EXTRACAPSULAR CATARACT EXTRACTION WITH INTRAOCULAR LENS IMPLANTATION IN LEPROSY AND NON-LEPROSY PATIENTS: Visual Outcome and Complications

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SUMMARY
Cataract is the leading cause of blindness in leprosy patients. Sight restoration to blind leprosy patients prevents them from injuring their anaesthetic limbs.

The visual outcome and complications of extracapsular cataract extraction with intraocular lens implant in 42 leprosy and 91 non-leprosy patients were compared.

The mean age of the study population was 57.1 years; that of non-leprosy patients was 57.4 years while that of leprosy patients was 56.5 years. The male to female ratio was 1:1 — in the non-leprosy group, the ratio was 1.2:1 and in the leprosy group it was 1:1.2. The ocular lesions seen before surgery and the complications of surgery were comparable in the two groups of patients. Visual outcome between the two groups was similar — 4.3% of the non-leprosy and 4.8% of the leprosy patients had poor visual outcome.

With the introduction of the multidrug therapy, the causes of cataract, complications and short-term visual outcome of extracapsular cataract extraction with intraocular lens implant in leprosy and non-leprosy patients are similar.

INTRODUCTION

Cataract is the leading cause of blindness in leprosy patients. In leprosy, cataract results from recurrent inflammation of the uvea, use of steroids to treat reactions and the age-related components.[1] Blind leprosy patients present a pathetic situation as the lack of sight puts them at greater risk of injury to their anaesthetic extremities.

Treatment of cataract will reduce the burden of blindness in leprosy patients by up to 50% or more.[2,3] Repeated intraocular inflammation is thought to make cataract extraction more difficult in leprosy patients as poor dilatation of the pupil and low intraocular pressure become problems to contend with. However, with only 5-10% of cataracts in leprosy patients thought to be due to ocular inflammation,[1] it is expected that the outcome of cataract surgery will be similar to that in the general populace. Results of intracapsular cataract extraction,[4] extracapsular cataract extraction with intraocular lens implant[5,6] and phacoemulsification[7] have shown significant improvement in the vision of leprosy patients. The complications of surgery may be more common in leprosy patients, but the outcome of surgery has been shown to be similar in leprosy and non-leprosy patients.[8] With reports of good outcome of intraocular lens implantation, there has been a need to compare these outcomes with the results in non-leprosy patients.[5]

This study is aimed at comparing the short-term visual outcome of extracapsular cataract extraction with intraocular lens implant in leprosy and non-leprosy patients, the complications of surgery and the reasons for poor outcome of surgery in both groups.

MATERIALS AND METHODS

The Netherlands Leprosy Relief Association provides free cataract surgery to leprosy patients in thirteen states in north eastern Nigeria. The surgery session takes place after a reasonable number of patients have been diagnosed by the eye nurse in a leprosy hospital usually located in a rural area as close to the patient's residence as possible. To encourage integration, cataract blind non-leprosy patients who present for surgery are also operated free during the same surgical session. This study includes all bilateral cataract blind patients that presented between November 2003 and March 2004 at the eye clinics of the National Leprosy and Tuberculosis Training Centre, Saye-Zaria and the Leprosy Hospital, Molai-Maiduguri. Patient evaluation included a general examination to exclude patients with systemic diseases, especially hypertension. An ocular examination was done with a pen torch and an X4 loupe to check the status of the lid, conjunctiva, cornea, anterior chamber, pupil and lens. Lens maturity was confirmed by the absence of the red reflex on funduscopy.

Cataract extraction was performed under an operating microscope with fixed magnification by one surgeon (C.M.) under local anaesthesia (2% lignocaine) by standard extracapsular cataract extraction through a

fornix-based conjunctival incision. Lens nucleus was expressed after a 'can opener' capsulotomy; cortical matter was aspirated using a simcoe cannular. Patients with iris atrophy or miosed pupil had a sector iridectomy done prior to nuclear expression. Intraocular lens insertion was under hydroxymethyl cellulose and lens power ranged between 19 and 22 dioptres. Lens power for emmetropia was not determined prior to surgery as there were no facilities for biometry. The limbal section was closed using 9/0 nylon with 5 interrupted sutures; subconjunctival gentamicin and dexamethasone were given on the table. Patients were placed on topical mydriatics for one week after surgery, while topical antibiotics and steroids were continued for 4-5 weeks depending on the presence of ocular inflammation. Patients were discharged two days after surgery and expected to report at one and six weeks after discharge. Visual acuity was assessed with the Snellen or illiterate 'E' chart at six metres and vision was categorized as follows: less than 6/60 was considered a poor outcome; 6/24 -6/60 a borderline outcome, and 6/6 - 6/18 a good outcome.

RESULTS

Patient Characteristics

A total of 170 patients were operated on, out of which 135 returned for follow-up six weeks after discharge. Of the 35 lost to follow-up, 6 (12.5% of leprosy patients) were leprosy patients while 29 (23.8% of non-leprosy patients) were non-leprosy patients. There was no gender disparity in those lost to follow-up. Of those who returned for follow-up, 66 (48.9%) were female while 69 (51.1%) were male; the male to female ratio was 1:1. Ninety-three were non-leprosy while 42 were leprosy patients. The mean age of the non-leprosy patients was 57.4 years (S.D. 10.3); while that of leprosy patients was 56.5 years (S.D. 8.3). There was no significant difference in the mean age of the two groups (X^2= 23.8; p= 0.47), though the non-leprosy group had a larger percentage of younger patients. The gender distribution was similar in both groups. The age group distribution, gender and leprosy status of these patients are shown in table 1.

Table 1. Age group distribution by sex and leprosy status

Age group	Leprosy		Non-leprosy	
	Females	Males	Females	Males
20-29	0	0	1	0
30-39	0	0	3	1
40-49	2	5	3	6
50-59	7	6	22	14
60-69	11	6	16	11
70-79	3	2	5	9
80-89	0	0	1	1
Total	23	19	51	42

Pre-op Ocular Status

All patients were blind prior to surgery with none of the patients having a visual acuity of better than counting fingers at 3 metres. In the leprosy group, all patients had been released from treatment. Three eyes had evidence of previous uveitis, 2 eyes had undergone tarsorrhaphy while 3 eyes had had tarsal rotation done, and another 2 eyes had mild corneal opacification (maculae). In the non-leprosy group, 5 eyes had had tarsal rotation and 4 eyes had corneal opacity. Only the 3 eyes (7.1%) with evidence of previous uveitis could be said to have a leprosy-related cataract. Details of the pre-operative status of the eyes in the two groups are shown in table 2.

Table 2. Ocular lesions seen pre-op

Lesion	Leprosy	Non-leprosy	Total
Corneal opacity	2	4	6
Uveitis	3	0	3
Tarsal rotation	3	5	8
Tarsorrhaphy	2	0	2
Total	10	9	19

Complications

Intraoperative complications included vitreous loss, rupture of the posterior capsule, while postoperative complications included severe uveitis and hyphaema, which cleared with treatment except in one leprosy patient where uveitis was associated with poor visual outcome. There was no significant difference between the two groups in the spectrum of complications seen as shown in table 3.

Table 3. Intra and postoperative complications

Complications	Leprosy	Non-leprosy	Total
Capsule rupture	3	5	8
Vitreous loss	2	6	8
Hyphaema	1	3	4
Uveitis	2	2	4
Residual cortex	0	3	3
Total	8	19	27

Visual Outcome and Causes of Poor Outcome

Uncorrected visual outcome at six weeks after discharge revealed that 4 (4.3%) non-leprosy and 2 (4.8%) leprosy patients had poor outcome. In the leprosy group, 23 (55%) patients had borderline outcome compared to 44 (47%) non-leprosy patients. A breakdown of the patients with poor outcome revealed the two patients could count fingers at 3 metres while the remaining four patients could count fingers at 1 metre. There was no statistically significant difference in the visual outcome between the two groups (X^2= 0.73, p= 0.69). Causes of poor outcome in the non-leprosy group included uveitis in two patients who were non-complaint with their

medications; one patient with a history of hypertension had vascular occlusion, while the other had age-related maculopathy. In the leprosy group the causes of poor outcome included macular scar (1 patient) and uveitis (1 patient). Table 4 gives the details of the visual outcome in both groups.

Table 4. Visual outcome six weeks after discharge

Visual category	Leprosy (%)	Non-leprosy (%)	Total (%)
Good (6/6-6/18)	17 (40.5)	45 (48.4)	62 (45.9)
Borderline (6/24-6/60)	23 (54.8)	44 (47.3)	67 (49.6)
Poor <6/60	2 (4.8)	4 (4.3)	6 (4.4)

DISCUSSION

The main finding of this study was the fact that the visual outcome between leprosy and non-leprosy patients was comparable. This is similar to what has been reported in other studies.[9,10] Since only about 7% of leprosy patients had evidence of previous uveal inflammation, age may have been responsible for the other causes of cataract, which may explain the similarity in outcome between the two groups. Another factor responsible for this similarity in visual outcome could be the careful selection of patients for surgery in a camp situation as poor outcome of surgery carries with it poor publicity and could prevent other patients from coming for surgery in the future.

Functional visual acuity is described as vision with available correction, and the World Health Organization recommends that surgeons aim at less than 5% of patients having a vision of <6/60 after surgery.[11] This study shows that in both leprosy and non-leprosy patients, less than 5% had a poor outcome. This could be attributed to the strict selection criteria mentioned above, the use of intraocular lenses and the low incidence of intraoperative and postoperative complications seen. However, this study could not attain the recommended 80% for vision of 6/18 or better. A number of factors could be responsible for this: the lack of facilities for the preoperative determination of intraocular lens power for emmetropia, the lack of refraction after surgery, and the few patients with mild corneal opacity before surgery. Biometry prior to surgery or refraction and provision of spectacle correction after surgery would improve the proportion of patients with good outcomes.

Interestingly, more female leprosy patients were operated upon. This may be because the surgical site was close to their homes and the fact that surgery was free. Female patients are less able to pay for eye care, unwilling to travel far from their homes and so do not easily assess eye care services.[12]

The age at which cataract occurred in both groups was similar, though the non-leprosy group had a larger number of younger persons. This can be attributed to the low prevalence of leprosy-related complications following the introduction of the multi-drug therapy (MDT)[1] and thus the lower chance of steroid and uveitis-related cataracts. As seen in this study, the low numbers of leprosy-related complications have been reported in other studies.[5] The low numbers of leprosy-related complications and the age structure of the study population would further support the assumption that most of the cataracts were age-related.

The complications of surgery and causes for poor outcome were few and similar in both groups. Performing broad iridectomy in patients with pupillary problems reduced the risk of intraoperative complications and further increased their chance of having better visual outcome.[13] Except for severe uveitis seen in one patient, none of the complications were directly related to leprosy. This may be related to the fact that all the leprosy patients had been released from treatment. Intensive supervised steroid treatment two days after surgery and prior to discharge further reduced the postoperative complications seen.[1]

The short-term outcomes of cataract surgery in the leprosy and non-leprosy patients are comparable and good. However, long-term results will be more reflective of the true situation in the community. This cohort will be followed up for a longer period to assess the long-term outcome of cataract surgery.

CONCLUSION

A large proportion of the causes of cataract in leprosy patients are not related to the disease. With good patient selection and attention to surgery, the complications of cataract surgery in leprosy patients can be minimized with satisfactory outcomes that are comparable to what is obtained in non-leprosy patients. In addition, cataract surgical service can be a channel for the integration of services between leprosy and non-leprosy patients.

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