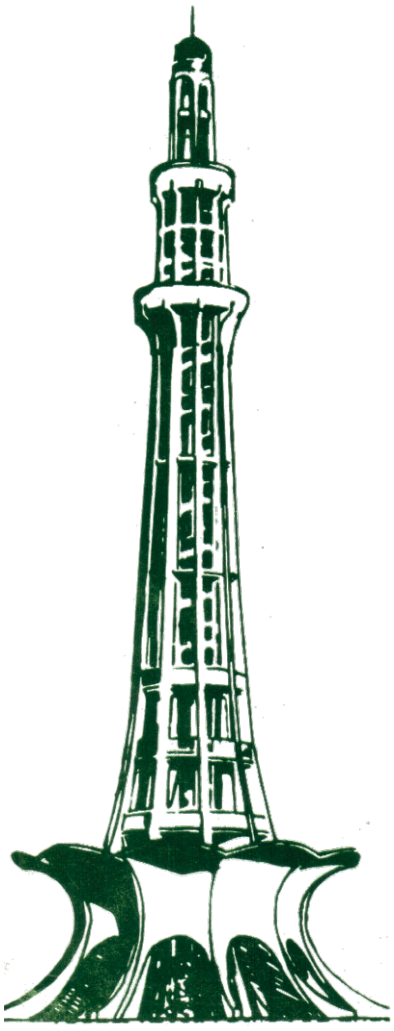
PAKISTAN JOURNAL OF OPHTHALMOLOGY

THE OFFICIAL JOURNAL OF THE OPHTHALMOLOGICAL SOCIETY OF PAKISTAN

VOL. 2 NO. 3 JULY 1986 PUBLISHED QUARTERLY



ISSN 0886-3067

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IN THE NAME OF ALLAH, THE BENEFICENT, THE MERCIFUL

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Volume 2 Number 3 July, 1986 ذوالقعدہ ۱۴۰۶

ISSN 0886-3067

Contents

Publisher: Khalid J. Awan, M.D., F.P.A.M.S.

Manuscripts: Send manuscripts and all correspondence related to them to Khalid J. Awan, M.D., F.P.A.M.S. Editor, Pakistan Journal of Ophthalmology, 1921 Park Avenue, S.W., Norton, Virginia 24273 U.S.A.

Subscription: Non-members. Pakistan, R. 400.00 per year; United States, $50.00 per year; Elsewhere U.S. $60.00 per year by surface mail and $98.00 by air mail. Single copies: Pakistan Rs. 150. Elsewhere U.S. $15. Send subscription with check or money order to Pakistan Journal of Ophthalmology, 1921 Park Avenue, S.W. Norton, Virginia 24273 U.S.A.

Address changes: POSTMASTER please send address change to Pakistan Journal of Ophthalmology, 1921 Park Avenue, S.W., Norton, Virginia 24273 U.S.A.
Published quarterly in January, April, July and October.

Publication and Editorial Staff:

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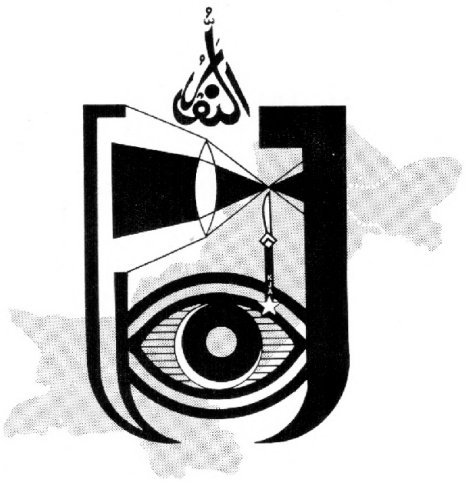
Odds and Ends: Sohaib Awan, Musa Awan, and Maryam Awan.
Printed by: Norton Press, Inc., Norton, Va.

IN THE NAME OF ALLAH, THE BENEFICENT, THE MERCIFUL



PAKISTAN JOURNAL OF OPHTHALMOLOGY

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Scholarship Schedules

10th Congress of the Ophthalmological Society of Pakistan

The 10th (1987) Congress of the Ophthalmological Society of Pakistan will be held in Rawalpindi. For further details contact: Brig. Professor Nasim Ahmed, Chairman, Department of Ophthalmology, Military Hospital, Rawalpindi, Pakistan.

The International Oculoplastic Surgery

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Contact: Congress Administrator, c/o Pierre Guibor, M.D., 630 Park Avenue, New York, New York 10021, (212) 734-1010 or (800) 223-4500.

1986 Convocation of the Pakistan Academy of Medical Sciences

The 1986 Convocation of the Pakistan Academy of Medical Sciences will be held in December 1986 in Karachi, Pakistan. The President of Pakistan, Gen. Muhammad Zia-ul-Haq, will be the Chief Guest. For further information contact any one of the following: Muhammad Shoaib Akhtar, Secretary, PAMS, Department of Pharmacology and Physiology, University of Agriculture, Faisalabad, Pakistan, OR Professor Najib Khan, Vice-President, PAMS, Said Clinic, I.I. Chundrigar-Burns Road, Karachi, Pakistan, OR Khalid J. Awan, President, PAMS, 1921 Park Avenue, SW, Norton, Virginia 24273 U.S.A.

Canadian Implant Association

December 27, 18, 29, 1986
Fort Lauderdale, Florida USA

Themes: - Radial Keratotomy, Extracapsular Surgery and Eyelash Micropigmentation. Contact Marvin L. Kwitko, M.D., Program Chairman, 5591 Cote des Neiges Road, Montreal, Quebec, Canada, H3T 1Y8.

IN THE NAME OF ALLAH, THE BENEFICENT, THE MERCIFUL

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Editorials

Say: Are the blind and the seeing man equal, or are the darkness and the light equal?

Holy Quran 13:16

The Eye Camps — Risky, Or Rewarding?

"We are most delighted that you are laboring so hard to stimulate the nation's medical professionals to engage in the so long ignored but most vital aspects of research and writing, but why is it that despite being an ophthalmologist you have not uttered a word against the eye camps that are being held under the most deplorable conditions by some of your Pakistani colleagues," asked a reporter during one of the press conferences at the occasion of the 1985 Convocation of the Pakistan Academy of Medical Sciences in Lahore. The reporter had caught me by total surprise.

He expressed his disgust at the presence of "hundreds of flies" and the blowing of "filthy street dust" into the operating areas of several "eye camps" he had covered for his publication.

I had not made any first hand observations of an eye camp, and his description was so alarming I had a hard time believing it. First I hedged, but then made a qualified comment that if the circumstances were indeed as he had described, these eye camps must be condemned and forced by law to stop.

Recently, at the 9th Annual Congress of the Ophthalmological Society of Pakistan at Quetta, Dr. Saleh Memon,[1] presented the details of a formal study he had conducted on cataract surgery in eye camps. The dismal and depressing results of this study have prompted this editorial.

According to Dr. Memon's study, only about 50 percent of the patients receiving care at these camps get any benefit. Many eyes are lost to lack of follow-up, negligence of inexperienced junior surgeons who operate without any supervision, and substandard surgical setups. Dr. Memon has recommended that no more than 50 patients should be operated on in a day; no junior surgeon be allowed to operate without direct supervision by the senior surgeon; surgical setups must be improved; and follow-up camps should be held four to six weeks after the surgery.

To these recommendations must be added that:

- All patients undergoing surgery in these camps must receive a proper preoperative and postoperative education;
- All patients who have undergone operations should be checked, even if by a well-instructed junior surgeon, two to three days postoperatively for any signs of endophthalmitis;
- Sanitary and sterility measures must be checked and approved by a non-participating senior ophthalmologist, who may be assigned for this purpose by the Ophthalmological Society of Pakistan, or the local association of ophthalmologists;
- Much stricter accountability of the funds be instituted; and full documentation must be made of all the activity going on in an eye camp, including patients' records and final results.

Until this is done, all poorly organized substandard eye camps must be condemned and legally stopped.

An outspoken Pakistani publication on medical affairs has expressed dismay at the failure of the Ophthalmological Society of Pakistan to make any statement on the issue of these eye camps, which are an insult to the integrity and the image of the profession. The same publication has accused the holders of such camps of being selfish, publicity seeking, greedy people who have little concern for the blind. It maintains that misuse of funds is so obvious that "even social workers of some of these organizations change latest model cars every year."[2]

Of course, not all eye camps fall into this category. Some organizations are doing a commendable job holding successful eye camps under optimum scientific conditions.[2] By the applause given to Dr. Memon's presentation, it is clear that an overwhelming majority of Pakistani ophthalmologists condemns such practices. The President of the Society, Professor Sardar Ali Sheikh, has stated that the time has come to take effective action against these disgraceful so-called eye camps.

Eye camps are examples of a good idea gone bad in Pakistan because of the apathy of the profession and a lack of a quality control system. We need eye camps — eye camps that meet the required standards. Although the government has established Rural Health Centers all over the country, the paucity of qualified ophthalmic surgeons makes it impossible to staff these for operative eye care. Hence, an overwhelming number of people in Pakistan are going blind from cataracts every year, making cataract surgery camps the only solution to their blindness.

The Mobile Eye Hospital has been very successful in other parts of the world,[3] and may be used in Pakistan in accordance with the above recommendations. Carefully organized and properly supervised cataract camps have achieved a success rate of 90 to 95 percent in other parts of the world.[4] I see no reason why properly and conscientiously conducted cataract camps cannot achieve similar results in Pakistan.

— *Khalid J. Awan, M.D., F.P.A.M.S.*

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Book Reviews

TOPICS IN OPHTHALMOLOGY. By Jack J. Kinski. East Sussex/Philadelphia, Bailliere Tindall/W.B. Saunders. 1985. 20 audiovisual format volumes. Ring-binder. 50 color slides and a 60-minute audiocassette in each volume. Price not shown. Slide-projector and audiocassette-player not included.

Topics in Ophthalmology is a set of 20 volumes, one each on Disorders of Eyelid, Disorders of Orbit, Lacrimal Disorders, Scleritis & Contact Lenses, Disorders of Conjunctiva, Disorders of Cornea, Uveitis, Primary Glaucomas, Secondary & Congenital Galucomas, Disorders of Lens, Cataract & Lens Implant Surgery, Retinal Detachment Diagnosis, Retinal Detachment Management, Retinal Vascular Disorders, Acquired Maculopathies, Hereditary Disorders of Retina & Choroid, Intraocular Tumors, Strabismus, Neuro-Ophthalmology, Common Eye Disorders, and Optics. The publisher has sent only volume 10 (Cataract & Lens Implant Surgery) and volume 12 (Retinal Detachment Management) for review; hence, it is not possible to evaluate and comment on the quality of the set as a whole. There is no printed text, not even a brief outline of the commentary by the author on the audiocassettes. It would have been of greater value to the users of these volumes if in addition to numbering, each transparency had a short legend printed on its frame. Despite these minor inconveniences, Topics in Ophthalmology fulfills its intended purpose of providing a valuable "basic teaching programme for aspiring ophthalmologists." Unfortunately, the additional cost of purchasing an audiocassette-player and a slide-projector by those who do not already own these might make this book unaffordable for many in this group.

Cataract & Lens Implant Surgery (Volume 10) is, like all other volumes, impressively ring-bound, with durable clear plastic jackets for the color transparencies and a secure dust-free pocket for the audiocassette. The overall quality of the slides is excellent, except for slides 17, 22, 34 and 36. The commentary is clear, lucid, and basic enough to benefit a budding ophthalmologist or a trainee, but an experienced cataract surgeon would want more detailed contents and comments.

Retinal Detachment Management (Volume 12) is of much higher standard, both in the quality of transparencies that consist of clinical photographs, artist's sketches, line drawings, and tables, and the richness of the commentary on the audiocassette. This volume is undoubtedly of great value to those interested in retinal surgery, beginners or experts. The variable quality of these two volumes is probably universal to the whole set, something expected when a single author is tackling all the subspecialties. Finally, the set may be cheaper in cost and more convenient to use if produced in audiovisual format in the future. I think the complete set of Topics in Ophthalmology is a must for the library shelves of all the institutions engaged in the education and training of ophthalmologists. — *Reviewed by Khalid J. Awan, M.D.*

SPECIAL TESTS OF VISUAL FUNCTION. Edited by Eberhart Zrenner, S. Karger, Basel, Muenchen, London, New York 1984, hardcover, 240 pages.

Clinical scientists with interest and expertise in visual physiology and vision testing will find this collection of papers presented in March 1983 at the International Symposium on the "Clinical and Physiological Aspects of Light Reception and Perception" a stimulating source of basic information. The history and application of nostic methods are discussed. Objective methods of assessing visual acuity are of great practical importance in cases of aggravation and simulation. Papers on documentation of color vision testing and tests for retinotoxic disturbances conclude the volume. The book is a very encouraging example of successful interdisciplinary exchange on an international level. — *Reviewed by J. Reimer Wolter, M.D.*

NEW DIRECTIONS IN OPHTHALMIC RESEARCH. Edited by Marvin L. Sears, M.D., New Haven and London, Yale University Press 1986, hardcover, 358 pages, price $30.00.

The dedication of new facilities to visual science of Mirabel, France, in May 1980 was occasion for a seminar on new directions in ophthalmic research. Eighteen participants presented new developments in their research. The topics included Isolation of Ocular Antigens, New Animal Models for Ocular Inflammation, Immune Surveillance in Inflammatory Reactions to Proteins of the Crystalline lens, pathogenesis of Cataracts, and new directions in studies of Regulation of Intraocular Pressure. The need for a Molecular Marker in Developing Diabetic Retinopathy and a Potential Relationship of the Metabolism of Vitamin A in the Visual Cycle of Dystrophies in the Retina were among topics discussed. The areas of discussion were subdivided into seven segments: Inflammatory Disease, Cataract and the Aging Lens, Receptory Control of Aqueous Humor Formation, Molecular Basis for Vision, Diabetes, Amblyopia, and Neuropeptides in the Eye. The book is not only a source of interesting information, but it can also serve as an example of superb scientific writing. — *Reviewed by J. Reimer Wolter, M.D.*

Original Article

Subluxation of the Lens and Ocular Hypertension in Exfoliation Syndrome

Shad Mohammad, F.R.C.S.
Nasir Kazmi, M.B., B.S.

ABSTRACT: The authors examined on slit lamp 3,942 consecutive patients over the age of 40 for evidence of exfoliation syndrome (pseudoexfoliation). The prevalence of exfoliation syndrome was 1.2% (48 patients). Males were affected 3 times more often than females. It was bilateral in 80% of the patients and unilateral in 20% of the patients. The intraocular pressure was more than 20 mm Hg in 31% of the eyes with exfoliation syndrome. Subluxation of the lens occurred in 16% of the eyes with exfoliation syndrome, suggesting that degeneration and disintegration of zonules occur to some extent in this condition. (Pak J Ophthalmol 2:77-78, 1986)

The condition now commonly known as exfoliation syndrome was first described by Lindberg[1] in 1917 and its detailed histopathological features were published by Vogt[2] in 1925. He gave it the name of 'senile exfoliation of the lens capsule.' To differentiate it from true exfoliation seen in glass blowers, Dvorak-Theobald[3] called it 'pseudoexfoliation.' Later the term 'fibrillopathia epitheliocapsularis' was introduced because the material was thought to originate in the lens epithelium.[4] Eagle and his co-workers[5] suggested the term 'basement membrane exfoliation syndrome', thinking that the disease is due to abnormal basement membrane production. More recently the term "oxytalanosis" of the aqueous has been suggested, as oxytalan is the essential constituent of exfoliative fibrils.[6]

To find out the prevalence of exfoliation syndrome and its relation with raised intraocular pressure, a prospective study was initiated in patients more than 40 years of age attending the Outpatient Department of Civil Teaching Hospital, Abbottabad, Pakistan.

MATERIALS AND METHODS

All patients above the age of 40 attending the Ophthalmology Out-Patient Department were examined on slit lamp by the authors for the presence of exfoliative material.

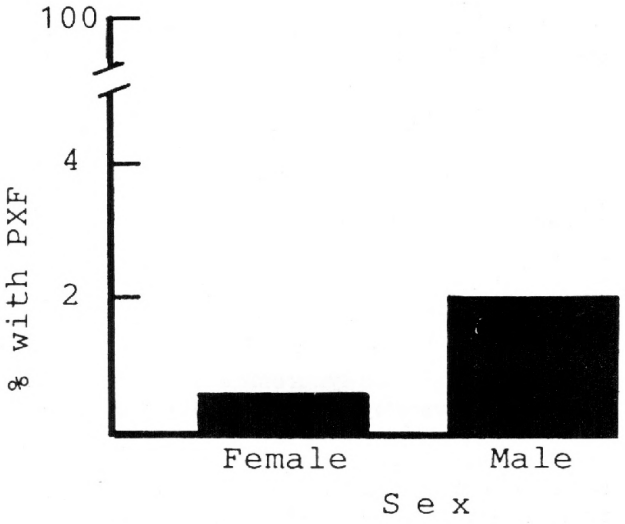

Figure 1. (Mohammad, Kazmi): Prevalence of exfoliation syndrome in relation to sex.

The intraocular pressure was measured with applanation tonometer. The pupil was not dilated routinely unless otherwise indicated. Other abnormalities of the lens such as position and presence of opacities were also observed. The age and sex of the patients were also noted.

RESULTS

Of the total 3,942 patients above the age of 40 years examined, exfoliation syndrome occurred in 48(1.2%) patients. Among these 37 (77%) were male and

Accepted for publication May 8, 1986.
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Reprint requests to Shad Mohammad, F.R.C.S., Civil Teaching Hospital, Abbottabad. N.W.F.P., Pakistan.

TABLE I

Prevalence of Exfoliation Syndrome (3,942 Patients)

Age (years)	Male No. examined	Male With ES* No.	Male With ES* %	Female No. examined	Female With ES* No.	Female With ES* %
40-49	545	1	0.2	731	0	0
50-59	696	2	0.3	746	0	0
60-69	414	15	3.6	413	4	0.9
70-79	222	15	6.7	126	5	3.9
80 +	28	4	14.2	21	2	9.5
Total	1905	37	1.9	2037	11	0.5

* ES: Exfoliation Syndrome

11(23%) were female. The prevalence of exfoliation syndrome in the 2,037 female patients was 0.5%, while in 1,905 male patients it was 1.9%. The sex correlation was statistically significant (t test: P 0.01; Fig.1). The prevalence of exfoliation syndrome for different age groups is shown in Table 1 and Fig. 2.

Out of 48 patients with exfoliation syndrome, 3 patients were one-eyed. Excluding these 3 patients pseudoexfoliation was unilateral in 9 (20%) patients and bilateral in 36(80%) patients. Of the total 84 eyes affected with exfoliation syndrome the intraocular pressure of more 20 mm Hg occurred in 26(31%) eyes. The severity of intraocular pressure in these eyes is shown in Table 2.

Subluxation of the lens occurred in 14(16%) eyes with exfoliation syndrome. There were two patients in whom the subluxation was bilateral. None of the eyes without pseudoexfoliation in unilateral group showed subluxation.

TABLE 2

Intraocular Pressure in Exfoliaton Syndrome (84 eyes)

IOP (mm Hg)	Number of eyes
- 20	58
21 - 30	11
31 - 40	8
41 - 50	5
51 - 60	2

DISCUSSION

Although exfoliation syndrome occurs in every race, its prevalence varies considerably. Our data indicate that the prevalence increases with age, a similar finding has been reported previously.[7] This study also indicates that the incidence of the disease is higher among males than among females. This is consistent with the finding of a study by Taylor,[8] and in a recent study by Khanzada[9] from Pakistan. In Aasved's[10] study the prevalence of pseudoexfoliation was the same in both sexes for patients below the age of 70 years, but it increased in females above that age.

The incidence of glaucoma in patients with pseudoexfoliation varies from 0 to 100 percent as quoted by Aasved.[10] In Khanzada's[9] study from Pakistan the incidence of glaucoma in these patients was found to be almost 70%.[9] In our study the intraocular pressure of more than 20 mm Hg was found in 31% of eyes with pseudoexfoliation. The type of glaucoma associated with pseudoexfoliation is believed to be secondary in nature, because of higher

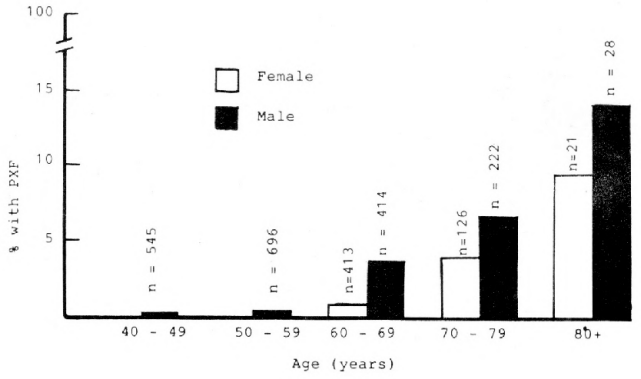

Figure 2. (Mohammad, Kazmi): Prevalence of exfoliation syndrome in relation to age and sex.

incidence of unilateral ocular hypertension in unilateral pseudoexfoliation, non-glaucomatous response to steroid provocative test, and good response to drainage surgery.[11]

The finding of subluxation of the lens which occurred in 16% of the eyes with pseudoexfoliation is an interesting observation. It would support the idea that pseudoexfoliation is a degenerative condition causing disintegration of zonules of the lens as reported by Gifford.[12]

ACKNOWLEDGEMENTS

The authors thank Dr. Jahangir A. Khan Ph.D. Principal Research Officer, Pakistan Medical Research Council, Abbottbad for the critical review of this paper, Mr. Rizwanullah, Statistical Officer for statistical analysis, and Mr. Sadat Khan, for typing the manuscript.

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Original Article

Extracapsular Cataract Surgery Risks in Patients with Exfoliation Syndrome*

Khalid J. Awan, M.D., F.P.A.M.S.
and
Muhammad Humayun, M.D., F.P.A.M.S.

ABSTRACT: The authors warn about the higher incidence of posterior capsular rupture during extracapsular cataract extraction in patients with exfoliation syndrome. Out of a total of five consecutive patients with exfoliation syndrome, ranging in age from 71 to 83 years, who underwent planned extracapsular cataract extraction with intraocular lens implantation, three developed posterior capsular rupture during cortex aspiration; whereas, out of a total of 124 consecutive control cases without exfoliation syndrome only three had this intraoperative complication. One patient, with exfoliation syndrome, developed severe intraocular hemorrhage from a blood vessel at the root of the iris. Although it is known that excessive zonular weakness is present in patients with exfoliation syndrome, none of our patients developed lens subluxation during the delivery of the nucleus or aspiration and irrigation of the cortex. (Pak J Ophthalmol 2:79-80, 1986)

Exfoliation syndrome, a condition in which bluish-white dust-like deposits are seen on the pupillary border, anterior lens capsule, and other ocular structures, has also been described in literature as exfoliation superficialis capsule anterioris, glaucoma capsulare, Busacca deposits, pseudo exfoliation, senile uveal exudation, senile exfoliation, fibrillopathia epitheliocapsularis, and more recently basement membrane exfoliation syndrome.[1] The commonest and most serious associated ocular condition in eyes with exfoliation syndrome is secondary glaucoma.[2] Mohammad and Kazmi[3] have most recently reported that degeneration and disintegration of zonules occur more commonly in eyes with exfoliation syndrome. A higher incidence of cataract formation in patients with exfoliation syndrome has also been documented.[4] The purpose of this paper is to report on the increased risks of extracapsular cataract surgery in patients with exfoliation syndrome.

Accepted for publication May 29, 1986.

From the Department of Ophthalmology, University of Virginia School of Medicine, Charlottesville, Virginia, and Awan Ophthalmology Clinic, Norton, Virginia (Dr. Awan), and the Department of Ophthalmology, Dalhousie University, Halifax, Nova Scotia, Canada (Dr. Humayun).

Reprint requests to Muhammad Humayun, M.D., F.P.A.M.S., 176 Portland Street, Suite 306, Dartmouth, Nova Scotia, Canada B2Y 1J3.

* Funded by the Pakistan Academy of Medical Sciences.

MATERIALS AND METHODS

Five consecutive patients, ranging in age from 71 to 83 years, with cataracts and exfoliation syndrome with or without glaucoma were included in this study. All patients underwent planned extracapsular cataract extraction with intraocular lens implantation with a 120° incision, which was made according to a technique which has been previously described.[5] The follow-up period varied from three to 15 months. During the same period, 124 patients with cataracts but without exfoliation syndrome underwent the same procedure. These consecutive patients were used as a control. The results are given in the case reports and discussed in the comments.

CASE REPORTS

Case 1: A 71-year-old white woman was seen with the complaint of bilateral decrease in her sight, which could not be improved by a change in her glasses. Eye examination showed visual acuity of 20/200 (6/60) in the right eye and 20/50 (6/15) in the left eye. In addition to advanced cataractous changes, typical exfoliative deposits were seen in both eyes on the slit lamp examination. The intraocular pressure was elevated to 32 mm Hg in the right eye and 25 mm Hg in the left eye with applantion tonometry. A 50-application argon laser trabeculoplasty followed by twice daily use of 0.25% timolol controlled the intraocular pressure. The patient requested cataract extraction with intraocular lens implantation in the right eye.

Extracapsular cataract extraction was carried out by an aspiration-irrigation technique using an incision of 120°, according to a technique which has been previously described.[5] The procedure

was uncomplicated up until the late stages of cortical aspiration. When the superior cortex was being aspirated, a sudden opening was noticed in the posterior capsule. Aspiration and irrigation were stopped and anterior vitrectomy performed through the opening in the posterior capsule. This permitted insertion of a posterior chamber lens implant that completely covered the posterior capsular tear. Post-operative course was uneventful with final visual acuity of 20/40. The patient is still on the same glaucoma medication for control of the intraocular pressure.

Case 2: An 83-year-old white woman was seen with complaint of poor vision in both eyes. Eye examination showed her vision to be counting fingers at two feet. She had advanced changes of cataract formation with exfoliation deposits. The intraocular pressure was normal in both eyes. The patient requested cataract extraction with intraocular lens implantation in the right eye.

A planned extracapsular cataract extraction was performed under local anesthesia using a procedure similar to the one described in Case 1. The operative procedure was uncomplicated up to the stage of cortical aspiration from the capsular fornices. A sudden tear in the posterior capsule was noted. An anterior vitrectomy was performed. However, sudden, severe bleeding from a vessel at the root of the iris prohibited any further surgical intervention. The wound was closed and intraocular pressure was increased by intraocular injection of sterile saline solution. Repeated aspiration and irrigation did not stop the bleeding. The final visual acuity in the eye was light perception.

Case 3: A 74-year-old East Indian man was seen with advanced cataract and exfoliation without glaucoma. The visual acuity was reduced to counting fingers at two feet in each eye. An extracapsular cataract extraction with intraocular lens implantation was planned for the right eye. It was carried out using a technique similar to the one described in Case 1. During aspiration of the superior cortex, a posterior capsular tear developed. However, a successful posterior chamber lens implant covered the capsular defect and prevented the herniation of the vitreous into the anterior chamber. Final acuity was 20/40 (6/12).

Case 4 & 5: These patients, a 76-year-old man and a 77-year-old woman, with exfoliation syndrome and cataract did not have any operative complications during cataract extraction with intraocular lens implantation.

COMMENTS

Despite a more cautious surgical approach due to our awareness of an increased risk of the posterior capsular rupture in exfoliation syndrome, this complication could not be avoided in three out of five consecutive cases. Whereas, out of a total of 124 consecutive control patients, this complication developed in only three patients. There distinctly is a higher risk of posterior capsular rupture during extracapsular cataract surgery in patients with exfoliation syndrome. It has been shown in recent studies that the basement membrane in exfoliation syndrome is defective and a probable cause of exfoliation.[6] This pathologic change may be responsible for the increased fragility of lens capsule.

It has been previously reported that zonules in exfoliation syndrome undergo degeneration and disintegration. This is the cause of subluxation of the lens in some patients who have exfoliation syndrome.[3] However, in five patients reported here none had preoperative subluxation, nor developed it during surgical manipulation. The complication of posterior capsular rupture appears to be independent of the state of the zonules at the time of surgery. The same seems to be true whether secondary glaucoma is present or not. It is important that ophthalmic surgeons plan cataract operations on patients with exfoliation syndrome with awareness that there is a much higher incidence of the operative complication of posterior capsular rupture in them.

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Ophthalmic "Past Pourri"

of Augen-Spiegels and Arteries

"It is possible to distinguish two types of vessels, one from the other, by the brighter color of the blood and the double contour of the walls of the arteries and their first branches."

H. von Helmholtz-1851
in the report on his invention
of ophthalmoscope

Van Trigt later pointed out, in 1853, that the double contour of arteries was actually from the light reflection from the surface of arterial walls (Vordeflache). Jaeger expressed the view, in 1869, that the light reflection was actually from the blood column. In 1933, Wilmer, Pierce, and Friedenwald[1] presented the currently accepted concept that the light streak on the arteries was produced both "by the reflection at the anterior surface of the blood column" and "by the reflection at the anterior surface of the media (muscularis)." -Editor

Reference

1. Wilmer, WH, Pierce, HF, and Friedenwald, JS: The light streaks on the retinal blood vessels. Arch Ophthalmol 9:368, 1933.

Remarks and Replies

Exfoliation Syndrome in Pakistan

I read with interest the article, Exfoliation Syndrome in Pakistan (Pak J Ophthalmol 2:7-9, 1986). I was intrigued by the mention of the apparent variation in rates of prevalence of exfoliation among different tribes in Pakistan and the possibility that the disease was more common in the mountainous areas than in the lowland. Exfoliation syndrome is quite common in New York, Philadelphia, and Florida, while Drs. M. Bruce Shields in Durham, North Carolina and various investigators in St. Louis, Missouri claim that it is rare in those areas. Drs. Krupin in Philadelphia and Palmberg in Miami trained in St. Louis and feel that it is not merely a difference in thoroughness of examination. We considered the possibility that exfoliation might be more common around coastal areas, but it also frequently found in Navaho Indians and Australian aborigines and now, mountainous areas of Pakistan.

I think it would be quite interesting if Dr. Khanzada could prospectively examine the Wazirs and Khattaks, or other lowland tribes in which they found a low frequency of exfoliation. Since exfoliation is associated with glaucoma and cataracts, a retrospective study might be biased by the frequency with which patients with these latter disorders present to an ophthalmologist. A prospective study would allow to examine all the members of a tribe or village say, between the ages of 50 and 80, or to examine a specific number of randomly chosen, consecutive persons of defined ages from each tribe. This would eliminate uncontrolled selection variables in the hope of defining possible environmental factors contributing to the prevalence of exfoliation.

The presence of exfoliation in a 32 year old woman was also quite interesting. Did she have any associated disorders or was the exfoliation an incidental finding? The incidence of cataract formation is known to be quite high in younger age groups in Tibet at high altitutes. Is the same true for Pakistan? Again, I believe that a prospective epidemiologic study would potentially be a valuable contribution to our understanding of exfoliation syndrome. I would be interested in hearing further about Dr. Khanzada's findings.

Robert Ritch, M.D.
Professor, Clinical Ophthalmology
New York, N.Y.

Reply

I am most thankful for Dr. Ritch's letter. I wrote my paper Exfoliation Syndrome in Pakistan (Pak J Ophthalmol 2:7-9, 1986) because I was surprised at the prevalence of exfoliation syndrome in the tribes of North Western Frontier Province of Pakistan. As reported by Dr. Awan in his commentary and review published with my paper (Pak J Ophthalmol 2:9-12), exfoliation syndrome is also seen in other provinces of Pakistan, but not with as high a frequency. Northwestern area of Pakistan is unique in that its inhabitants are descendants of many Indo-European races. This is because this area was the gateway to India for invaders like Alexander the Great, Mahmud of Ghazni, Persians, Central Asians etc. This genetic background may be partly responsible for higher incidence of exfoliation syndrome in this area.

I am very interested in the prospective study of the tribes mentioned by Dr. Ritch, but unfortunately the paucity of ophthalmologists in our area keeps my work load so heavy that it is almost impossible to find time for such an undertaking. I request Dr. Awan, Editor of the Pakistan Journal of Ophthalmology to write to the presidents of various societies in Pakistan to plan prospective studies as suggested by Dr. Ritch. If I ever find time for such a study, I shall be most delighted to communicate my findings to Dr. Ritch.

The 32-year-old woman, with exfoliation syndrome, mentioned in my paper had no systemic disease. However she presented with interesting findings of visual loss pain, and subluxation of the lens with typical exfoliation material deposits without any other signs of inflammation or trauma. I did not have the opportunity or the means to do thorough systemic studies on this patient.

Atta M. Khanzada, FRCS
Peshawar, Pakistan.

Ophthalmic "Past Pourri"

Ambulatory Surgical Center

Today:

There is a "burgeoning trend" toward providing ocular surgery on an "outpatient basis in ambulatory surgical centers (ASCs)."

H.R. Stokes, M.D.
in Ocular Surgery News,
January 1986

A Hundred Years Ago:

"Since the introduction of cocaine, iridectomies for glaucoma or visual purposes and those preliminary to cataract extraction have invariably been performed either at my private office or at the public clinic, patient being allowed to walk home..."

Michael, C.E.: Dark rooms and bandages discarded in the after-treatment of cataract-operations, iridectomies, etc.
Arch Ophthalmol 15:318, 1886

History of Medicine

Evolution of Medical Education in the 19th Century Indo-Pakistan

The Early History of King Edward Medical College, Lahore*

S. Amjad Hussain, F.R.C.S., F.P.A.M.S.

ABSTRACT: With the establishment of the imperial government of India in the 19th century, the western medicine arrived in the subcontinent by way of the civil service and armed forces. The prevailing systems of medicine practiced in India were Greek-Arabic (Unani) and old Hindu medicine (Ayurvedic). The first medical college was started in Calcutta in 1822 and thereafter, the colleges were started in Madras, Bombay and Lahore. The establishment of these institutions opened the way for the natives to get educated in western medicine and to enter the civil service and the armed forces.

Lahore Medical School, the forerunner of the King Edward Medical College, was established in Lahore in 1860. From its humble beginning in the stables of Raja Suchet Singh near the Tibbi bazaar this institution developed into one of the premier medical institutions of the subcontinent and the southeast Asia. History of the early days of King Edward Medical College is the history of the medical education in the Indo-Pakistan subcontinent. This article also includes a portrait of Dr. Syed Sher Shah, an 1863 alumnus of the first graduating class of the Lahore Medical School. (Pak J Ophthalmol 2:85-96, 1986).

PART I
START OF MEDICAL EDUCATION IN INDO-PAKISTAN

The history of the Lahore Medical School, which later became the King Edward Medical College, is inextricably linked with the inception of western medical education in the Indian subcontinent.[1] Although native Indians had been trained as apprentices under British doctors, their education and training was not systematic and organized. The stage was set for medical education when the Imperial government of India issued a general order on June 21, 1822,[2] directing the establishment of a medical institution at Calcutta, stipulating that 20 Indian students should be admitted and that they be recruited by the superintending surgeon. The superintendent of the institute was directed to translate medical books and to instruct the students in the vernacular languages. The students were to receive a stipend of Rs. 8 a month during their education. After qualifying, if they entered government service, they were required to serve the army or civil department for 15 years and were to receive a salary of Rs. 20 per month with an extra allowance of Rs. 5 when on field service.

Classes were started in the two native languages, Urdu and Sanskrit;[2] Sanskrit classes at the Calcutta Sanskrit College and the Urdu classes at the Calcutta Madrassa. Standard English textbooks of the era were translated into these languages. A Munshi for the Urdu class and a Pundit for the Sanskrit class was appointed as translator. The students at the Sanskrit College were given additional studies in the old Hindu medical books, whereas the Muslims at the Madrassa were required to read Avicenna and other physicians of Arabic origin. The period of training at the school lasted three years. In the first year, pharmacy, materia-medica, physiology and anatomy were

Accepted for publication May 26, 1986.

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*Adapted from the keynote lecture delivered at the 125th year anniversary alumni dinner of the King Edward Medical College, Lahore, Pakistan. Lahore, December 17, 1985.

taught, whereas, medicine and surgery were taught in the next two years. For clinical teaching, students were required to attend various hospitals and dispensaries available in Calcutta.

Because of the difficulty of imparting Western medical knowledge in the local Indian languages, there developed a group of English doctors who opposed the continuation of medical education in vernacular languages. A committee was appointed which recommended that students entering a medical college should be proficient in the English language, in that they be able to read, write and enunciate with fluency and facility, to analyze a passage in *Milton's Paradise Lost, Robertson's Histories* or works of similar classical standard.[1]

These recommendations were accepted by the government and in 1835 abolishing the teaching of medical education in the native languages, the English Medium Medical College of Calcutta was inaugurated. Although the medium of instruction had been changed in Calcutta, the native languages were still to be used for medical education elsewhere in India.[3] The next two colleges to be started in India, i.e. Madras Medical

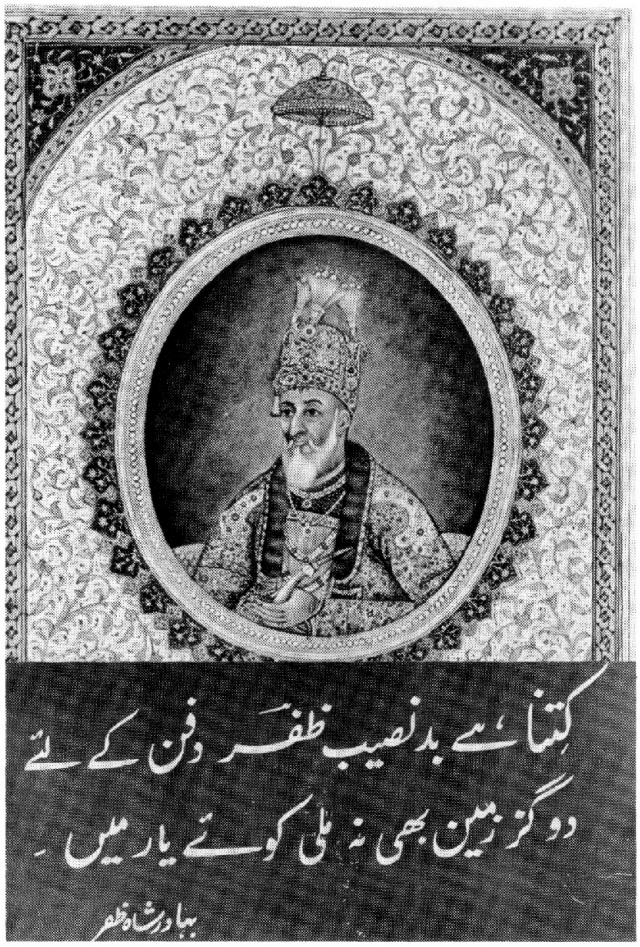

Figure 1. Bahadur Shah Zafar, the last moghul emperor of India, also an accomplished poet, was exiled by the British and imprisoned for life on an island. He wrote the above Urdu verse: "How woefully luckless is Zafar; he has been even denied a few feet hole for burial in his beloved land."

Figure 2. Dr. J.B. Scriven, First Principal of the school.

School and College in 1835 and the Grant Medical College, Bombay, in 1845 were however, English medium Colleges.

WORLD AT LARGE IN THE LATE 1850's

As the foundation of this great college was being laid in the power corridors of Imperial India in 1860, there were other events unfolding in the subcontinent and abroad. The brief War of Independence, otherwise labeled as mutiny, was over three years earlier and Bahadur Shah Zafar (Fig. 1), the last emperor of India, had been packed off to Rangoon to die in exile. That irrepressable soul Ghalib was witness to that carnage and still lived a rather secluded life in Mohalla Billi Maran in the old city of Delhi. Queen Victoria had been proclaimed Empress of India two years earlier. The Sikhs no longer ruled the Punjab, having relinquished control to the British eight years before. The Northwest frontier was still wild and unpredictable and the English rule was limited up to the eastern bank of the Indus.

Elsewhere, Darwin had just published (1859) his classical work *The Origin of Species.* The great

Austrian surgeon Billroth was starting his illustrious career as an innovative surgeon in the first University clinic of Vienna. And in Britain, that "dickens" of a man, Charles Dickens had just published his great novel *A Tale of Two Cities.* The American Civil War was about to start.

LAHORE MEDICAL SCHOOL[1,4,5,6]

Efforts had been made as early as 1837 to establish a medical school at Lahore. The appointment of Sir John Lawrence (of the Lawrence gardens fame) as the British Resident of Punjab, gave impetus to this idea, but the disturbances of 1857 kept the establishment of the school in abeyence. The medical school finally started in August of 1860 under the principalship of Dr. J.D. Scriven (Fig. 2), who had been the Medical Superintendent of General Hospital, Calcutta. In November of that year an admission examination was conducted and 20 students were selected for the Urdu medium classes. No one qualified for the English medium class. A second admission exam was held a few months later and another 24 candidates were selected for the Urdu medium class and 5 students in the English medium class. High school education was the minimum requirement for admission to the school.

The school had its humble beginning in the artillery barracks, which is now the Government College. The first hospital used by the school was located in the stables of Raja Suchet Singh in the Tibbi bazaar. The hospital, located a mile away from the college, consisted of open verandas and catered to the needs of the 90,000 population of Lahore. At the time of the start of the medical school it had 56 inpatients.

The initial staff of the school consisted of a principal, professor of medicine, professor of surgery, professor of chemistry, superintendent of Urdu class, assistant demonstrator in anatomy, resident house surgeon and an apothecary. Since most of the students had only a high school education the pre-medical subjects were taught at the school and the teachers worked in more than one capacity. In 1863, 27 students graduated from the Urdu class (called native doctors) and one from the English class (called sub-assistant surgeon). The enrollment increased steadily over the next few years so that in 1870 there were 87 students in the Urdu class and 40 in the English class. From the year 1864, the students from the Northwest Frontier Province were also being admitted to Lahore Medical School. The applications continued to outstrip the available seats, and by 1871 there were 190 applicants for 40 seats, and by 1892 the number of students had increased to 322. At that time a professor of materia-medica and a professor of pathology were added to the staff. The strength of the professional teaching staff, even at this level, was almost half of what was in Calcutta in the early days of that college. The chairs of obstetrics and gynecology, eye and ENT and assistant professorships in medicine, materia-medica and physiology were added in 1908. Towards the end of the century, a military class was also started at the medical school to satisfy the needs of the army and other armed services. This class continued to increase in number so that by 1913 there were 90 students enrolled in the military class. In 1882, the first contingent from the Lahore Medical School joined the Indian Army and served in Kabul, Afghanistan.

In the first quarter century of the school, the drop-out rate was noted to be 16 percent for the English medium class and 24 percent for the Urdu medium class. It was far better than the Calcutta Medical College where in 1872 only 7.6 percent of the students could get through the entire course. The majority of these drop-outs became unlicensed and unqualified practitioners.

COLLEGE EXPANSION

From the artillery barracks where it was initially located, the college was moved near Shah Aalmi gate in 1870. This new location was close to the civil hospital near Anarkali. Also in 1870, the Mayo Hospital, named after the Earl of Mayo the Viceroy of India, was opened. It was not until thirteen years later in 1883 that the first college building was constructed next to the Mayo Hospital.

Up until 1906 the pre-med courses were taught in the school itself. At this time it was decided to transfer science courses to the Government College. This effectively separated the pre-medical education from the medical education and thus lessened the burden of the teachers at the medical school. A two year pre-medical (F.Sc.) course became a requirement for admission to the medical school.

START OF EDUCATION IN INDIGINOUS MEDICAL SYSTEMS

The time between 1870 and 1882 marks a rather bizarre period in the history of this institution. As I have noted, both Urdu and the English classes were taught western medicine. But in 1870, a class for the sons of Hakims was started in Urdu language with the emphasis on native Unani medicine rather than on western medicine. Soon after, courses were started in the ancient Indian medicine (Ayurvedic), the medium for instruction for this class being also Urdu. But like Unani classes, the emphasis was on the old Hindu medicine.

Between 1860 and 1870 the school granted its own native doctor diplomas to the Urdu class and sub-assistant surgeon diplomas to the English class. The Punjab University College was started in 1870 and for the next thirteen years, the faculty of medicine of this college conducted examinations. It was under the auspices of the Punjab University College (which later became the University of Punjab in 1882) that a myriads of diplomas were issued. The list of these are as follows:

Western Medicine *English Medium*	Licentiate in Medicine *(Sub Assistant Surgeon)*
Western Medicine *Urdu Medium*	Licentiate in Medicine *(Native Doctor)*

Figure 3. King Edward VII on whose death in 1910, the college was named after him.

Unani Medicine	Hakim Haziq
Urdu Medium	*Umdat ul Huqma*
	Zubdat ul Huqma
Ayurvedic Medicine	Vaida
Urdu Medium	*Bhishak*
	Maha Bhishak

SEPARATION OF COLLEGE AND SCHOOL

Until 1886 the institution was known as Lahore Medical School. At that time it was decided to have a college and a school within the same building with the school teaching Western medicine, Unani medicine and Ayurvedic Medicine in Urdu and the college teaching Western medicine in English. Both the school and college used Mayo Hospital for clinical teaching. The school was physically separated from the college in the late 1880's. There followed a period of intense competition between the school and the college for admissions, each institution trying to attract potential students.

The school stopped teaching Unani and Ayurvedic courses by 1890 and remained a diploma school through the early 1900's granting LMS diplomas. The college awarded the degree of M.B. which was changed to the present M.B.B.S. in 1912.

Because of the continuous friction between the school and college, the school was finally shifted to Amritsar in 1920.

VARIOUS FIRSTS

The University of Dublin recognized the Lahore Medical School in 1868, thus paving the way for graduates of this school to go abroad for higher studies. The first college day was celebrated in 1888, and the first female student, a Miss H. Connor, graduated in 1889.

THE FIRST STRIKE

The first strike of the college occurred from February 2, 1913 to February 28, 1913. The students appeared to have struck as a result of uncomplimentary press reports about the Indian students studying abroad. The college administration and the government took due note of the strike and consequently four students were detained for one year and six students were obliged to give up their scholarships. The brunt fell upon the military class of the college where the entire class of 90 students was expelled from the college.

CHANGES IN NAME

From the school's inception in 1860, until 1886, it was called the Lahore Medical School. From 1886 through 1910, it was called the Lahore Medical College. In 1910 the college was renamed King Edward Medical College in memory of King Edward VII, who died in that year (Fig. 3).

PART II

EDUCATIONAL MEDIA AND MATERIALS

In this part, I shall describe various books and periodicals used in the teaching of medical students in the later half of the 19th century.

With the start of the medical school in Calcutta in 1822 in the native languages, the standard English books were translated into Urdu and Sanskrit. This pattern was followed later in other medical schools where the initial medium of instruction was other than English.

With the start of the school in Lahore, it appears that the Urdu language books from Calcutta were initially used. However, as the school progressed, the text books were translated and printed locally. Following is the brief description of some of the books which I have been able to examine.

Tashrih - e - Insani *(Human Anatomy).* Urdu translation of an English text, this book was published in 1880 by Albert Press, Anarkali, Lahore (Fig. 4). The book was translated by Assistant Surgeon

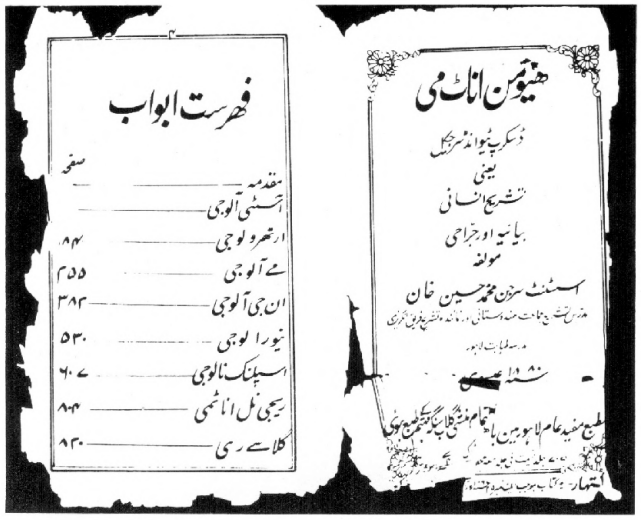

Figure 4. Cover of the Urdu textbook of human anatomy with list of chapters (1880).

Muhammad Husain Khan, who was lecturer in Anatomy at the Lahore Medical College. It is an illustrated book with anatomic drawings done in pen. The book is divided into different sections like histology, osteology, angiology, etc. Anatomic details

Figure 5. Anatomic description of eyeball in an Urdu textbook of 1880.

Figure 6. Anatomic description of eyeball in an Urdu textbook of 1880.

are not as detailed as the present day text, but quite adequate as introduction to anatomy (Figure 5 & 6). For the benefit of non-English speaking students, enclosed is a glossary of English terms used in the text and their Urdu translation.

Naya Materia Medica ***(New Materia Medica)*** The second edition of this Urdu text was published in Lahore in 1868 (Figure 7). It was written (translated) by Sub Assistant Surgeon Rahim Khan, who at the time was superintendent of the Urdu classes at the Lahore Medical College.

The book is divided into three parts dealing with medicines extracted from metal, plant and animal sources. It discusses the pharmacology of different agents, their uses and dosage. For the benefit of students, conversion tables are provided between Indian weights and the English metric systems.

Mujarrabat-e-Akbar ***(Book of Prescription) Tibb-e-Abkar (Greater Book of Medicine).*** (Figure 8 & 9) These two books indiginously written were efforts to amalgamate Western medicine with the native Greek-Arab (Unani) medicine. Published around the mid 1860's, these two books are, for the most part based on the practice of native medicine and indicate that the students and practitioners of the era, though educated in the Western style, did take

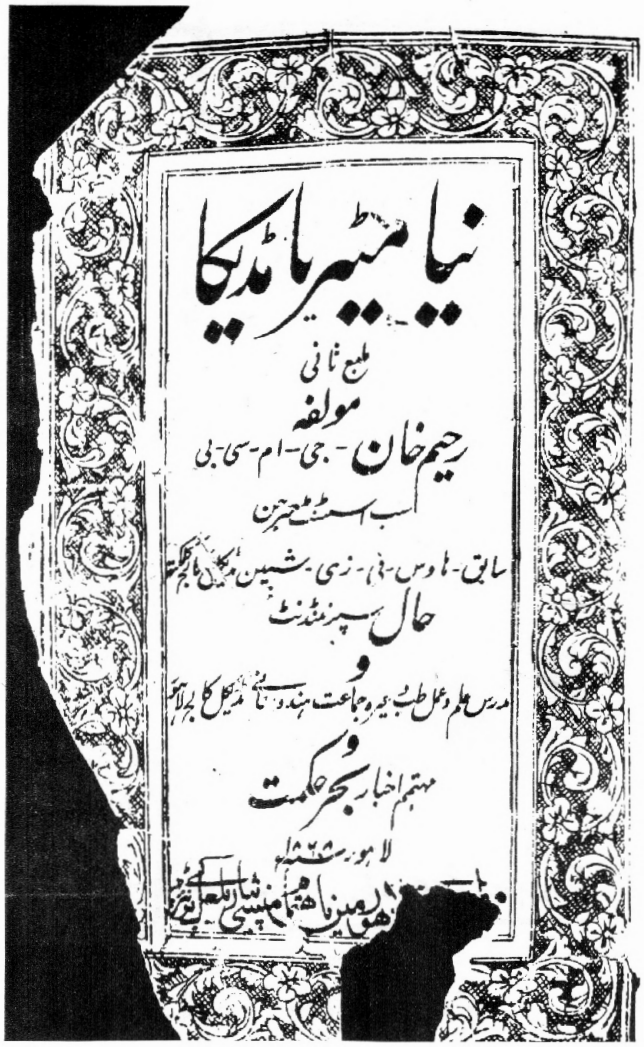

Figure 7. Cover page of materia medica in an Urdu textbook of 1868.

advantage of the indigenous medical system. It is doubtful that these two books were part of the syllabus.

JOURNALS[7,8]

There were three medical journals published in Lahore in the last quarter of the past century.

1) **Bahr-e-Hikmat** (Figure 10). Published under the auspices of the medical college and edited by Dr. Rahim Khan, Superintendent of the Urdu Class, this monthly Journal was distributed widely among the practitioners of the day including government servants in the remote areas. The only copies available were published between 1878 and 1883.

The Journal contained few articles on timely topics, usually written by the editors. There were also continuing lessons on various diseases. One series of lessons on diseases of female sex organs covered fifteen issues. There were at times Urdu translations of a lecture given by English professors.

There was occasionally a section devoted to letters to the editor. In this, one finds comments on the articles, as well as seeking solutions to difficult cases. This forum also provided avenue for practitioners to report new innovations. It was in this Journal that the first time use of the syringe in the city of Lahore was reported by a correspondent. As was the custom in those days, the message of such letters was illustrated with poetic quotations. Another important advance was the first time use of the thermometer in Lahore reported in September, 1882 issue.

2) **Ganjina-e- Tababat.** Advertised as biweekly, but published as a monthly periodical this Journal was edited by Dr. Brij Lal Ghosh, who was a lecturer in surgery (Figure 11). The exact date of its beginning is not known, but appears to have been in wide circulation in 1895 and 1896. Published in Urdu under the patronage of Dr. S.H. Brown, Principal of the Lahore Medical College, it was more scientific than Behr-e-Hikmat (Figure 12). It quoted liberally from the international literature and carried free articles, serial lessons and reported on new and innovative techniques (Figures 13 & 14). In the September, 1896 issue, a correspondent reported administration of quinine in paan (chewing beetle leaf) to mask its

Figure 8. Cover page of Urdu Mujarrabat-e-Akbar, the book of Unani Prescriptions.

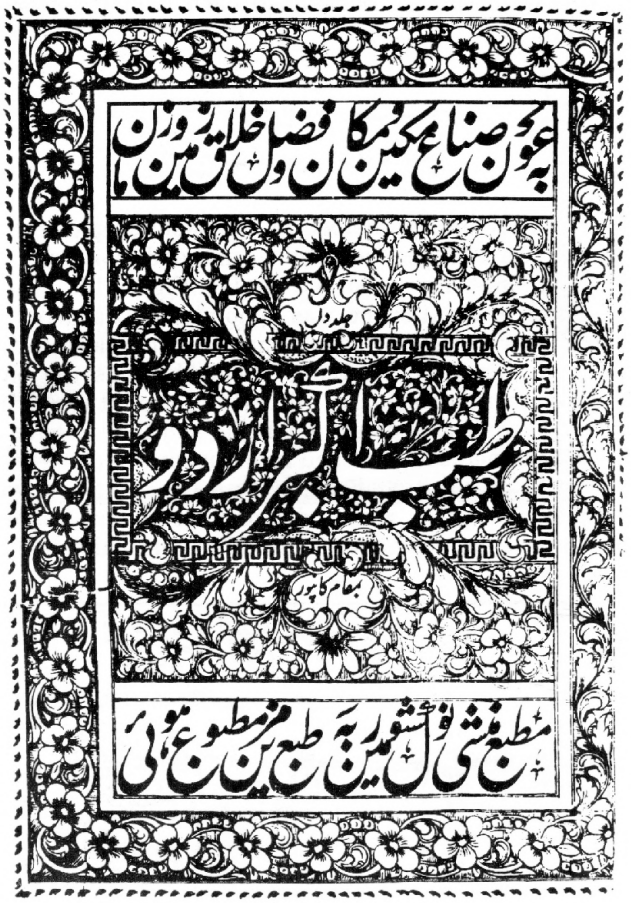

Figure 9. Cover page of Urdu Tibb-e-Akbar, the book of Unani Prescriptions.

extreme bitter taste.

The journals also devoted a section in which the gazettes and notification of the various provincial governments of British India were published. Most of the contents dealt with the transfers, promotions and appointments in the health department. It also reported on departmental promotion examinations and published the questions asked in these examinations (Figure 16). There were, at times, advertisements for medical remedies, which appear fraudulant now, but were considered authentic and reliable then.

From the address label, it appears that this Journal was distributed widely among the governmental servants in the health department and perhaps to the private practitioners.

4) **Risala-e-Tibb-e-Adalat** ***(Journal of Medical Jurisprudence)***. Advertisements about the launching of this Journal appeared in the journal Behr-e-Hikmat (Figure 17), but the copies of this journal are not available and the duration of its publication is not known. From the advertisement it appears to have beendevoted entirely to the science of medical jurisprudence.

OTHER BOOKS

Although not available now, the following books had already been translated into Urdu at the start of the Calcutta Medical College almost twenty five years before the start of the Lahore Medical School. It is quite conceivable that these books were also used in Lahore.

Hopper's Anatomist's Vade-mecum, Surgeon's Vade-mecum, Thomson's Conceptus of the Pharmacopoeia, Fyfe's Manual of Chemistry and *Conquest's Outline of Midwifery, Twinning and Smith's Tropical Diseases,* and *Thomas's Plague.*

PART III

PORTRAIT OF A FIRST GRADUATE

Sayed Sher Shah was born about 1844 in the walled city of Lahore. His father, Sayed Qutb Shah was a

Figure 10. Journal Behr-e-Hikmat. Volume 8, Number 9, 1979. A Medical Journal in Urdu.

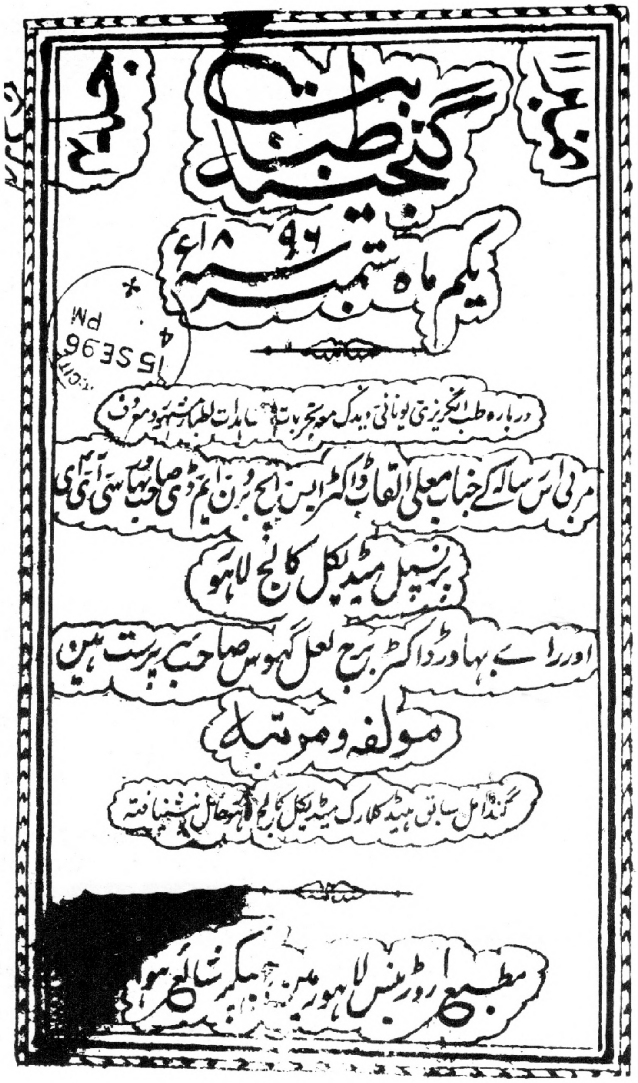

Figure 11. Cover page of Journal Ganjina-e-Tababat, an Urdu Journal, Volume 4, Number 11, 1885.

successful Hakim and an absentee farmer and being a Sayed indulged in a little spiritual panhandling. After finishing high school Sher Shah took the entrance examination of the just established medical school and was admitted in the first Urdu class in 1860. Three years later he was among the first graduating class receiving the diploma of Licentiate of Medicine (Figure 18).

Not much is known about his student days except that he was a hard working student. He was a poet of sorts and expressed the misery of student life and the hot and humid summers of Lahore by writing couplets in his books.

خدایا ہم کہاں جاویں یہاں سے
بہت تنگ ہو گئے ہم اپنی جان سے

اگر اسطرح کی گرمی رہے گی
تو اک دن جان بھی جاتی رہے گی

One of his couplets tells us that he was undergoing all that torture to be able to earn twelve rupees a month.

اگر سہ سال گذریں خیریت سے
تب ہوویں مستحق بارہ روپے کے

As a student he helped in the cholera epidemic of Lahore in 1862 and received a commendation from the Lieutenant Governor of the Punjab (Figure 19).

After graduation he was appointed in Paharpur, a small town in Dera Ismail Khan district, close to the western bank of the Indus River. He was the only doctor in that vast area dispensing a mixture of his newly acquired Western medicine and the knowledge of Unani medicine (learned from his father) along with a touch of spiritual healing. One can imagine, with amusement, this young doctor treating an abscess with incision, drainage, prescribing a herbal medicine

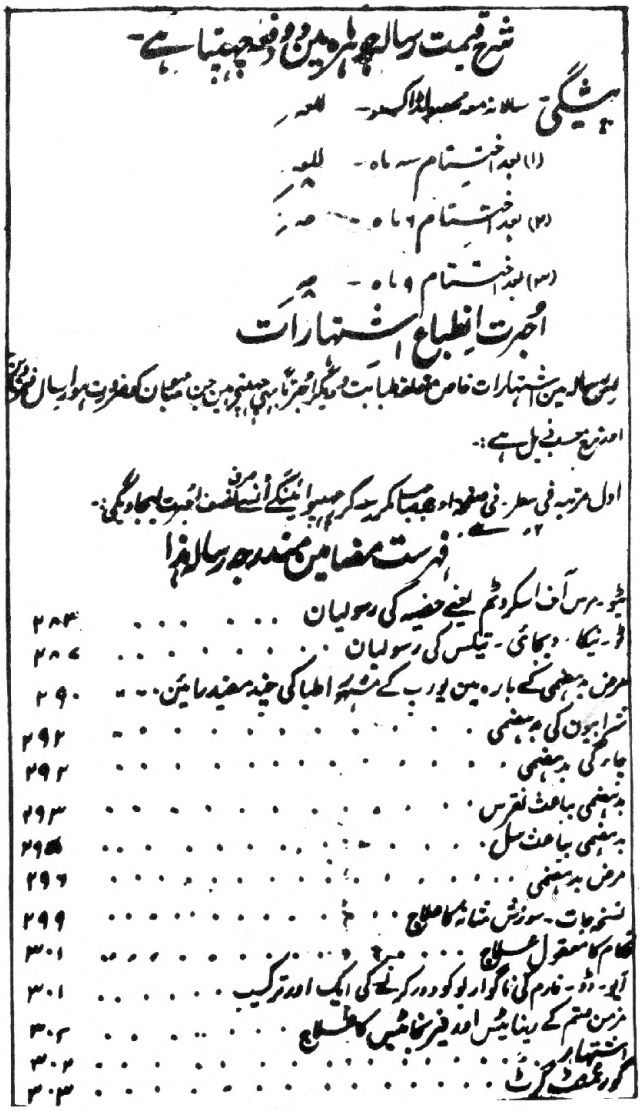
شرح قیمت رسالہ ہذا میں دو فصل چھپتا ہے۔
پیشگی سالانہ مصول ڈاکخانہ
(۱) بعد اختتام سہ ماہ
(۲) بعد اختتام ۶ ماہ
(۳) بعد اختتام ۹ ماہ
اجرت اشتہارات
اول مرتبہ فی سطر
فہرست مضامین مندرجہ رسالہ ہذا
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Figure 12. List of Contents of one issue of Ganjina-e-Tababat.

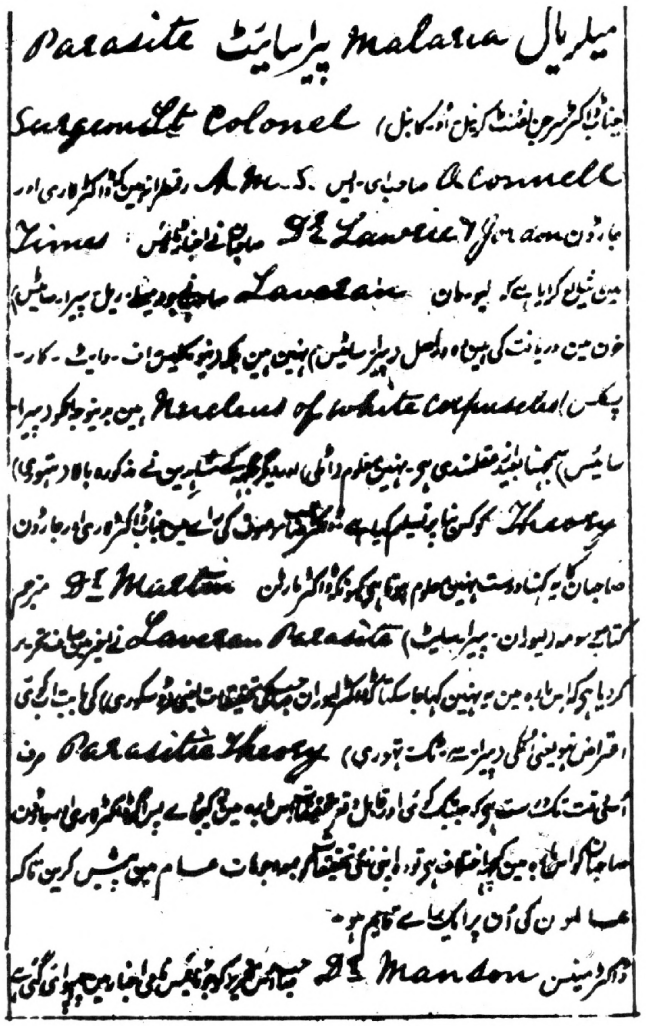

Figure 13. Description of Malarial parasite (Ganjina-e-Tababat) in Urdu.

or Kushta, along with a prayer or a Taaweez.

A few years after graduation, he married in Peshawar, and in subsequent years, as his ties with Peshawar strengthened, his visits to Lahore became more infrequent.

His family was of the most orthodox Muslim families of his time. The women seldom ever, if at all, ventured outside their home. And, when they did, they had to be covered with extra layers of clothes, a tent-like veil and travel in an enclosed tonga or doli. Against this background it was indeed very unusual for his family to make biennial trips from Paharpur to Peshawar.

From Peshawar, the family would travel eight miles in Tongas to Dalazak on the Kabul River, to board a cabin boat, which were common on the Indus in the last century (Figure 20). This trip would take them past Khairabad where Kabul river meets the Indus, by the Emperor Akbar's fort at Attock (Figure 21) and down the Nizampur plain. They would camp at night where the women, secluded from the men, would cook meals on makeshift wood burning hearths. After six days they would disembark at Kolar Kot and travel another fifteen odd miles to Paharpur riding in Kujawas (Figure 22). The boats would pick up other passengers and continue their Southward journey to Sind.

The return journey to Peshawar was done by land on camel back and took usually 10 days to cover a distance of 250 miles. Years later, towards the end of the century, the Mari Indus railway line made the journey much faster and more comfortable. It also became easier for Sher Shah to visit Lahore to check upon his parents who still lived in the city of Lahore.

Mid 1870's saw his appointment at Hangu, a town along the Afghanistan frontier 40 miles Southwest of Kohat. Because of constant turmoil in the area he chose to keep his family in Peshawar. An added urgency was his only son who by this time was of school age. He bought a house in Peshawar near the clock tower and named it Bhakri Manzil after the small town in Sind from where his forefathers had migrated to the Punjab.

In 1877 he took a leave of absence to supervise the repairs of his ancesteral home in Mohalla Sathan in Lahore City. Doctors being in short supply, a leave of absence was seldom granted. In this case a letter of recommendation from the Nawab of Hangu was instrumental in getting the necessary leave (Figure 23). It was a common custom for nobility to write recommendations for their favorite officials.

In 1905 he passed the promotion examination and was appointed Sub Assistant Surgeon in charge of

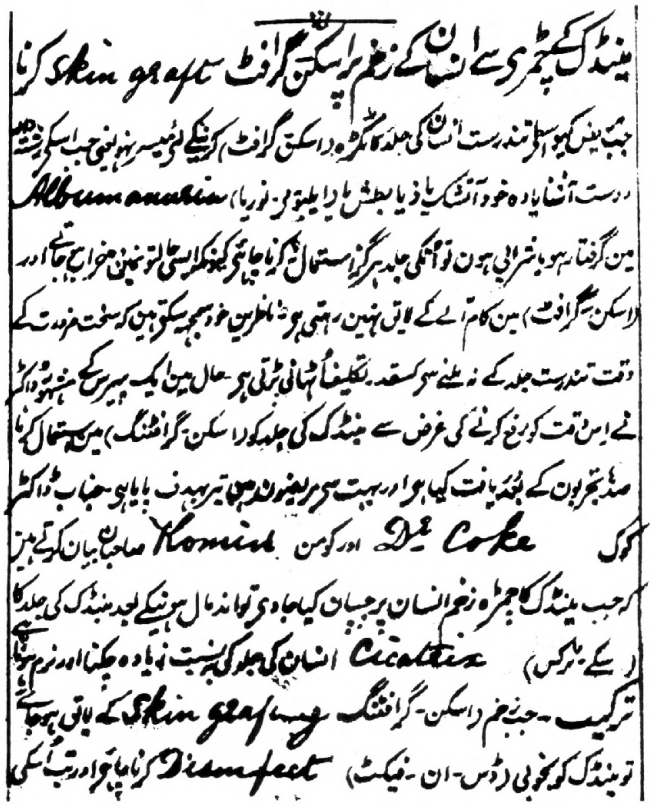

Figure 14. Frog skin used for skin grafting (Ganjina-e-Tababat) in Urdu.

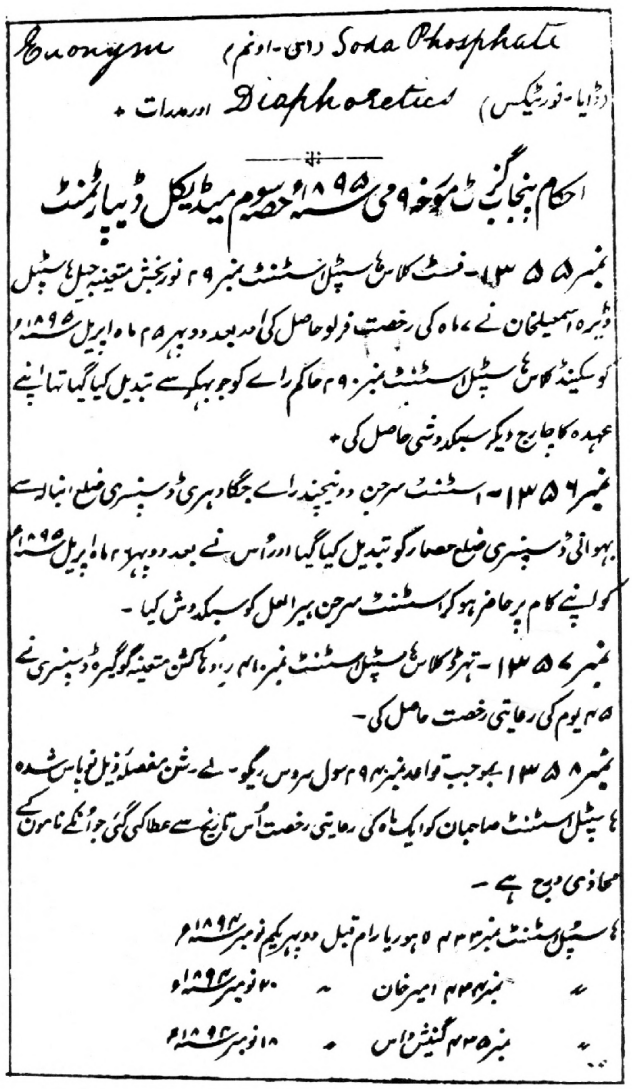

Figure 15. Government notification gazettes in Urdu.

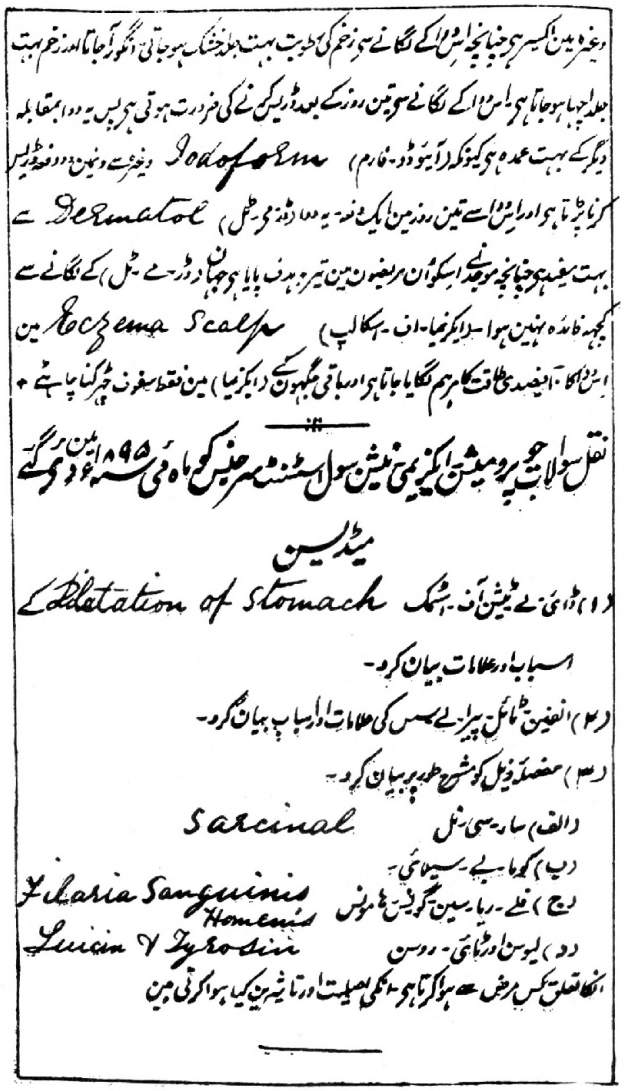

Figure 16. A list of the government's examination questions in Urdu.

Peshawar Jail. That was the most tranquil time of his life. He obviously enjoyed his status as a native Sub Assistant Surgeon and cherished his role as the senior member of the Sayed clan of Peshawar. Four years later he retired after serving in different outposts for 47 years. He opened a clinic in the Qissa Khani bazzar (Figure 24) and settled down to a peaceful life. In 1910 he died of a short illness, the same year that King Edward VII died and the name of this institution was changed the third time to honor King Edward's memory.

The portrait of Sher Shah, put together with sketchy information, family traditions and oral history, appears to be of a man who broke traditions in order to attain what very few natives had attained. His satisfying career shows that he was industrious and strived for on-going education. He subscribed to journals and obtained medical books as they became available. He made copious notes in his books indicating his desire to bring the native Unani medicine into better focus and amalgamate it with his knowledge of the Western medicine. He practiced medicine for the benefit of his fellow human beings. Except for a few small pieces of property he had purchased, he died a poor man.

In conclusion, I must add, that although I am not a graduate of this prestigious college, (I graduated from the Khyber Medical College), I am a Kemkolian (an alumnus of King Edward Medical College) by implication. Most of you may not be aware but I had a head start on all of you alumni. I sent Sayed Sher Shah to this college 125 years ago, who incidently happened to be my paternal grandfather.

Excellence is acheived!

It is not stumbled upon in the process of amusing oneself. It is achieved with persistence and tenacity of purpose. The past one hundred and twenty five years have been witness to the fact that this great college has done just that.


اشتہار

رسالہ طب متعلقہ عدالت

اکثر ایسا دیکھنے میں آتا ہے کہ جب کوئی مقدمہ عدالت میں دائر کیا جاتا ہے جس میں طبی معاملات میں گفتگو کرنی پڑتی ہے اور کسی ڈاکٹر کا اظہار لینا پڑتا ہے تو وکیلوں کو نہایت دقت ہوتی ہے غرض اُس وقت کو رفع کرنیکو اسطے اور نیز اسواسطے بھی کہ کوئی بھی طبیب جسنے صرف دیسی زبان ہی میں طب پڑھی ہو اُن طبی معاملات سے واقف نہیں ہیں جو عدالت کے متعلق ہیں پنجاب یونیورسٹی کالج نے جگانشا وبیشہ سے علوم پھیلانیکا ہے ایک سالہ موسوم رسالہ طب متعلقہ عدالت چھاپنا شروع کیا ہے۔ اس سال میں مضامین حسب تفصیل ذیل ہونگے۔ چنانچہ یہ کتاب دو حصوں میں منقسم ہے۔ حصہ اول میں ایسے دقوں کا ذکر ہے جیسے ناجبر بچہ کشی۔ پھانسی۔ ڈوبنا۔ ضرب زخم۔ وضع حمل۔ استقاط حمل۔ تخصیت۔ نامردی۔ مختلف قسم کی موت۔ وغیرہ وغیرہ۔ اس کتاب کے دوسرے حصہ میں سمیات کا ذکر ہے چنانچہ مختلف سمیات معدنی حیوانی کی علامات وصورتحال تشریح کی بعد وغیرہ شناخت کیمیاوی اور اُنکا علاج بشرح وبسط بیان کیا گیا ہے اور ہر ایک زہر کی نسبت خاصکر اُن باتوں کا ذکر کیا گیا ہے جو عدالت میں پیش ہوا کرتی ہیں اور جسپر وکیل اور طبیب کو بحث کرنی پڑتی ہے۔ جس کسی صاحب کو خریداری اس کتاب کی منظور ہو قیمت نقد بخدمت صاحب رجسٹرار پنجاب یونیورسٹی کالج لاہور بھیجکر منگالے۔

قیمت فی جلد۔ ۔ ۔ محصول ڈاک وغیرہ ۳ر

Figure 17. Advertisement about a forensic Medical Journal in Urdu.

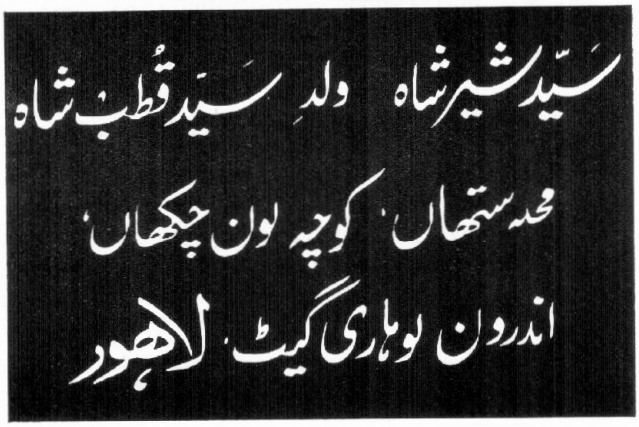

Figure 18. The sign board of Dr. Sher Shaha in Lahore.

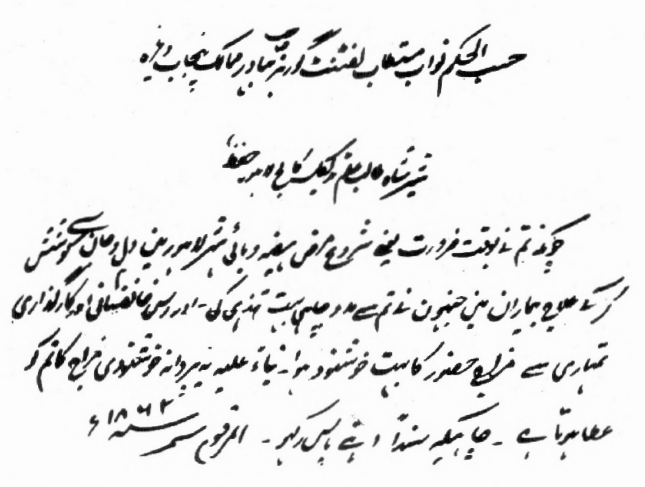

Figure 19. Citation of work during Lahore chlorea epidemic 1862.

Figure 20. A typical passenger boat on the Indus River. Such boats travelled down the Indus to the Indian Ocean.

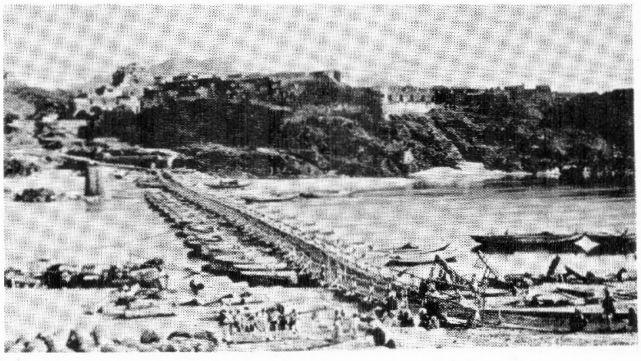

Figure 21. The boat bridge on the Indus near Attock connecting the Punjab with the Frontier province. Akbar's fort situated on the east bank is in the background.

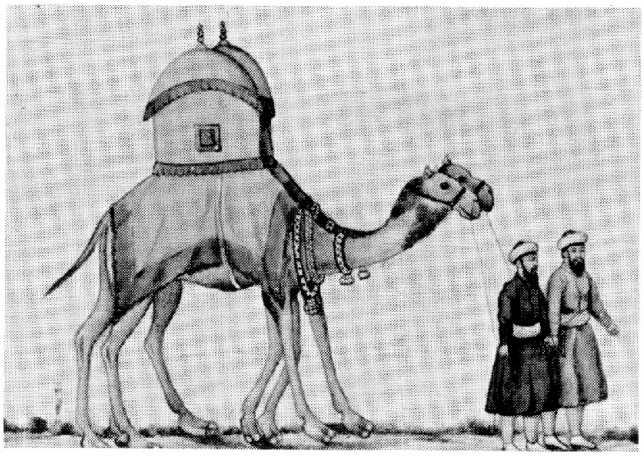

Figure 22. A kujawa on the camel back was used for the travel of women.

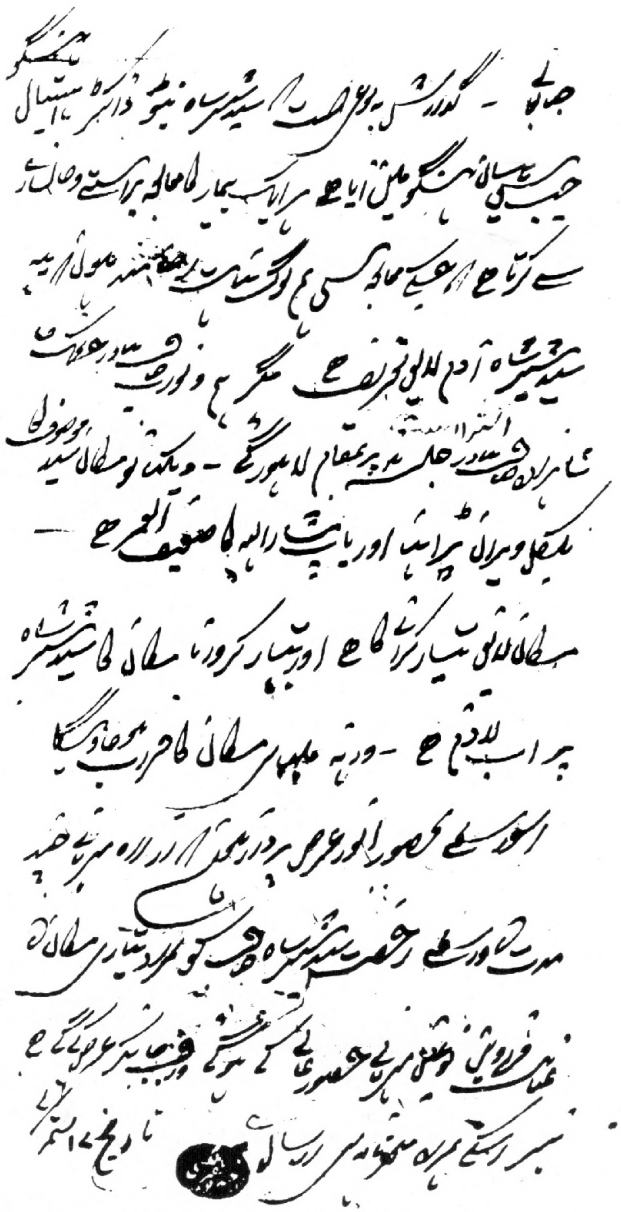

Figure 23. A letter of recommendation from the Nawab of Hangu recommending Sher Shah for a leave of absence. Dated September 17, 1876.

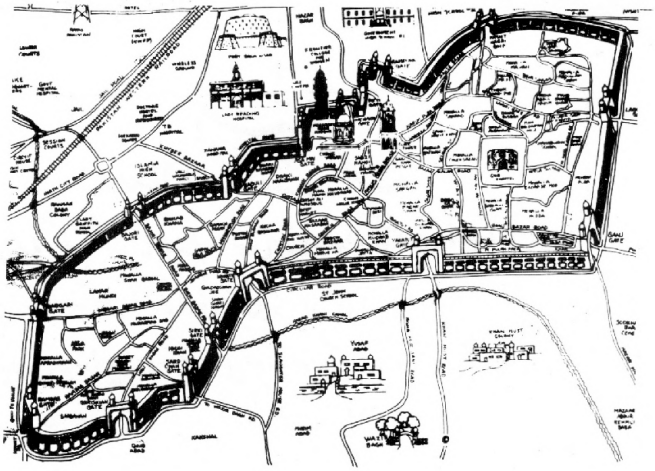

Figure 24. Old walled city of Peshawar.

ACKNOWLEDGEMENTS

I gratefully acknowledge the assistance of Ms. Brenda Kiss, Education Assistant, St. Charles Hospital, Toledo, in preparing the manuscript, Mr. Richard Walczak and Miss Stephanie Grand for preparation of slides and photographs; Mrs. Munawar Jehan Khan, Librarian, Toledo University, for providing material about the mid-nineteenth century India; Sayed Sardar Hussain, my elder brother, and other members of my family for providing valuable oral history.

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Ophthalmic "Past Pourri"

Don't Like Spectacles? Don't Write German (Or Urdu?)

'...many eyeglasses in Germany can be set down to the account of the slanting ziz-zag writing" of German language.

Ellinger, I: The optical law for letters and writing. At the Congress of Naturalists and Physicians, Strassburg - 1885 (1-15-95)

Original Research

Cholesterol Granulomas in Exit Areas for Macrophages from the Inner Eye*

J. Reimer Wolter, M.D.

ABSTRACT: Cholesterol granulomas typically develop in the eye late after extensive or recurrent vitreous hemorrhages on the inner surface of optic nerve or on the peripheral retina adjacent to superficial blood vessels representing exit areas for macrophages. They may induce chronic uveitis locally. A well developed example of a cholesterol granuloma on the peripheral retina is histopathologically demonstrated and discussed in its basic nature and clinical significance. (Pak J Ophthalmol 2:97-100, 1986).

To restate several well-known facts from the fields of basic physiology and general medicine will be helpful for the creation of a basis on which the present thoughts about ophthalmological details can be developed. Cholesterol – in its pure state – is a viscous fluid resembling liquid soap. Pure cholesterol does not mix with water - nor with blood or tissue fluids. When cholesterol enters the organism, it is combined with proteins to form so-called low-density lipoproteins. These combinations allow for circulation of the cholesterol in the blood stream, until this is used up in the construction of tissue components - or broken down in the liver for excretion. Cholesterol is an essential building block of some of the most important and very diverse parts of the organism. Cell membranes and hormones are examples. Cholesterol has a central role in the very common disorder of atherosclerosis. It is deposited in arterial walls and its presence triggers a very typical combination of chronic inflammation associated with fibrous proliferation, resulting in the formation of artery-clogging atheromas. Macrophages are attracted by cholesterol crystals in the areas of these deposition and - they change into foreign body giant cells to surround and isolate their irritating substance.

The lipid metabolism of the inner eye under pathological conditions is of special interest, since the relatively common combinations of massive intraocular hemorrhage and destruction of retinal neurons both result in the liberation of relatively large amounts of lipids within the extremely well defined limits of the inner eye. The eye, furthermore, is not well equipped to deal efficiently with massive release of lipids. It contains no lymph vessels and does not normally have sessile reticuloendothelial elements. It has to rely on the relatively inefficient free-moving macrophages, which are supplied by the blood stream and come into its tissues from small blood vessels. After phagocytosis of blood remnants in the fluid spaces and tissues of the inner eye, these macrophages try to deliver the phagocytosed material

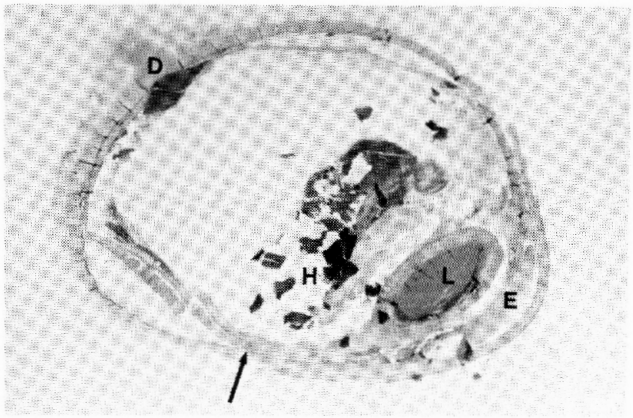

Figure 1. (Wolter): View of cross section of present eye with exudate-filled anterior chamber (E), lens (L) with early cataract, artifically broken hemorrhage in retracted vitreous (H), and second localized pool of blood in front of optic disk (D). Location of the cholesterol granuloma seen at higher power in Figure 2 indicated by arrow. Paraffin section, H and E stain, photomicrograph X 6.

Accepted for publication February 12, 1986

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* Supported by the Research to Prevent Blindness, Inc., New York, N.Y., USA.

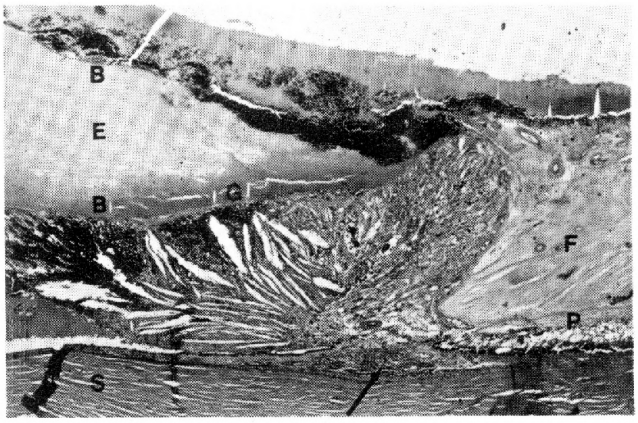

Figure 2. (Wolter): Cross section of cholesterol granuloma (G) in peripheral retina exhibiting large cholesterol crystal spaces in center, blood (B), and exudate (E) on inner aspect. Focal accumulation of mononuclear cells in adjacent choroid (arrow), fibrovascular scar (F) on pars plana (P) and scleral base (S) seen. Paraffin section, H and E stain, photomicrograph photomicrograph X 90.

out of the eye either by the way of chamber angle and filtering trabeculum into the aqueous veins or back to blood vessels on the inner surface of the ocular wall in many cumbersome steps including repeated re-phagocytosis of some of the more digestion-resistant substances. Cholesterol granulomas commonly develop on the optic disk or in the region of the retinal periphery as a temporary solution for the piling-up of blood remnants near the exit zones for macrophages with blood remnants.[1] Clinically common situations with a history of massive or recurrent intraocular bleeding allow for interesting observations concerning the lipid metabolism and the pathological effects of its decompensation on a cellular level. Studies of the formation of the so-called deep hard exudates in the retina composed of lipid-filled macrophages[2,3] and on macrophage functions in the vitreous and retroretinal spaces[4,5] are examples for the approach that will be used in the present demonstration of a typical cholesterol granuloma on the peripheral retina.

CASE REPORT

The example of the left eye of a 63-year-old male is used for this study. This eye had a history of a penetrating injury in 1979. The injury was repaired and no foreign matter remained in the eye. There were no significant signs of infection or inflammation, but an extensive intraocular hemorrhage was associated with the original injury. The eye had lost all of its vision within a few months after the injury. Over the years it was involved with episodes of pain and irritation. Clinical evaluations revealed signs of repeated intraocular hemorrhage. Corneal scarring and glaucoma developed. The eye became unsightly and it was enucleated on December 8, 1983 - about four years after the original injury during an episode of new bleeding, pain, and pressure rise.

Gross pathological evaluation revealed the eye ball to measure 24x24x23 mm. The cornea was scarred. When the eye was opened in the horizontal plane, the anterior chamber was shallow and the lens appeared cataractous. Dark blood filled the vitreous and the vitreous showed posterior vitreous detachment and some vitreous retraction. The retina was grossly in place. More hemorrhage was grossly visible in front of the optic disk. The space in back of the retracted vitreous was filled with a brownish fluid that ran out, when the eye was opened. The optic nerve was cut at about 2mm in back of the sclera.

Microscopic study of sections stained with Hematoxylin and Eosin as well as with an iron stain revealed corneal stromal scarring with blood staining. The corneal endothelium was partly absent and scar tissue filled the anterior chamber angle on the nasal side and also involved the iris. On the temporal side the chamber angle was closed and endothelial proliferation had extended across the closed angle onto the iris surface and had there produced a well developed "new Descemet's membrane." An exudate filled the anterior chamber (Figure 1). Scar tissue extended from the nasal cornea to the lens and partly covered the ciliary body. This scar tissue contained new-formed blood vessels. The lens was swollen and cataractous, but its capsule was intact. The ciliary body was atrophic and it exhibited only few inflammatory cells of the mononuclear type. Fibrovascular tissue also had developed in back of the iris on the temporal side, extended posteriorly over the ciliary body, and inserted in the pars plana as well as in the ora serrata zone of the retinal periphery (Figures 1 and 2). The vitreous contained a mixture of serous exudate with remnants of degenerated blood and many free-moving macrophages as well as pools of fresh blood with preserved erythrocytes (Figures 1 and 2). Another accumulation of blood was found in front of the optic disk (Figure 1). The retina exhibited advanced degeneration mainly of its inner layers with irregular areas of shallow exudative detachment. Cystoid macular edema was seen in the foveal region and the perifoveolar retina exhibited deep hard exudates composed of accumulations of more or less degenerated lipid-filled macrophages. The pigment epithelium was generally preserved, but areas of degeneration and atrophy were seen in the periphery. The choroid was rather well preserved and exhibited only very slight and diffuse infiltration with few mononuclear inflammatory cells. The optic nerve exhibited a small granuloma with large cholesterol crystals on its anterior surface next to the accumulation of blood. The optic nerve also was atrophic and both, the central retinal artery and vein in the optic nerve head, were obliterated and contained fibrous scar tissue in their lumen instead of blood. The sclera was normal.

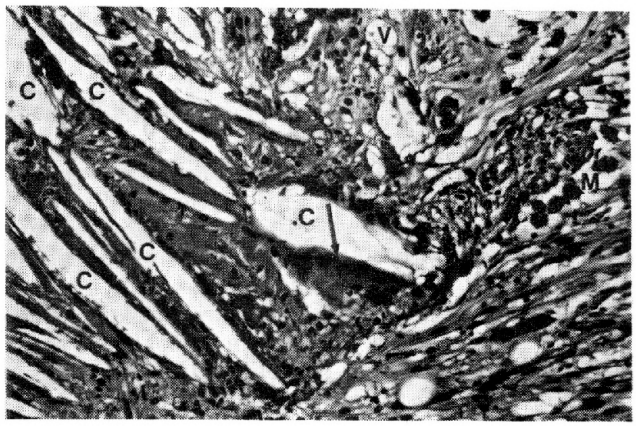

Figure 3. (Wolter): High power of giant cholesterol crystal spaces (C) surrounded by continuous giant cell protoplasm(arrow) and lipid vacuoles (V) in upper left part of retinal cholesterol granuloma. Hemosiderinfilled macrophages (M) on surface of remaining retinal structures on lower right. Paraffin section, H and E stain, photomicrograph X 600.

A well developed cholesterol granuloma had formed 8 mm in back of the limbus on the temporal side on the inner aspect of the ocular wall in the horizontal plane (Figures 1-4). In relation to other structures of the inner eye, this was located in back of the ora serrata, where shrinking fibrovascular tissues covering much of the ciliary body of that zone were inserting. The retina just in front of the granuloma had formed a meridional traction fold (Figures 1 and 2). In the region of the granuloma the retina had either become part of its scar-like components and lost its structural identity. Or the granuloma had primarily formed in the area of a small atrophic retinal defect. The retina directly around the granuloma was in its normal place, but a small zone of exudative detachment involved the retina directly in back of the granuloma. The pigment epithelium also had a defect in the center of the granuloma (Figure 4). Fibrous tissue surrounding blood vessels continuous with peripheral retinal

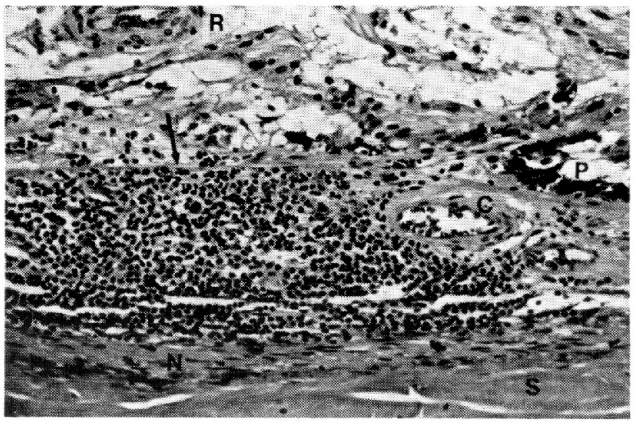

Figure 4. (Wolter): Focal accumulation of mononuclear inflammatory cells in choroid adjacent to cholesterol granuloma with choroidal arteriole (C) overlying sclera (S) and long ciliary nerve (N). Margin of interrupted pigment epithelium (P) seen on one side. Bruch's membrane is preserved (arrow). Base of retinal portion of cholesterol granuloma with lipid vacuoles and retinal arterioles (R) in top half. Paraffin section, H and E stain, photomicrograph X 600.

vessels was part of the granuloma. Serous exudate with numerous free moving macrophages covered its inner aspect (Figure 2). Large macrophages of balloon-like shape with lipids and some pigmented granules in their protoplasm were seen on the inner surface of and within the granuloma (Figure 3). Large foreign body giant cells surrounded cholesterol crystals spaces with their extensive and continuous protoplasm (Figures 2 and 3).

The base of the granuloma was firmly attached to the preserved membrane of Bruch (Figure 4). However, Bruch's membrane was frayed in places and the pigment epithelium was missing in the center of the granuloma. Relatively large vessels seen in the layer of the choriocapillaris were attached to the outer surface of Bruch's membrane. The choroid was thickened in the region of the granuloma. Massive and localized inflammation found in this thickened zone of adjacent choroid is considered a very important observation for the considerations of this paper (Figure 4). This was represented by a massive and well circumscribed focal accumulation of mononuclear inflammatory cells - mostly lymphocytes with some plasma cells mixed in. The sclera was normal.

DISCUSSION

The inner eye is not very well equipped to clear extensive hemorrhages of its inner spaces. In reaction to such an occurrence, monocytes leave adjacent blood vessels, change into free-moving macrophages, and are chemotactically attracted by the blood.[6] However, in the vitreous space these cells cannot immediately start phagocytosing the blood. They can do this on the surface of lens implants, for example, probably due to special activation.[7] But in the vitreous the macrophages have to wait around, until the erythrocytes fall apart - and it is believed that these may come close to completing their normal life cycle in the fluids of the inner eye.[8] When the macrophages, finally, get to phagocytoze the remnants of the degenerated erythrocytes, they grow large in the digestion process and become balloon-like mainly due to lipid accumulation in their protoplasm. They take a long time to move back to the ocular wall. A certian fluid circulation is suspected to exist in the vitreous space of the human eye. This fluid flow is believed to be slow under normal conditions. The origin of the circulating fluids is not clear at this point. But the optic disk and the region of the extreme retinal periphery are suspected to be the areas of outflow for the circulating fluids in the vitreous space. Figure 5 is presented as a typical histological view of the typical flow of necrotic debris and groups of neoplastic cells in Cloquet's canal towards the optic disk in endophytic retinoblastoma. Evidence of fluid flow in the vitreous space towards the peripheral retina may also seen be, but it is not as obvious, because this outflow is less localized and involves the whole circumference of the peripheral retina. The delivery of intravitreal substances, by macrophages, to retinal blood vessels, is difficult because of separating anatomical structures.[6] Blood remnants probably are re-phagocytosed a few times by macrophages, before their soluble remnants make their way back into the blood stream. Macrophages, filled with blood remnants, typically accumulate in so-called exit areas from the vitreous space: the optic nerve head and zones on the surface of peripheral retina along retinal blood vessels with so-called pores in the inner limiting membrane.[6,9] The histopathological appearance of a lipid granuloma in the optic nerve head with large cholesterol crystals has been demonstrated in a recent paper[10] – and a granuloma of this type was also found in the optic nerve head of the present case. But there is need to emphazise the fact that the retinal periphery also is a common place for the accumulation of lipid-filled macrophages and the resulting formation of cholesterol granulomas.

The pathological situation of the present case is special, because the retina has suffered obstruction of central retinal artery and vein in the optic nerve head as a secondary occurrence related to the glaucoma caused by the results of the primary trauma. The fact that the retinal blood vessels carry some blood and are not obliterated can be explained by the formation of collaterals between the retinal and ciliary circulations. The removal of blood remnants from the repeated vitreous hemorrhages is suspected to have been especially difficult in the absence of good retinal circulation in this eye. This fact explains the presence

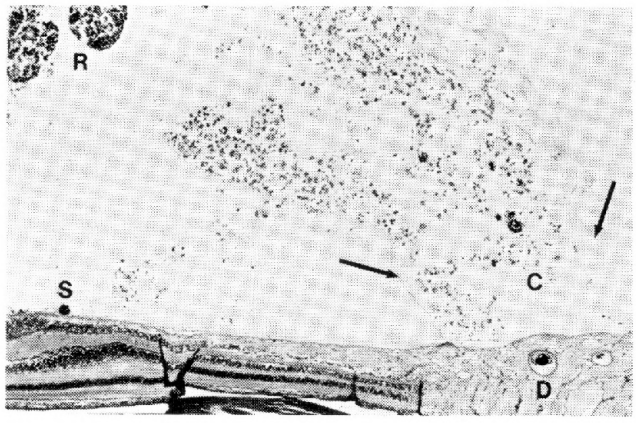

Figure 5. (Wolter): Flow of isolated groups of neoplastic cells and necrotic debris from surface of endophytic retinoblastoma with pseudorosettes (R) towards optic disk (D) seen in eye of four year-old. Arrows: outer limits of Cloquet's canal (C). Seeding of retinoblastoma cells (S) on paracentral retina. Paraffin section, H and E stain, photomicrograph X 110.

of its extremely well developed cholesterol granuloma. However, not all eyes with cholesterol granulomas are blind and in such cases an understanding of the basic pathological processes is the first step towards proper treatment.

Substances that cause difficulties for the digestion potential of the macrophages are hemosiderin and lipids. As a result, these substances stay around the longest in the protoplasm of the macrophages - as well as in the fluids and other structures of the inner eye. Not all the lipids in eyes with extensive and recurrent hemorrhages come from the degenerating erythrocytes. But degeneration of retinal neurons may be associated and results in the release of even more lipids. Granulomas develop as some of the macrophages change into fibroblast-like cells and take part in forming the fibrous framework, while others fuse to form giant cells.[11] Cholesterol crystals are deposited in the protoplasm of giant cells. These crystals grow to large sizes and they usually are multiple and of parallel arrangement - often pointing with their narrow ends in the direction to the exit from the eye. The accumulation of cholesterol in these granulomas is considered only a temporary storage solution - and the ocular tissues will clear these deposits, when there is improvement of blood circulation and the lipid delivery problem for the macrophages.

The massive focal inflammatory reaction in the choroid underlying the cholesterol granuloma is a very exiting observation in the present case. Similar secondary choroiditis has been seen in the same relationship in other cases. A patient's own blood injected into the skin is well known to cause an inflammatory reaction, of course. It is also known that atheromas with cholesterol in the wall of blood vessels typically are associated with chronic inflammation. However, the separation in neuroectodermal and mesodermal layers in the eye allows for a much better demonstration of the components of this reaction in the eye. The accumulation of mononuclear cells in the choroid indicates chronic inflammation. It is not clear at this time, how these granulomas induce the secondary inflammatory reaction in the adjacent choroid. From a practical standpoint the observation of the choroiditis in the choroid adjacent to cholesterol granulomas may justify clinical application of regional steroids in attempts to relieve irritation and pain in eyes with cholesterol granulomas. Furthermore, the removal of extensive blood from the vitreous at an early stage by a vitrectomy procedure with the aim to avoid the late problems here described should always be considered.

Very large cholesterol crystals are an outstanding component of the granulomas developing late in the course of extensive and recurrent intraocular hemorrhages. Final stages of Coats's disease are good examples and typically grossly exhibit glistening intraocular fluids due to the extensive accumulation of large cholesterol crystals - as well as histological evidence of secondary uveitis. In atheromas the abnormal cholesterol accumulation is explained by a failure in processes of tissue chemistry that normally allows for the formation of highdensity lipoproteins. These can be carried back to the liver by the blood stream for removal or re-use. The development of cholesterol granulomas in the ocular wall is not directly related to atherosclerosis, of course. The inability of the inner eye to remove lipids is believed to be a local problem mainly. My present theory is that the macrophages of the inner eye under the existing conditions of poor blood supply and overwhelming amounts of degenerating blood in its fluid-filled spaces, cannot fulfill the functions that a more differentiated apparatus of reticulo-endothelial cells with its own blood supply would be able to accomplish. The macrophages simply decompensate and are, in the end, helpless against the massive lipid substances released in the eye. They do the best they can by accumulating these in one area, partly digesting them, and causing their crystallization - as well as by creating a separating protoplasmatic wall around the irritating crystals. With this function of separation they partly fail, of course, - and some adjacent choroiditis typically develops, in spite of this.

The present paper aims to make interest among ophthalmologists for the complicating role of blood and blood remnants in the eye under situations after trauma or surgery. The present description of a typical cholesterol granuloma is only a first step on the way towards a better understanding of the very complex reactive process as a whole. Much more work is needed to gain complete insight, but this will be clinically important.

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Camera Clinicals: Expositions

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Figures 1 & 2 (Awan)

Psychiatric Disorder Association With Recurrent Ocular Toxoplasmosis

ABSTRACT: A 26-year-old man developed irrational behavior, delusions, and hallucinations with reactivation of congenital toxoplasmosic retinochoroiditis in his right eye. The psychiatric symptoms disappeared as the retinochoroidal lesion resolved. Two years after this episode another recurrence of retinal lesion was again accompanied by behavioral and emotional changes that responded to medical treatment of toxoplasmosis. (Pak J Ophthalmol 2:82 and 101, 1986)

Toxoplasma gondii, a protozoal parasite, usually reaches the eye of the fetus by a transplacental transmission from the mother, and infects the retina primarily. Although on rare occasions *Toxoplasma* may be transmitted to the eye in acquired toxoplasmosis, most of the cases of ocular toxoplasmosis are congenital. The triad of clinical features of history of convulsions, intracranial calcification, mental retardation, and punched-out retinochoroidal lesions is sufficient to make the diagnosis of congenital toxoplasmosis. Satellite lesions are most characteristic of ocular toxoplasmosis. As a rule congenital toxoplasmosis affects only one living sibling, but reports of more than one living sibling with congenital toxoplasmosis have appeared.[1] Depending on the degree of host immunity, the organism either remains inactive in the form of cysts, or multiplies asexually within the cytoplasm of nucleated host cells in active stage.

Berengo and Frezotti[2] reported association of ocular and central nervous system toxoplasmosis in 12 patients with toxoplasmic meningoencephalitis. Uchida, Kakehashi, and Kameyama[3] reported psychiatric disorder in a patient with active ocular toxoplasmosis, and isolated *Toxoplasma* from his cerebrospinal fluid. Their patient recovered from both when treatment with acetyl spiramycin was given. The patient, reported here, also recovered, on both occasions, from retinochoroditis and psychiatric symptoms when treated with triple sulfa, pyrimethamine, and clindamycin. This case supports the association of active ocular and central nervous toxoplasmosis.

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Figure 3 (Awan)

Pili Torti

ABSTRACT: Pili torti, a condition in which the eyelashes are abnormally curled, irregularly twisted, and emerge at unusual angles is a rare ocular anomaly. Author describes pili torti limited to the upper eyelids of an eight-year-old Negro boy. (Pak J Ophthalmol 2:82 and 101, 1986).

Pili torti is an interesting and rare condition in which eyelashes are abnormally curled and entangled without following the normal parallel arrangement in straight rows. Duke-Elder[1] reports that condition may be transmitted by autosomal dominant heredity, may be combined with similar abnormality of the eyebrows, may be part of an ectodermal dysplasia, and the children afflicted by it are usually bald for the first year or two of their life. None of these situations was present in this case. It is most unusual in this patient that only the upper eyelids were involved. The eyelashes that had an abnormal inward curl, caused intermittent irritation of the eyes, that was affectively treated by clipping only the offending cilia.

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Figure 4 (Awan and Humayun)

Hemorrhagic Lymphangiectasia of the Conjunctiva

ABSTRACT: Conjunctival hemorrhagic lymphangiectasia is a rare disorder in which obstructed and irregularly dilated lymphactics abnormally communicate with blood vessels, which leads to repeated intralymphatic blood pooling and hemorrhages. A 35-year-old woman had conjunctival hemorrhagic lymphangiectasia that caused repeated benign conjunctival hemorrhages and was not associated with any other abnormalities. (Pak J Ophthalmol 2:82, 83, 101 and 102, 1986).

In 1880, Leber[1] first described abnormal connection between the lymphatics and the blood vessels of the conjunctiva, and called it lymphangiectasia hemorrhagica conjunctivae. The condition has now and then been reported, but is rare. Apparently the first detailed report in English literature is that of Awdry,[2] in 1969. The precise cause for the abnormal connection between the lymphatics and the blood vessels, or of blood entering the lymphatics, is not known. Duke-Elder[3] felt that strands resulting from chronic inflammation were responsible for periodic constrictions of lymphatics. No age or sex is immune. Spontaneously or following minor trauma, the involved lymphatics, with segmental constrictions and balloon-shaped dilations, become completely or partially filled with blood. In the latter case, the blood in the lymphatic ampoules shows a horizontal level with clear lymph occupying the upper half. Most of the time the condition is benign and merely annoying, because of the repeated hemorrhages and the irritation caused by the dilated segments rubbing against the blinking eyelids. Lymphangiectasia hemorrhagica conjunctivae has been reported in association with lymphangioma of the homolateral parotid,[3] trachoma,[3] amyloidosis and occlusion of the superior and the inferior ophthalmic veins.[4] Other than the recurrent irritation and conjunctival hemorrhages, the patient described here had no problems.

Treatment of chronic inflammation if present and the patient reassurance are sufficient to manage conjunctival lymphangiectasia hemorrhagica. However, excision or obliteration of involved vessels by cauterization with diathermy or laser may prove effective. In the patient reported here, the initial episodes were treated with antibiotic-corticosteroid combination drops, but eventually needed vessel obliteration by laser therapy.

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Figure 5 (Awan and Humayun)

Severe Corneal Edema from Extended-Wear Contact Lens

ABSTRACT: A 15-year-old girl developed severe visual loss and ocular pain from extensive corneal edema from the use of extended-wear soft contact lens, which she had successfully worn for one year with a weekly schedule. Corneal edema appeared acute and worsened over several days despite no further use of the lens. The treatment with cycloplegic and gentamicin drops with subsidence of corneal edema in three weeks.. (Pak J Ophthalmol 2:82, 83 and 102, 1986).

Extended-wear contact lenses are associated with an alarmingly high frequency of corneal complications, such as microcystic epithelial and stromal edema, superficial punctate keratitis, stromal infiltrates, corneal ulcers, particularly those caused by *Pseudomonas,* erosions, and toxic allergic reactions.[1-3] Although exact cause of extended-wear lens complications is not fully understood, corneal hypoxia, negligence in cleaning techniques, and delay in seeking timely help from the ophthalmologist have been proposed as a few of the important contributing factors.[2-3] A recent editorial has seriously questioned the use of presently available extended-wear lenses for cosmetic purposes or convenience in healthy eyes.[2] Epithelial microcysts were found in 100 percent of extended-wear lens users in a recent study.[1]

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Figures 6 & 7 (Awan)

Aqueous Vein Araneus

ABSTRACT: The author describes an unusual spider's web — shaped (araneosus) aqueous vein at the nasal limbus of a 46-year-old man. The vessels of the plexus showed at different times the lamination of blood column, total filling with blood, or complete filling with clear aqueous when the main trunk was manually obliterated and the intraocular pressure raised. (Pak J Ophthalmol 2:83 and 102, 1985)

Aqueous veins are biomicroscopically visible vessels that carry aqueous from Schlemm's canal and empty it into the conjunctival and subconjunctival veins. They were first described in the limbal and paralimbal areas by Ascher.[1] Usually they appear as single vessels with a laminated blood column with one side of the column being composed of clear aqueous. However, under various conditions, such as inflammation, and depending upon the pressure gradient between the venous and the aqueous flow they may not appear laminated.[2] The aqueous veins in the patient reported here is most unusual. The whole complex became filled with aqueous when the main trunk was compressed and intraocular pressure raised.

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Abstracts From Elsewhere

Edited by Khalid J. Awan, M.D., F.P.A.M.S.

OPHTHALMOLOGY

The Journal of the
American Academy of Ophthalmology

AGING MACULAR DEGENERATION. CLINICAL FEATURES OF TREATABLE DISEASE. J C Folk. The author concludes that argon laser treatment reduces visual loss in patients with aged macular degeneration and extrafoveal subretinal neovascular membranes. The patients must be educated about the symptoms of subretinal neovascularization and given an Amsler grid. The patients who develop symptoms should be examined promptly. The fluorescein angiograms and meticulous contact lens examinations of the macula should be performed to detect subtle neovascularization and differentiated from fluorescein angiographic changes of drusen, retinal pigment epithelial atrophy, and retinal pigment epithelial detachments. *Ophthalmology 92:594-602, 1985. Reprint requests to James C. Folk, MD, Department of Ophthalmology, University of Iowa Hospitals and Clinics, Iowa City, IA 52242.*

IMPORTANT POINTS IN MANAGEMENT OF PATIENTS WITH CHOROIDAL NEOVASCULARIZATION. L J Singerman. The Macular Photocoagulation Study has proven the efficacy of argon blue-green laser treatment for extrafoveal choroidal neovascularization (CNV) in aging macular degeneration, presumed ocular histoplasmosis syndrome and idiopathic choroidal neovascularization. It is applicable only to eyes managed according to certain principles of therapy and post-treament follow-up. The use of a recent fluorescein angiogram and retrobulbar anesthetic, aiming for complete obliteration of the CNV is necessary. Meticulous post-treatment follow-up with daily patient's monitoring of the Amsler grid, and prompt examinations if distortion is noted is important. Fluorescein angiography is mandatory and is repeated frequently and studied promptly. Residual or recurrent extrafoveal CNV requires prompt re-treatment. The technique set includes first outlining the complex of CNV and adjacent blocked fluorescence from blood or pigment with 100-*um* noncontiguous light intensity burns placed 100 to 125 *um* beyond the margins of the complex. Heavy treatment is then applied with overlapping 200-*um* 0.2-second duration burns beginning on the foveal margin of the CNV. The perimeter of the membrane is then treated with the same settings. Lastly, intense treatment is applied with 200- to 500-*um*, 0.5- or 1.0-second burns over the center of the CNV and the entire area previously treated. The treatment must extend beyond the margins of CNV and must result in a confluent, intense white burn, often including the inner retina. *Ophthalmology 92:610-614, 1985. Reprint requests to Lawrence J. Singerman, MD, Retinal Laboratory, 26900 Cedar Road, Suite 323, Cleveland, OH 44122.*

PERFLUOROCARBON GASES IN VITREOUS SURGERY. S Chang, H A Lincoff, D J Coleman, W F Fuchs, M E Farber. The authors tested 56 patients with complicated retinal detachments with perfluorocarbon gases, which are capable of greater expansion and greater longevity compared to sulfur hexafluoride. Forty-five patients received perfluoropropane (C3F8), eleven received perfluoroethane (C2F6). The retinas of 31 patients (55.4%) were attached at six months after the disappearance of the gas. Previously the operations performed with air-sulfur hexafluoride mixtures had failed in many instances. The increased intraocular pressure, usually transient, and gas-induced lens opacities are major complications. *Ophthalmology 92:651-656, 1985. Reprint requests to Stanley Chang, MD, Department of Ophthalmology, The New York Hospital, 525 East 68th Street, New York, NY 10021.*

INACCURACY OF FINE NEEDLE ASPIRATION BIOPSY. G B Krohel, D R Tobin, R M Chavis. An accuracy rate of 92% has been claimed by some authors by the use of needle aspiration biopsy (FNAB) of orbital tumors. This figure remains unproven. The author recently performed FNAB on 34 patients at the time of surgical biopsy. Cytologic diagnosis has been accurate in less than half of the cases biopsied. Fine needle aspiration biopsy should be limited to strongly suspected cases of orbital metastases or secondary tumors. *Ophthalmology 92:666-670, 1985. Reprint requests to Gregory B. Krohel, MD, Department of Ophthalmology, Albany Medical College, Albany, NY 12208.*

TOPICAL RETINOID TREATMENT FOR VARIOUS DRY-EYE DISORDERS. C G Tseng, A E Maumenee, W J Stark, I H Maumenee, A D Jensen, W R Green, K R Kenyon. The authors evaluated the clinical efficacy of treating various dry-eye disorders using 0.01% and 0.1% (weight/weight) topical all-trans retinoic acid ointment one to three times a day and concurrently with all the medications the patients were previously using. Twenty-two patients were classified into: (1) keratoconjunctivitis sicca (6 patients; 11 eyes), (2) Stevens-Johnson syndrome (9 patients; 17 eyes), (3) ocular pemphigoid or drug-induced pseudopemphigoil (3 patients; 6 eyes) and (4) surgery or radiation-induced dry eye (4 patients; 4 eyes), based on the criterion that they remained symptomatic even under maximum tolerable conventional medical and/or surgical therapies. The squamous metaplasia with mucin deficiency secondary to goblet cell loss and keratinization may be the basis for the development of clinical symptoms and morbidities, as these epithelial abnormalities were invariably present before treatment. All patients

demonstrated clinical improvements in symptoms, visual acuity, rose Bengal staining, or Schirmer test. This topical vitamin A treatment caused the reversal of squamous metaplasia as evidenced by impression cytology. Therefore, the topical use of vitamin A may represent the first nonsurgical attempt to treat these disorders by reversing diseased ocular surface epithelium. *Ophthalmology 92:717-727, 1985. Reprint requests to Scheffer C. G. Tseng, MD, PhD, Eye Research Institute, 20 Staniford Street, Boston, MA 02114.*

EXCIMER LASER ABLATION OF THE CORNEA AND LENS. EXPERIMENTAL STUDIES. C A Puliafito, R F Steinert, T F Deutsch, F Hillenkamp, E J Dehm, C M Adler. The pulsed ultraviolet excimer laser can produce tissue ablation with a high degree of precision and with minimal thermal damage to adjacent structures. In comparative studies of excimer laser ablation of the cornea and crystalline lens using 193 nm and 248 nm radiation, threshold fluence for corneal and lens ablation was higher at 248 nm than at 193 nm. Ablation of corneal stroma at 193 nm produced the most precise cuts. When examined by transmission electron microscopy, a narrow zone of damaged tissue (0.1 to 0.3 *um*) was seen immediately adjacent to the tissue removed by the laser. Ablation with 248 nm radiation produced incisions with ragged edges and with a wider and more severe zone of damage in adjacent stroma. Ultraviolet spectral transmission studies of the corneal stroma showed that absorption is 10 times greater at 193 nm than at 248 nm. The excimer laser was effective in producing well controlled ablation of the crystalline lens in vitro, with effects parallel to those seen in the cornea. *Ophthalmology 92:741-748, 1985. Reprint requests to Carmen A. Puliafito, MD, Howe Laboratory of Ophthalmology, Massachusetts Eye and Ear Infirmary, 243 Charles Street, Boston, MA 02114.*

AN ULTRASTRUCTURAL STUDY OF CORNEAL INCISIONS INDUCED BY AN EXCIMER LASER AT 193 NM. J Marshall, S Trokel, S Rothery, H Schubert. Far ultraviolet light (193 nm) produced by an excimer laser has been used to produce a variety of incisions in the corneas of anaesthetised rabbits. Ultrastructural analysis of the walls of the ablated areas show damage to the adjacent structures to be confined to a zone 60 to 22 nm in width. These dimensions could either be attributed to photochemical processes in which high energy photons directly break organic molecular bond, or to thermal reactions which result in limited heat flow and damage confined to the absorption depth at 193 nm of less than 1 *um*. In non-penetrating incisions that reached within 40 *um* of Descemet's membrane, endothelial cells were lost beneath the line of the irradiation. This spalling of cells seemed to be generated by shock or acoustic waves. *Ophthalmology 92:749-758, 1985. Reprint requests to Stephen Trokel, MD, The Edward S. Harkness Eye Institute, Columbia-Presbyterian Medical Center, 635 W. 165th Street, New York, NY 10032.*

RETINAL COMPLICATIONS FOLLOWING YAG LASER CAPSULOTOMY. R L Winslow, B C Taylor. Out of a total of 1100 YAG capsulotomy eyes, 19 developed retinal complications. Complications included one retinal flap tear, two macular holes, six eyes with cystoid macular edema, and ten retinal detachments. The authors feel that these resulted from opening the capsule and were not a specific complication of the YAG laser. (Key words: crystalline lens, cystoid macular edema, lasers, retinal detachment.) *Ophthalmology 92:785-789, 1985. Reprint requests to Richard L. Winslow, MD, 2811 Lemmon Avenue East, Dallas, TX 75204.*

DRUSEN OF THE OPTIC NERVE HEAD. AN IMPORTANT MODEL. G L Savage, A Centaro, J M Enoch, N M Newman. The authors propose that drusen of the optic nerve head (ONH) may provide a useful model for the study of diseases which affect the vicinity of the optic disc. Fundus Photo Perimetry confirmed that little correlation exists between visual field defects and the location of ophthalmoscopically visible ONH drusen. The Flashing Repeat Static Test (FRST) was abnormal in half of the patients, indicating probable ascending dysfunction in optic nerve fibers beyond the lamina cribrosa. Alterations in transient-like and/or sustained-like functions, found in several cases, are thought to represent effects of dysfunction descending to the retinal plexiform layers. *Ophthalmology 92:793-799, 1985. Reprint requests to Jay M. Enoch, PhD, School of Optometry, University of California, Berkeley, CA 94720.*

PHARMACOLOGIC THERAPY OF APHAKIC AND PSEUDOPHAKIC CYSTOID MACULAR EDEMA. 1985 UPDATE. L M Jampol. Because no major advances in the pharmacologic therapy of aphakic cystoid macular edema (ACME) have occurred since 1982, topical indomethacin remains the one agent which has been proven to be of prophylactic value for angiographic aphakic cystoid macular edema although other non-steroidal agents may also work. The therapeutic value of these compounds for established ACME remains uncertain. No prospective randomized prophylactic or therapeutic trials of either topical or systemic corticosteroids have been performed. *Ophthalmology 92:807-810, 1985. Reprint requests to Lee M. Jampol, MD, 303 E. Chicago Avenue, Chicago, IL 60611.*

CLINICOPATHOLOGICAL CORRELATION OF A SOLITARY CHOROIDAL TUBERCULOMA. C E Lyon, B S Grimson, R L Peiffer, Jr., J C Merritt. The authors describes a rapidly enlarging choroidal tuberculoma in a 34-year-old black man with pulmonary tuberculosis. Despite appropriate systemic anti-tuberculous therapy the granuloma progress to a large size. The eye became blind and painful, and was subsequently enucleated. No organisms was present on conventional staining of tissue sections, but

tubercle bacilli were demonstrated by fluorescence microscopy. *Ophthalmology 92:845-850, 1985. Reprint requests to Charles E. Lyon, MD, Department of Ophthalmology, 617 Clinical Sciences Bldg. 229H, Chapel Hill, NC 27514.*

THE EARLY STRUCTURAL AND FUNCTIONAL DISTURBANCES OF CHRONIC OPEN-ANGLE GLAUCOMA. ROBERT N. SHAFFER LECTURE. S M Drance. The author reports that earliest psychophysical changes in color vision, foveal sensitivity, spatial and temporal contrast sensitivity precede nerve fiber bundle defects of the visual field in glaucoma. Optic disc changes such as enlargement of the physiological cup, as well as retinal nerve fiber layer losses, also precede visual field defects. It is not yet clear which of these is the earliest change. The author presents evidence for more than one mechanism of damage in glaucoma. *Ophthalmology 92:853-857, 1985. Reprint requests to Stephen M. Drance, MD, VGH/UBC Eye Care Center, 2550 Willow Street, Vancouver, BC, V5Z 3N9.*

CHANGE IN APPEARANCE OF THE OPTIC DISC ASSOCIATED WITH LOWERING OF INTRAOCULAR PRESSURE. K C Greenidge, G L Spaeth, C E Traverso. The authors provide additional documentation that the appearance of the optic disc may improve after intraocular pressure is lowered in patients with glaucoma. Photographic records of the patients of one of the authors (GLS) were reviewed retrospectively. Seven previously unreported cases showing apparent improvement of the optic disc were found. In two cases the improvement was transient, and in five it was lasting. Patients with evidence of disc improvement had an age range of 5 to 55 years. In one case, the scleral ring decreased in size following the lowering of intraocular pressure. In the other cases, the disc appeared to "fill in" without change in the size of the scleral ring. When improvement is short-lived, it presumably represents edema. When of longer duration, it may be a response to anterior repositioning of a posteriorly displaced lamina cribrosa, a decrease in diameter of the scleral ring, hypertrophy and/or proliferation of glial cells, or return towards normal of axonal metabolism. *Ophthalmology 92:897-903, 1985. Reprint requests to Kevin C. Greenidge, MD, MPH, New York Eye & Ear Infirmary, 310 East 14th Street, New York, NY 10003.*

TRABECULODIALYSIS FOR INFLAMMATORY GLAUCOMA IN CHILDREN AND YOUNG ADULTS. J J Kanski, J A McAllister. The authors performed trabeculodialysis on 30 eyes of 23 patients with secondary glaucoma due to chronic anterior uveitis. Trabeculodialysis was unsuccessful in lowering intraocular pressure to below 21 mmHg in 12 (40%) of eyes and successful in 18 (60%) of eyes. Of the 18 successful cases, 5 required no additional medication, but in 13 cases the intraocular pressure could only be maintained at a normal level by concomitant anti-glaucoma therapy. The presence of aphakia, extent of preoperative angle closure, and patient's age had no bearing on the outcome. *Ophthalmology 92:927-930, 1985. Reprint requests to Jack Kanski, FRCS, Prince Charles Eye Unit, King Edward VII Hospital, Windsor, Berkshire SL43DP, England.*

CYCLOCRYOTHERAPY IN THE TREATMENT OF ADVANCED GLAUCOMA. J Caprioli, S L Strang, G I Spaeth, E H Poryzees. The authors exaluated cyclocryotherapy in the treatment of aphakic open-angle glaucoma (AO), aphakic angle-closure glaucoma (ACL), and neovascular glaucoma (NVG) in 96 eyes of 96 patients with a follow-up of greater than 12 months. Intraocular pressure (IOP) was lowered to less than 21 mmHg in 76% of eyes with aphakic open-angle glaucoma, 68% of eyes with angle-closure glaucoma, and 55% of eyes with neovascular glaucoma. Patients with NVG lost vision more frequently (70%) than patients with AO (41%) or ACL (41%). In patients having visual field examinations (76/96), glaucomatous field loss was arrested in 71% of patients with AO and 65% of patients with ACL, compared to 29% of patients with NVG (P less than 0.025). There was a significant correlation between postoperative IOP less than 21 mmHg and preservation of visual field. Patients receiving initial 360° cryosurgical treatment required fewer repeat treatments than patients receiving initial 180° treatment ($P = 0.004$); complications were slightly more common in the 360° group. *Ophthalmology 92:947-954, 1985. Reprint requests to Joseph Caprioli, MD, Yale University School of Medicine, Box 3333, Cedar Street, New Haven, CT 06510.*

SURGICAL MANAGEMENT OF ENCAPSULATED FILTERING BLEBS. J E Pederson, G Smith. Out of a total of 222 eyes 5-years following glaucoma filtering operations 24 (11%) developed encapsulated filtering blebs associated with elevated intraocular pressure or symptomatic dellen formation, unresponsive to conservative therapy. Nine of 13 eyes were treated successfully with primary needling of the bleb. Ten of 11 eyes were successfully treated with primary bleb revision. Four eyes were successfully treated with a combination of needling and surgical revision and one eye required cyclocryotherapy. The overall success rate of needling or bleb revision was 96% after an average follow-up of 20 months. *Ophthalmology 92:955-958, 1985. Reprint requests to Jonathan E. Pederson, MD, Box 493 Mayo, University of Minnesota, Minneapolis, MN 55455.*

COMPLICATIONS OF SURGERY IN GLAUCOMA. EARLY AND LATE BACTERIAL ENDOPHTHALMITIS FOLLOWING GLAUCOMA FILTERING SURGERY. L J Katz, L B Cantor, G L Spaeth. The authors present one case of "early" post-trabeculectomy endophthalmitis and five eyes with "late" endophthalmitis three to nine years after

glaucoma filtration surgery. Differentiation of early versus late endophthalmitis is based on the time of onset and pathogenesis. Retrospective analysis of 1100 consecutive trabeculectomies revealed an incidence of less than 0.1% for early and 0.2% for late endophthalmitis. The authors discuss medical and surgical approaches and the presumed importance of identifying posterior extension into the vitreous and performing a therapeutic vitrectomy. *Ophthalmology 92:959-963, 1985. Reprint requests to L. J. Katz, MD, The Wills Eye Hospital, Ninth & Walnut Street, Philadelphia, PA 19107.*

LATE ONSET ENDOPHTHALMITIS ASSOCIATED WITH FILTERING BLEBS. s Mandelbaum, R K Forster, H Gelender, W Culbertson. The authors present 36 cases of late onset endophthalmitis in patients with filtering blebs. endophthalmitis appeared from 4 months to 60 years after bleb formation. Possible contributing factors could be identified only in a minority of patients. Aqueous, vitreous or both were cultured in all cases. Eighty-three percent of eyes were culture positive. Streptococci were the most frequent causative organisms, isolated from 57% of culture positive eyes. Twenty-three percent of eyes grew *Hemophilus influenzae.* Only two cases were caused by staphylococci. In general, the visual outcome was poor, probably primarily due to the virulence of the infecting organisms. Endophthalmitis remains a risk even many years after creation of a filtering bleb. The microbiologic spectrum in this clinical setting is considerably different from that of recent postoperative endophthalmitis. Based on the bacteriology and clinical course of the patients presented, the authors make recommendations for management. *Ophthalmology 92:964-972, 1985. Reprint requests to Sid Mandelbaum, MD, Bascom Palmer Eye Institute, P.O. Box 016880, Miami, FL 33101.*

AN INTERNATIONAL CLASSIFICATION OF RETINOPATHY OF PREMATURITY. CLINICAL EXPERIENCE. J T Flynn. Retinopathy of prematurity presents a problem in classification of its manifestations by which it may present to the clinician. A group of 23 ophthalmologists, representing 11 countries, met over a period of two years to develop a new classification. This paper presents the classification and the author's experience with its use in classifying the disease in 121 infants of birthweight less than or equal to 1300 grams over a 15-month period. *Ophthalmology 92-987-994, 1985. Reprint requests to John T. Flynn, MD, Bascom Palmer Eye Institute, P.O. Box 016880, Miami, FL 33101.*

MANAGEMENT OF RETINOPATHY OF PREMATURITY. W Tasman. Seventeen patients with symmetrical stage 3 retinopathy of prematurity (ROP) and plus disease as described in the International Classification of ROP had one eye randomized to cryotherapy and the other to control. Seventy-seven percent of the patients were under 1000 grams at birth and females outnumbered males by a 2 to 1 ratio. The average chronologic age at which cryotherapy was performed was three months. Twelve of seventeen treated eyes (71%) showed resolution of the ROP and 10 of 17 untreated eyes (59%) became significantly worse. However, only five patients had improvement in the treated eye and progression in the untreated eye, a number too small to provide statistical significance. Six eyes with Stage IV ROP were operated by encircling scleral buckling techniques because of total retinal detachment secondary to peripheral traction and cicatrization arising from the ridge. In five patients the unoperated eye had already developed a retrolental membrane, and in one patient bilateral detachments were present. Five of the six operated retinas were reattached. *Ophthalmology 92:995-999, 1985. Reprint requests to William Tasman, MD, 910 E. Willow Grove Avenue, Philadelphia, PA 19118.*

PROGRESSIVE INHERITED RETINAL ARTERIOLAR TORTUOSITY WITH SPONTANEOUS RETINAL HEMORRHAGES. C G Wells, R E Kalina. Tortuosity of the retinal arterioles complicated by spontaneous retinal hemorrhages is inherited as an autosomal dominant trait. Even when hemorrhages involve the fovea, spontaneous clearing with recovery of normal vision is the rule. We have studied members of three families in which arteriolar tortuosity increases with age. Tortuosity increases most dramatically during adolescence and affects small arterioles in the macular area. Retinal hemorrhages in children from two pedigrees led to extensive laboratory investigation because arteriolar tortuosity may be overlooked easily, particularly in children. Patients with spontaneous retinal hemorrhges and their relatives should be examined for retinal arteriolar tortuosity before being subjected to cardiovascular or hematologic studies. *Ophthalmology 92:1015-1024, 1985. Reprint requests to Craig G. Wells, MD, Ophthalmology Service, Pacific medical Center of Seattle, 1131—14th Ave. South, Seattle, WA 98195.*

REMOVAL OF EPIMACULAR MEMBRANES. R R Margherio, M S Cox, M T Trese, P L Murphy, J Johnson, L A Minor. The authors used vitreous surgery to remove epiretinal macular membrances in 328 cases, 184 (56%) of which had membranes that were considered idiopathic and 144 (44%) which were due to other causes. The 12- to 92- month follow-up showed that visual acuity improved two lines or more in 243 (74%) of the eyes, 79 (24%) were unchanged and 6 (2%) became worse. The membranes recurred in 24 (7.3%) eyes and 27 (8%) eyes developed complications. In the idiopathic cases visual results were significantly better and complications fewer. Rapidly progressive nuclear sclerosis was noted in 23 (12.5%) eyes. The degree of cystoid edema had no relationship to the final visual result. Pseudoholes

which were present in 14 (8%) of the idiopathic cases either became smaller or disappeared following successful surgery with an average increase in acuity of five lines. *Ophthalmology 92:1075-1083, 1985. Reprint requests to Raymond R. Margherio, MD, 3535 W. 13 Mile Road, Suite 507, Royal Oak, MI 48072.*

DERMAL-FAT GRAFT AS A PRIMARY ENUCLEATION TECHNIQUE. W R Nunery, K J Hetzler. The authors undertook a retrospective study of 36 dermal-fat grafts to determine the indications as a primary enucleation implant material. Out of these 26 (61%) required a reoperation in a three-year follow-up period. Sixty-seven percent required secondary prosthetic revision. The authors do not recommend dermal-fat grafting for routine enucleation due to high reoperation rate and prosthetic revisions. *Ophthalmology 92:1256-1261, 1985. Reprint requests to William R. Nunery, MD, Department of Ophthalmology, Indiana University, 702 Rotary Circle, Indianapolis, IN 46223.*

BLOOD STAINING OF THE CORNEA. LIGHT MICROSCOPIC AND ULTRASTRUCTURAL FEATURES. P J McDonnell, W R Green, R E Stevens, C B Bargeron, J L Riquelme. The authors examined 11 blood-stained corneas by light and transmission electron microscopy at intervals ranging from one month to seven years after initial staining occurred. Each case was associated with focal loss of endothelial cells or endothelial degenerative changes and elevated intraocular pressure. Globules of erythrocytic breakdown products penetrated the discontinuous endothelium and intact Descemet's membrane. Large deposits, primarily extracellular, displaced but did not interrupt the stromal lamellae. Keratocytes in blood-stained corneas constained erythrocytic breakdown products and hemosiderin, and were remarkable for extensive degenerative changes in contrast to keratocytes in areas of cleared cornea, which contained smaller amounts of hemosiderin and were relatively normal. After one year, clearing could be seen to involve peripheral and posterior stroma, and to a lesser degree, the anterior stroma. We found no evidence to support the contention that blood-derived macrophages play a role in the clearing of erythrocyte debris. the stereotyped pattern of peripheral, posterior, and anterior stromal clearing observed seems to be consistent with diffusion of hemoglobin breakdown products out of the cornea as the primary mechanism of clearing. *Ophthalmology 92:1668-1674, 1985. Reprint requests to W. Richard Green, MD, Eye Pathology Laboratory, Johns Hopkins Hospital, 600 N. Wolfe Street, Baltimore, MD 21205.*

EXAMINATION OF THE VITREOUS. A COMPARISON OF BIOMICROSCOPY USING THE GOLDMANN AND EL BAYADI-KAJIURA LENSES. S M Buzney, J J Weiter, H Furukawa, H Hirokawa, F I Tolentino, C L Trempe, R E Rapp. The authors performed vitreous examinations using the three-mirror Goldmann and the preset El Bayadi-Kajiura lenses on 222 eyes. Clinical findings using the two lenses differed in 10% of the variables studied. The accuracy of the El Bayadi-Kajiura technique was confirmed by clinical and histological examination of 20 animal eyes with experimentally altered vitreous. The Goldmann lens afforded examination of peripheral vitreous and better identification of cells in the vitreous, whereas the El Bayadi-Kajiura lens permitted better visualization of complex vitreoretinal relationships. *Ophthalmology 92:1745-1748, 1985. Reprint requests to Library, Eye Research Institute, 20 Staniford Street, Boston, MA 02114.*

EPIDEMIC POSTSURGICAL *CANDIDA PARAPSILOSIS* ENDOPHTHALMITIS. CLINICAL FINDINGS AND MANAGEMENT OF 15 CONSECUTIVE CASES. W H Stern, E Tamura, R A Jacobs, V G Pons, R D Stone, D M O'Day, A R Irvine. The authors studied 15 cases of postoperative *Candida parapsilosis* endophthalmitis occurring secondary to a contaminated lot of an irrigating solution. All patients underwent a vitreous tap or diagnostic and therapeutic vitrectomy. Eleven of the 15 specimens were positive for the organism. Fourteen patients were treated with pars plana vitrectomy surgery. All patients were treated with intravitreal amphotericin B and systemic amphotericin B and 5-fluorocytosine. Two clinical recurrences were successfully treated withintravitreal amphotericin B, removal of the pseudophakos, and oral ketoconazole. the intraocular lens was retained in 11 of the 14 pseudophakic patients. Final visual acuities ranged from 20/25 to no light perception with eight of 15 patients having 20/60 or better visual acuities. Measurable levels of intraocular amphotericin B were found after systemic amphotericin B administration. Two patients with totals of 20 and 30 ug of intravitreal amphotericin B over 48 and 96 hours, respectively, had near normal ERGs one year later. Posterior capsulotomy and vitrectomy appear to decrease amphotericin B toxicity and allow sequential intraocular injection of this drug within a short time period. *Ophthalmology 92:1701-1709, 1985. Reprint requests to Walter H. Stern, MD, 400 Parmassus Avenue, San Francisco, CA 94143.*

TUMOR SEEDING IN OCULAR FINE NEEDLE ASPIRATION BIOPSY. Z A Karcioglu, R A Gordon, G L Karcioglu. the authors studied the occurrence of tumor cell seeding in needle tracks following fine needle aspiration biopsy of intraocular tumors. They performed 16 biopsies in four enucleated globes, 3 with retinoblastoma and 1 with choroidal melanoma, immediately after surgery. The needle tracks fromthe pars plana region were serially sectioned for histological examination. The authors found clusters of tumor cells within six of the 11 needle tracks that could be histologically identified. *Ophthalmology 92:1763-1767, 1985. Reprint requests to Zeynel A. Karcioglu, MD, Department of Ophthalmology, Tulane Medical School, 1430 Tulane Avenue, New Orleans, LA 70112.*

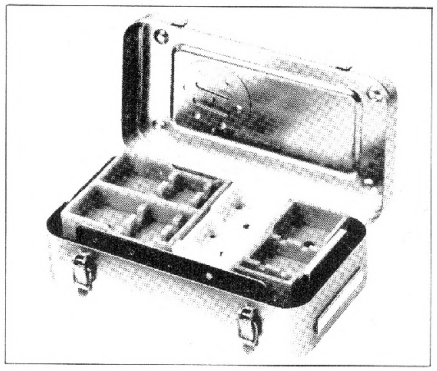
MANAGEMENT OF VITREOUS CAVITY HEMORRHAGE FOLLOWING PARS PLANA VITRECTOMY FOR DIABETIC RETINOPATHY. G W Blankenship. The author suggests that the frequent complication of vitreous cavity hemorrhage following diabetic vitrectomy can be managed by either vitreous cavity lavage or outpatient fluid-air exchange procedures. Visual acuities of 6/60 or better and clear vitreous cavities were obtained in 18% of aphakic lavage cases, 47% of lavage cases combined with lens removal, 47% of phakic lavage cases, one of three aphakic exchange cases, and 68% of phakic exchange cases. Iris neovascularization was a major complication of the aphakic eyes occurring in 76% of aphakic lavage cases, 67% of lavage cases combined with lens removal, 14% of phakic lavage cases, all three of the aphakic exchange cases, but in only 25% of phakic exchange cases. *Ophthalmology 92:594-602, 1985. Reprint requests to George W. Blankenship, MD, Bascom Palmer Eye Institute, P.O. Box 016880, Miami, FL 33101.*

COMPARISON OF INTRAOCULAR IRRIGATING SOLUTIONS IN PARS PLANA VITRECTOMY. S I Rosenfeld, S R Waltman, R J Olk and M Gordon. The authors conducted a prospective, randomized, masked clinical study on 71 patients to examine the effects of pars plana vitrectomy on the corneal edothelium comparing Balanced Salt Solution (BSS®) to BSS-Plus® as an intraocular irrigating solution. A significant 6.9% decrease in endothelial cell density was observed among all patients at six months postoperatively, compared to preoperative values, using the contralateral eye as a control. No significant difference in endothelial cell loss was found between BBS® and BBS-Plus® eyes. Both aphakic eyes and those undergoing lensectomy (with vitrectomy) showed a significantly greater reduction of endothelial cell density at six months compared to phakic eyes. No signficant difference in corneal thickness was observed at six months postoperatively compared to preoperative values. For the one-year duration of our study BBS® was as efficacious in preserving the integrity of the corneal endothelium as was BBS-Plus®. *Ophthalmology 93:109-115, 1986. Reprint requests to Stephen R. Waltman, MD, Department of Ophthalmology — Box 8096, 660 South Euclid Avenue, St. Louis, MO 63110.*

TREATMENT OF SUPERIOR LIMBIC KERATO-CONJUNCTIVITIS BY THERMOCAUTERIZATION OF THE SUPERIOR BULBAR CONJUNCTIVA. I J Udell, K R Kenyon, M Sawa, C H Dohlman. Superior limbic keratoconjunctivitis, a chronic and recurrent inflammatory disease of the superior tarsal, bulbar and limbal conjunctiva responds to topical silver nitrate. As an alternative treatment in 11 patients (13 eyes), the authors applied thermal cautery to the inflamed superior bulbar conjunctiva following subconjunctival injection of 2% xylocaine. Eight patients (73%) responded positively to thermocautery. Of the positive responders, 63% (5 patients) had been considered silver nitrate treatment failures. Keratitis sicca was additionally noted in 55% of the patients studied. Impression cytology of involved superior bulbar conjunctiva was nearly devoid of goblet cells during the acute stage of the disorder. Following successful cauterization, goblet cells returned. Thus, thermocauterization of the superior bulbar conjunctiva appears to be a safe and effective mode of therapy for superior limbic keratoconjunctivitis. *Ophthalmology 93:162-166, 1986. Reprint requests to Ira J. Udell, MD, Department of Ophthalmology, Long Island Jewish Medical Center, New Hyde Park, NY 11042.*

CONJUNCTIVAL AND CORNEAL INTRAEPITHELIAL AND INVASIVE NEOPLASIA. J C Erie, R J Campbell, and T J Liesegang. The authors studied the histopathologic findings and clinical records of 98 patients with conjunctival and corneal intraepithelial neoplasia and 22 patients with invasive neoplasia. They evaluated the pathologic material for cell type, degree of dysplasia, margins of excision, and change in pattern with recurrence. Clinical records were reviewed for demographic features, presenting symptoms, clinical appearance, therapy, and subsequent course. Recurrences occurred in 23 patients with CIN and 9 patients with invasive neoplasia. Intraocular or orbital extensions or both occurred in four patients and metastatic disease in two patients. The cell type, clinical appearance, and degree of dysplasia did not correlate with recurrence; involvement of the margins of the initial excision was an important prognostic sign for recurrence. *Ophthalmology 93:176-183, 1986. Reprint requests to Thomas J. Liesegang, MD, Department of Ophthalmology, Mayo Clinic, Rochester, MN 55905.*

FLOPPY EYELID SYNDROME: MANAGEMENT INCLUDING SURGERY. M B Moore, J Harrington, J P McCulley. The authors describe six overweight patients, five men and the first woman with floppy eyelid syndome. Five patients had bilateral ocular involvement. Only two patients were free of other ocular surface problems. Concurrent diagnoses included belpharitis, keratoconjunctivitis sicca, lagophthalmos, medicamentosal conjunctivitis, molluscum contagiosum, and masquerade syndrome. Five patients responded to appropriate therapy, which included shielding the eyes during sleep. Three patients underwent a horizontal lid tightening procedure, which resulted in permanent correction of their floppy eyelids and resolution of their ocular signs and symptoms. *Ophthalmology 93:184-188, 1986. Reprint requests to Mary Beth Moore, MD, Department of Ophthalmology, University of Texas Health Science Center, 5323 Harry Hines Boulevard, Dallas, TX 75235.*



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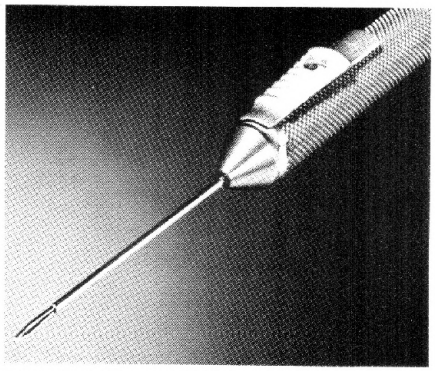

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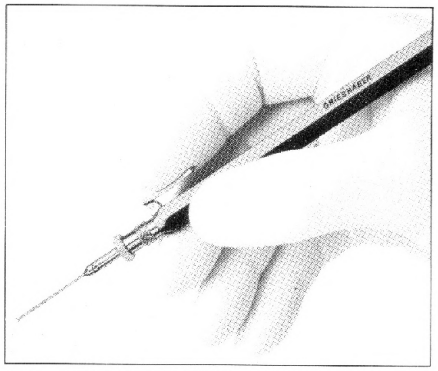

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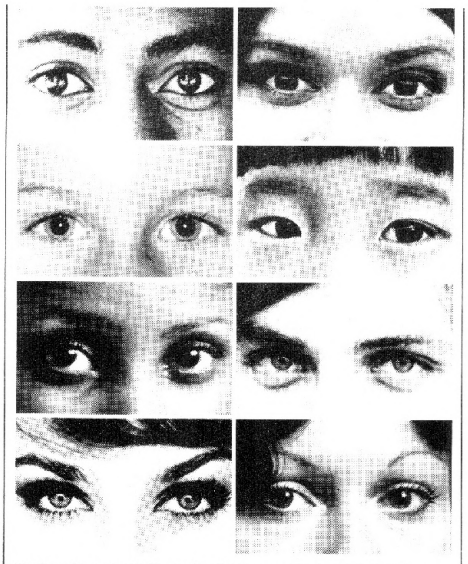

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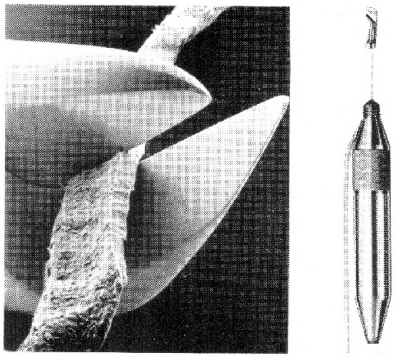

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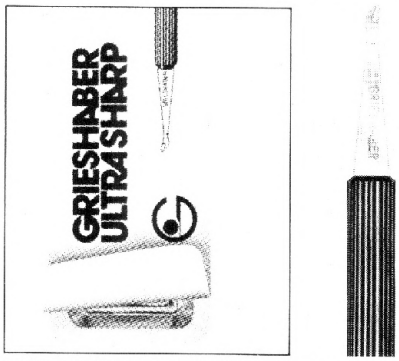

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