Cataract surgery in leprosy patients[1]

T J ffytche FRCS
St Thomas's Hospital, London SE1 7EH

Introduction

Visual problems in patients with leprosy very often have an effect that far outweighs their severity in normal individuals. The life of the leprosy patient is of necessity one of constant care and attention to the anaesthetic areas of the body in order to avoid trauma and infection; and visual surveillance of the extremities becomes a code to be practised daily by sufferers of this disease. Even a minor abrasion or wound may lead to eventual loss of a digit or permanent impairment of the function of a limb. Blindness, if it occurs for any reason in these patients, adds immeasurably to the already great burdens that these unfortunate individuals carry because of their peripheral nerve lesions, and frequently the onset of severe visual impairment accelerates the complications of this chronic disabling disease.

Vision in leprosy patients, as well as being affected by the common ocular changes that occur in an ageing population, is at risk in several ways. The eye may be involved as a complication of facial and trigeminal palsy, with exposure and neuroparalytic keratitis, secondary infection and corneal scarring leading at times to perforation. Alternatively, the globe may become invaded in lepromatous leprosy by large numbers of leprosy mycobacteria causing a chronic insidious iridocyclitis, secondary cataract, secondary glaucoma and eventual phthisis bulbi. Such ocular complications are present in the majority of cases with severe visual impairment. In addition, an acute plastic iridocyclitis with secondary glaucoma may occur as part of the lepra reaction and patients may also develop a specific leprous keratitis, with scattered nummular opacities in the cornea (Hobbs & Choyce 1971, Choyce 1972). Reports of choroidal and retinal involvement in leprosy are exceptionally few, although an incidence of fundus changes of about 10% has been reported (Balakrishnan 1966, Garus 1967). The most serious ocular complications occur in the lepromatous type of disease rather than the borderline and tuberculoid.

The WHO estimate of the number of leprosy patients is 11.8 million sufferers, but most authors consider the figure to be in the region of 15 million (Choyce 1973, G F Harris 1979, personal communication). Figures for ocular involvement and blindness vary geographically, as there is considerable racial variation: Asiatic races are more prone to develop the lepromatous form of the disease than Africans and Europeans and therefore carry a higher incidence of blindness. Hobbs surveyed 507 patients in the Far East and found an incidence of blindness of 7.1% (Hobbs & Choyce 1971). No figures for South Korea are available.

A reservoir of blind and severely visually handicapped patients exists in South Korea in several leprosy communities, and a project was set up with the help of the Institute of Ophthalmology and The Royal Northern Hospital, London, to obtain for pathological examination specimens of iris tissue, aqueous humour and serum from patients with different types of leprosy. In addition to the scientific aims of the project it was hoped that cataract surgery in the patients included in the study would be beneficial in the management of their disease; the chances of many of these patients receiving this surgical treatment were otherwise poor. The project received financial aid from LEPRA and the results of the pathological studies are to be published elsewhere.

[1] Paper read to Section of Ophthalmology, 14 December 1978. Accepted 27 July 1979

0141-0768/79/110826-05/$01.00/0

Ocular findings

Several individuals had contracted leprosy in childhood but all had received anti-leprosy therapy and the disease was inactive. Of the 44 patients submitted to surgery 42 had the lepromatous form of the disease and 2 showed tuberculoid features; this reflected the much higher incidence of ocular complications in lepromatous leprosy. All eyes were examined with the slitlamp and the pathological changes were recorded. The ocular manifestations of the 88 eyes are listed in Table 1. The visual acuity was measured by a standard Snellen's chart with Korean symbols and with an E-test type. Figure 1 demonstrates the visual acuity in the 88 eyes examined.

Table 1. Ocular manifestations in 88 eyes

Enucleated	1	Iris pearls	4
Phthisis	7	Iris floccules	2
Cataract	79	Lagophthalmos	7
Aphakia	1	Trichiasis	6
Corneal opacities	41	Pterygium	5
Enlarged corneal nerves	2	Dislocated lens	1
Iris atrophy	38	Retinal detachment	1
Posterior synechiae	37	Glaucoma	1

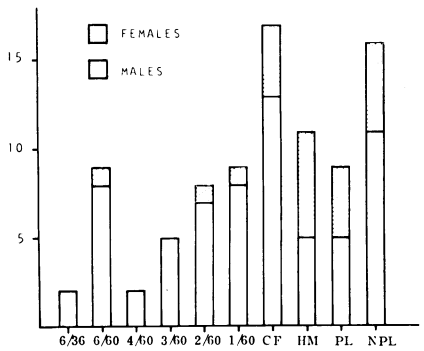

Figure 1. Preoperative visual acuity in 44 patients (88 eyes)

All eyes except one had cataract and over 50% had corneal changes varying from small isolated opacities to diffuse changes and band-shaped degeneration. The incidence of corneal changes as a cause of blindness in leprosy is, however, much higher than this; a large number of patients were rejected for surgery because of inoperable corneal changes. Iris pearls and enlarged corneal nerves were uncommon. Iris pearls tend to be a feature of active leprosy and are associated with chronic iridocyclitis. In time the pearls break off from the iris, precipitate in the bottom of the anterior chamber and eventually absorb. Raised intraocular pressure was seen in only one patient and one case of retinal detachment was seen in an already aphakic eye. Observations of the fundi could not be made because of the lens and corneal opacities, and postoperative examinations of the retina and choroid for signs of pathological involvement of the posterior segment will be the subject of a further study.

Patients were selected from three leprosy centres in South Korea: those at Yosu, Chinju and the Island of Sorokdo. Over a hundred cases were examined clinically. Many had advanced disease with disabling deformities of the limbs, loss of fingers and toes and severe facial involvement. Ocular examination showed inoperable corneal disease in a large number of cases and several cases of phthisis bulbi were observed. All patients had grossly impaired vision or were blind.

A total of 44 patients with cataract were submitted for surgery, 33 male and 11 female. This preponderance of male cases did not indicate any male predilection for the disease or its ocular complications, but rather reflected the male domination of Korean society and the natural reluctance of Korean women to present themselves for examination. The average age of the patients was 63 (49–77) and the mean duration of the disease was 39 years for males and 35 for females.

The preoperative acuity in the 44 eyes undergoing cataract surgery is shown in Figure 2. The majority of eyes operated on had vision of counting fingers, and the best recorded preoperative acuity was 3/60. Eyes with minimal corneal damage or opacities away from the axial line were selected; most had iris atrophy and synechiae but surgery was not performed on any case with active iritis.

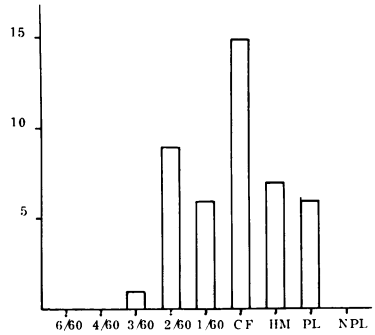

Figure 2. Preoperative visual acuity in 44 eyes undergoing cataract surgery

Operative procedure

All patients were operated on under local anaesthesia with a premedication of pethidine 50 mg and diazepam 10 mg intramuscularly one hour before surgery. Chloramphenicol drops were installed six-hourly for the preceding 24 hours. Lignocaine 2% was used for facial block and retrobulbar injection and the cornea was anaesthetized with local tetracaine drops. No preoperative dilating drops were used as most pupils were immobile from synechiae. In two cases it was necessary to open an existing lateral tarsorrhaphy and in one a medial tarsorrhaphy.

A standard ab-externo incision was made with a Bard-Parker knife after reflecting a limbal-based conjunctival flap and the section was completed with scissors. In all cases a broad iridectomy was carried out and posterior synechiae which were almost invariably present were broken with an iris repositor. An inferior sphincterotomy was performed routinely. Chrymotrypsin was instilled prior to lens extraction and the lens removed by expression combined with the application of capsule forceps in the late stages of delivery. This compromise method of lens removal was adopted as it was found at an early stage that the capsule in these secondary cataracts was very fragile and ruptured easily. In five difficult cases disposable cryotherapy packs were used; these had been left at the hospital five years previously by a visiting American ophthalmologist, and although their guaranteed life had expired several years earlier they all worked flawlessly. The wound was closed with 5 corneoscleral sutures of 8-0 virgin silk and air instilled into the anterior chamber. The conjunctiva was closed with interrupted virgin silk and atropine 1% drops instilled. The operation was completed by a subconjunctival injection of methylprednisolone and eye closure maintained by an upper lid suture.

Following surgery the patients remained in hospital for one night, where they were content to lie on mattresses on the floor. They were discharged to the community guest house the next

day, taking atropine 1% drops and neomycin and hydrocortisone (Neocortef) ointment twice daily. Subsequent examinations and visual acuity measurements were undertaken by Dr M Topple.

Results

44 lens extractions were performed (Table 2). The technical problems at surgery were mainly related to the fragility of the lens capsule associated with adherence of the iris with synechiae.

Table 2. 44 lens extractions

Uncomplicated	30	
Extracapsular	9	(planned 1, capsule removed 5)
Vitreous loss	6	(intracapsular 5, extracapsular 1)
Postoperative hyphaema	3	
Postoperative iritis	2	
Retrobulbar haematoma	1	

These conditions necessitated removal of the lens by expression rather than by application of capsule forceps; cryotherapy, which would have been the ideal method of extraction, was only available in a limited number of cases. In consequence, vitreous presentation and loss during expression of the lens occurred in 6 cases and was managed by anterior vitrectomy with few apparent short-term postoperative problems. Postoperative iritis was infrequent, although regarded as a potentially important complication. It is probable that the routine broad iridectomy and inferior sphincterotomy, together with the use of subconjunctival steroid injections and local steroid/antibiotic therapy postoperatively, were factors in avoiding this.

Visual acuity in the 44 operated eyes was measured 4–6 weeks after surgery. All measurements were made with a +10 diopter lens, as it was unlikely that anything more than the simplest aphakic correction would be available for these patients. The results of these measurements are shown in Figure 3 and comparison of the preoperative and postoperative

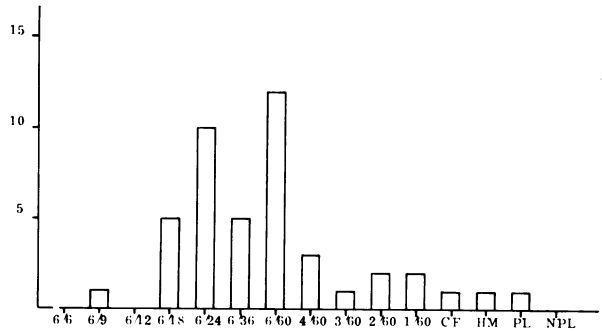

Figure 3. Postoperative visual acuity

visual acuities are demonstrated in Figure 4. In all but 3 patients the visual acuity was improved by surgery and in over 60% the acuity improved by at least three lines on the Snellen chart.

Summary

Blind patients from three leprosy centres in South Korea were examined and 44 underwent cataract surgery. The ocular findings in these cases are recorded and the surgical techniques adopted are described. The early visual results demonstrate that the majority of these unfortunate individuals can be benefited by this simple form of cataract surgery, especially as avoidance of the late crippling complications of leprosy depend to a large extent on the patient's own visual surveillance of the anaesthetic areas of the body.

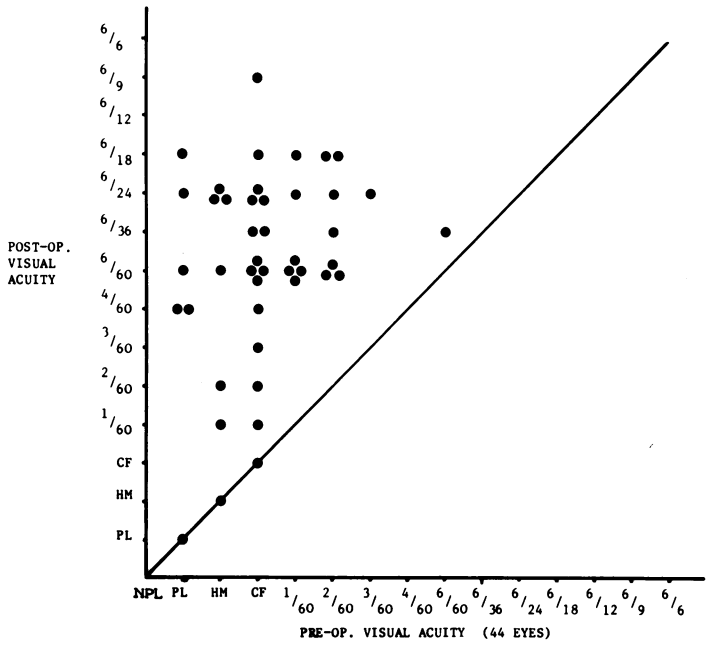

Figure 4. Comparison of preoperative and postoperative visual acuities

Acknowledgments: I am indebted to Dr Stanley C Topple, Dr Mia Topple, Dr Yoo Kyeung Un and all the staff of the Wilson Leprosy Centre and Rehabilitation Hospital, Yosu, South Korea for their invaluable help and assistance during my stay at their hospital. This work received encouragement and advice from Professor A Garner, Mr Alan Friedmann, Dr Geraint James and Mr D P Choyce. The project was financed by LEPRA and I am grateful to Mr G F Harris, Director of LEPRA for his assistance.

References

Balakrishnan E (1966) *Journal of the All India Ophthalmological Society* **14**, 214–216
Choyce D P (1972) *Proceedings of the Royal Society of Medicine* **65**, 955–960
Choyce D P (1973) *Tropical Doctor* **3**, 1–4
Garus Y I (1967) *Vestnik Oftal'mologii* **80**, 66–69
Hobbs H E & Choyce D P (1971) *Leprosy Review* **42**, 131–137