Ocular Complications in Longstanding Leprosy Patients at the Tampoi Leprosarium, Johore, West Malaysia

by Dr. (Mrs.) Jenny P. Deva
MBBS (OSMANIA.HYBD.) D.O.(IRELAND)

THE TAMPOI LEPROSARIUM was opened in October 1937. The total inmates were then 550. At the time of the survey however in October and November 1972, the total number of inmates was 296.

The Leprosarium is situated about 5 miles from the General Hospital in Johore Bahru.

Area Served by Leprosarium

Different states are served by this Leprosarium situated in the south of Malaya. The northern parts of Malaya are served by another Leprosarium situated in Sungei Buloh.

Johor State itself has the maximum number attending the Tampoi Leprosarium. After that come Malacca, Pahang, Negri Sembilan and Selangor – all these comparatively less in number.

Within Johor itself – the maximum number of patients come from Johor Bahru itself – then in decreasing numbers from Muar, Batu Pahat and Pontian. Very few patients come from the east coast of Johor state-areas of Kota Tinggi and Mersing.

Scope and Method of Survey:

Eye examinations were made with the help of a corneal loupe and Ophthalmoscope. Such cases as had to be seen by *slit* lamp or for confirmation by the Eye Specialist, Mr. S. Selvarajah were seen in the Eye-unit, General Hospital, Johor Bahru.

All the cases whether Lepromatous, Tuberculoid or Borderline were examined and their ocular lesions recorded. The lesions and findings are similar to those of Weerekoon's article 'Ocular Leprosy in West Malaysia' in the British Journal of Ophthalmology, Vol. 56 No. 2 February 1972. To quote him; "It is admitted that Active cases, mainly those involving the iris and sclera, were not numerous, but longstanding ocular involvement of every possible kind was rather common".

Only 239 out of 296 were examined. The numbers according to sex and ethnic origin were as follows:–

Male	165	Chinese	184	Lepromatous	52
Female	74	Malay	42	Tuberculoid	94
		Indian	13	Borderline	93
	239		239		239

Incidence of Eye Lesions:

To quote again, the opening sentences from 'The Eye in Leprosy' by D.P. Choyce in Cochrane's book on Leprosy, aptly fit in here.

> "The eyes are frequently involved in Leprosy either by the presence of bacilli in the eye, or secondary to involvement of Vth, or VIIth nerves, or by sensitization of the ocular tissues to leprous processes elsewhere in the body".

The incidence differs greatly with different authorities. However, in the group of inmates

examined in this Leprosarium – the ocular complications were apparently higher among the Lepromatous and Borderline cases in comparison with Tuberculoid group. In the Tuberculoid group, VIIth nerve involvement with paralysis of orbicularis muscle causing lagophthalmos and exposure keratitis was quite common.

Summary of Literature: (By D.P. Choyce 'The Eyes in Leprosy')

There are essentially two types of Leprosy or Hansen's Disease. One in infective or Lepromatous and the other Non-infective or Tuberculoid. Intermediate between these two is the Borderline group. Ocular involvement of the Eyes may occur in three ways:–

1) Direct spread of Leprous lesions from the lids, the face, and the nose and nasolaerimal apparatus to the eye itself.
2) Eye lesions secondary to lesions of Vth. and VIIth. nerves.
3) Direct infections of the eyeball with Leprosy bacilli.

1) **Direct Spread of Leprous Lesions:–**

This mode of spread is rare and ocular adnexal lesions might be present in the absence of an affected eye.

The following lesions may be seen:–

a) Gross lepromatous masses in the lids
b) Entropion lid may result and
c) Trichiasis resulting in Keratitis and Ulcer cornea
d) Madarosis
e) Dacrocystitis

2) **Eye Lesions Secondary to Vth and VIIth Nerve**

a) Vth. Nerve involvement may lead to corneal and conjunctival anaesthesia.
b) VIIth. Nerve involvement leads to lagophthalmos. Exposure Keratitis results if the Facial Palsy is marked.

3) **Direct Infection of Eyeball by Leprosy Bacilli**

How Leprosy bacilli reach the eye is still a disputable topic. Two views are held:

a) Majority favours the Nerval route – via the vth Nerve.
b) Others favour a Herxheimer type – sensitivity reaction of the deeper tissue like the iris.
c) Others think of a blood-borne infection.

Ocular Affection Can Present As Follows:–

I. **Conjunctivae and Episclera:**

Nodules may present commonly in the interpalpebral region. These may be quite large, smooth, reddish and painless.

II. **Cornea**

a) Corneal Nerves may appear unduely large and beaded.
b) Localised discrete opacities or cornea may appear covered by milky, chalky deposits.
c) Pannus formation – usually in superior limbus first and later circumferential.
d) Sclerosing keratitis may result from (c).

III. **Sclera**

Diffuse Scleritis may present but usually with Keratitis and Iridocyclitis.

IV. **Iris and Ciliary Involvement**

Very common and presents in 4 forms.

a) Miliary Lepromata or Iris Pearls – which are aggregations of Leprae bacilli and appear as tiny white spots – adjoining the pupillary margin.
b) Nodular Lepromata – are rarer, occurring in any part of the iris – are yellowish, globular and flattened.
c) Chronic Plastic Iridocyclitis
This is insidious in onset and is the most common cause of blindness in ocular leprosy. Later complications like Posterior Synechiae. and complicated cataracts can occur.
d) Acute Diffuse Plastic Iridocyclitis – This may occur suddenly.

V. **Posterior Segment Lesions:**

This is of low incidence

There are 2 types of Fundal lesions:

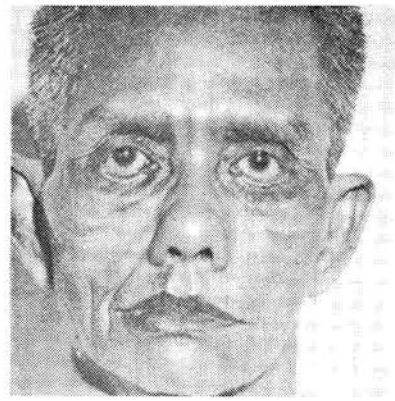
a) White, waxy, highly refractile deposits may occur at periphery of choroid and retina. Later there is retinal destruction and vascular fibrosis and sheathing result.
b) Discrete, circular, waxy and occasionally pedunculated nodules on retina.

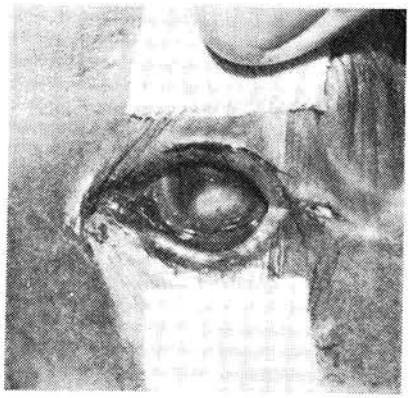
Ocular lessions are usually bilateral, but one eye may be affected earlier and more severely than its fellow.

Illustrated Case-Studies

Case 1

A Malay male aged 59 years, Tuberculoid leprosy. Visual acuity was 6/6. He had bilateral Facial palsy with marked lagophthalmos. The exposed conjuntiva showed increased vascularization and cornea showed Exposure Keratitis.



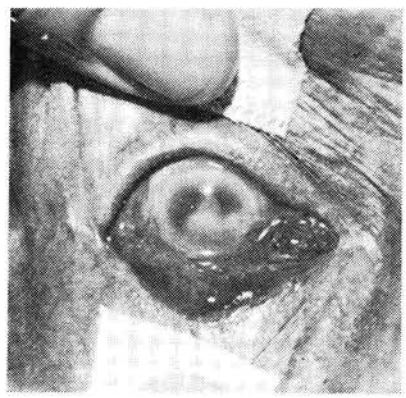


Case 2

A Chinese female aged 57 years. Borderline. Visual acuity 6/6, 6/6. She had a partially healed ulcer with a leucoma in the lower lateral quadrant of the cornea. A lateral tarsorrhaphy had been done for her.

Case 3

A Malay male aged 65 years. Borderline. Visual acuity was 6/24, 6/24. He had madarosis as well as entropion upper left eyelid and bilateral early Ectropion of lower lids. The whole conjunctiva of the right eye showed congestion and was hypertrophied. The cornea also showed a macula in the lower half of it.

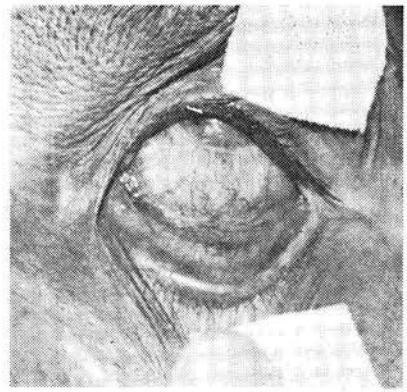


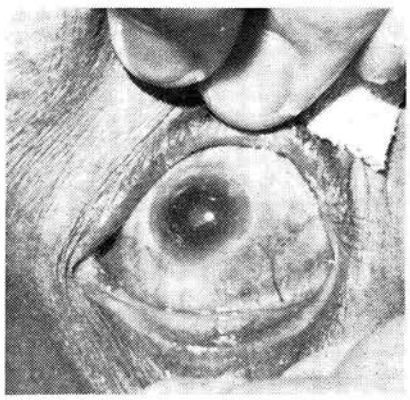
Case 4

A Chinese male aged 45 years. Lepromatous. Visual acuity 6/6, 6/9. He had a fairly large sized Lepromatous nodule on the left upper eyelid resulting in Entropion lid and trichiasis. This caused recurrent chronic conjunctivitis in that eye.

Case 5

A Malay Female aged 64 years. Borderline. Visual acuity 6/6, 6/9. She also had bilateral lagophthalmos. This was to illustrate the tortuous vessels present in the exposed parts of the conjunctiva. She also had Exposure Keratitis.



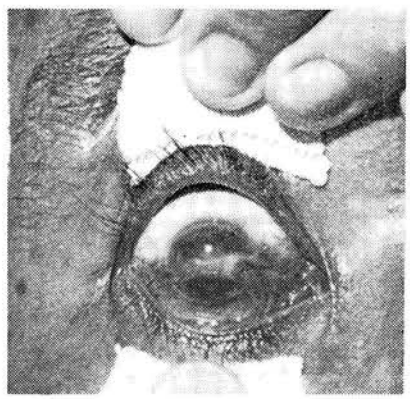


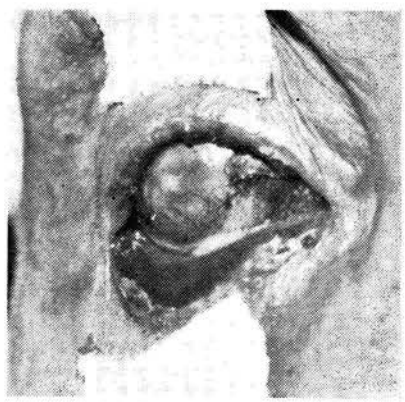
Case 6

An Indian Male aged 53 years. Lepromatous. Visual acuity 6/6, 6/9. He had diffuse hyperemic and yellowish lesions on lateral and medial bulber conjunctiva in the left eye. Episcleritis.

Case 7

A Chinese Female aged 99 years. Tuberculoid. Visual acuity 6/15, PL. She had bilateral lagophthalmos. Left eye had an ulcer in the centre and again pterygial-like vessels were seen.





Case 8

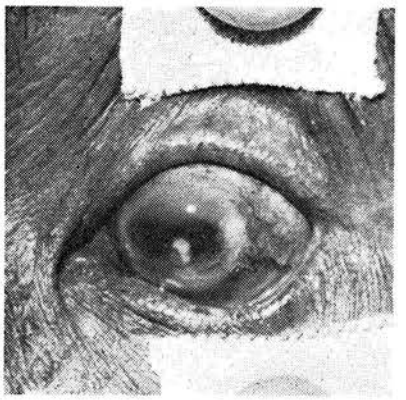
A Chinese Male aged 68 years. Tuberculoid. Visual acuity No Vision. CF. The right eye had marked ectropion lid, the conjunctiva was congested. Tortuous vessels were seen. There was an ulcer cornea and surrounding keratitis. The pupil was fixed and exudates were present in the pupillary region.

Case 9

A Chinese Male aged 51 years. Borderline. Visual acuity CF: PL. There were exudates and posterior Synechiae in the eye while the rest appeared relatively normal.

Leprosy Lesions:

	Lepromatous	*Borderline*	*Tuberculoid*	*Total*
Absence of Lashes	5	7	3	15
Entropion	1	—	—	1
Lid Nodules	2	—	—	2
Lid Erythema	1	—	—	1
Seventh Nerve Involved	—	16	22	38
Exposure Keratitis	1	6	9	16
Corneal Vascularisation	2	—	—	2
Adherent Leucoma	1	3	—	4
Corneal Macula or Leucoma	1	1	—	2
Chronic Conjunctivitis	1	4	6	11
Active Iritis	—	1	—	1
Phthisis Bulbae	—	3	3	6
Complicated Cataracts	1	1	—	2
Non-Leprous Lesions				
Cataract	2	4	8	14
Pterygium or Pterygical-like vessels	1	8	7	16
Tortuous vessels from periphery of conj,	12	10	5	27
Secondary Glaucoma	—	—	1	1
Diabetic retinopathy	—	—	1	1



Case 10

A Chinese Male aged 72 years. Tuberculoid. Visual acuity HM: 6/9. Right Facial Palsy with lagophthalmos corrected by Tarsorrhaphy. Old Iritis and ulcer cornea gave rise to adherent leucoma with vascularisation of cornea.

Findings

Adnexal Lesions:

Absence of lashes: A total of 15 cases had madarosis.

Entropion: One case of entropion lid due to a single big leprous nodule on upper eyelid was seen, while the other had bilateral multiple nodules on upper eyelids of about 3 mm diameter.

VIIth nerve involvement with partial or complete paralysis resulted in atonic ectropion or lagophthalmos. This in turn led to Exposure Keratitis. One case of Lid Erythema was seen. Anaesthetic patches on lids were not seen.

Cornea:

16 cases only had Exposure Keratitis. Corneal leucoma or Adherent leucoma totalled 6. In one case, there was pannus formation around the upper limbus.

Uvea:

Uveal involvement is common in the Lepromatous and Borderline cases and is also the cause of blindness.

Chronic Plastic Iridocyclitis or the effects of old Iritis probably was quite often seen in both lepromatous and borderline cases.

One case of *Active uveitis* was seen. There were exudates on the iris and posterior synechiae had started forming but no Keratic precipitates were seen.

Phthisis bulbae was seen in borderline and tuberculoid cases.

Posterior Segment Lesions – No Leprous lesions were seen.

Non-Leprous Conditions

Non-leprotic conditions like cataract were present in a few cases. Tottous vessels growing from palpebral to bulbar conjunctiva was quite often seen among Lepromatous and Borderline cases.

A leash of vessels resembling that in pterygium was seen in a few cases. Intercurrent infection of the conjunctiva in cases with ectropion and exposure was common too.

Incidence of Blindness

The criterion of blindness was taken to be vision of 3/60 or less than that. There were 12 blind female patients out of a total of 73. In the male population there were 28 blind out of the total of 164.

The causes of blindness were as follows:–

	Male	*Female*	*Total*
Cataracts	17	9	26
Phthisis Bulbae	4	2	6
Old Iridocyclitis	6	2	8
Glaucoma	1	–	1
Surgical Anopthalmos	1	–	1

From this it can be seen that cataracts are the main cause of blindness. However, 14 of the cases are due to some form of uveal involvement or other. 7 female out of 12 and 14 out of 28 had binocular blindness.

Ethnic and Sex Incidence

The number of male patients to female patients with ocular lesions was slightly more being 35: 27, though the total population was in the ratio of 2.2: 1.

The number according to ethnic origin was as follows:–

	Female	*Male*
Chinese	24	29
Indians	1	2
Malays	2	4
	27	35

Summary

From this survey of longstanding cases of Hansen's Disease at the Tampoi Leprosarium it can be seen that ocular involvement is quite common and varied. The incidence in the Lepromatous and Borderline cases was slightly higher than in Tuberculoid cases. Amongst Tuberculoid cases the commonest conditions were secondary to VIIth nerve involvement.

The illustrated cases serve to show the variety in involvement of the eye from its adnexae to its intraocular structures.

The findings from this survey give a clear picture of how the eyes are involved in Leprosy either directly or indirectly or secondary to Vth or VIIth nerve involvement. It also illustrates the importance of eye examination in Leprosy patients to prevent a possible preventable blindness which may be the sequelae of intraocular leprous infection too.

Non-Leprous ocular complications also occur in these patients and these are amenable to treatment.

It was noted too, blindness in these patients were due to leprous-induced as well as non-leprous conditions. Ocular complications in the male population seemed to be slightly higher than that in the female population.

All in all, it can be said that Ocular Leprosy can be quite varied in presentation, and if treated or detected early, can be made to respond to treatment – before the course of it becomes uncontrollable leading to complicated cataracts or total blindness.

Acknowledgement

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