OCULAR LEPROSY

Ebenezer Daniel
Dept of Ophthalmology
Univ. of Pennsylvania
ebdaniel@upenn.edu

The LOSOL study
What we know now and what we don’t know
What we would like to know – The Research questions
Gerhard Armauer Hansen

Armauer Hansen
3 November 1879
Leprosy Hospital in Bergen

Inoculated material taken from a leprous nodule into the eye of a female patient who probably suffered from borderline Leprosy according to the modern classification.

Knut Blom  Armauer Hansen and Human leprosy Transmission Medical Ethics and Legal Rights Int J Lepr Vol 41 (2)
Longitudinal Study of Ocular Leprosy

• Dr Paul Courtright
• India, Philippines, Ethiopia, Brazil
• Dr PSS Rao, Dr Ravenes, Dr Balagon
Patients

• New MB - Clinical Classification
• Active case finding - 301 patients
• 2 – year MDT, 5 – year RFT
• 2 Ophthalmic examinations every year
• Total follow up for 2 + 5 = 7 Years
Leprosy related ocular complications

At Diagnosis: 11%
During 2-year MDT: 9%
After MDT: 4% every year

1 in 5 Patients are likely to have a leprosy related ocular manifestation
Prevalent Complications

- Even with active case finding there is a considerable amount of ocular pathology present in newly diagnosed MB patients. 11%
- Some of these are not amenable to medical treatment.
- Every effort must be made to strengthen activities that promote early diagnosis and treatment of leprosy.
WHO ARE AT RISK FOR DEVELOPING OCULAR COMPLICATIONS?

- The elderly patient
- The smear positive patient
- The badly deformed patient
Ocular Complications Occur After MDT

- At the end of the MDT patients must be educated regarding the possible risk of eye disease.
- They should know about lagophthalmos, diminished vision, red eye, or a facial skin patch in reaction.
- Patients with lagophthalmos should continue to be followed up.
FINDINGS FROM LOSOL


- Daniel E, Rao PS, Ffytche TJ, Courtright P. Ocular hypotension and hypotony in multibacillary leprosy patients; at diagnosis, during and after completion of multidrug therapy. Indian J Lepr. 2010;82:181-8
Patients and Ocular Complications

Made up of clinically Diagnosed MB Patients.

- No Paucibacillary (PB) patient controls: Would PB patients have shown lesser and less severe leprosy related ocular complications?
- No Non-Leprosy controls: Would Non-leprosy ocular complications have been more in leprosy patients?
- Rx has changed from 2 years to 1 year
LAGOPHTHALMOS

- Early Diagnosis and Prevention: Recognizing risk factors
  - Face Patch
  - Borderline Leprosy
  - Early MDT
Lagophthalmos: Medical Treatment

- Aggressive Rx for erthymatous/depigmented face patches
- Role of oral steroids: We will hear of this in a subsequent presentation by Dr Kamble
- Newer tear substitutes
- Topical rebamipide: a derivative of quinolone-class antibiotics - a mucin secretagogue

Lagophthalmos: Surgery

- Surgical RX  TMT advantages / Gold weight lid implant
- Role of Physiotherapy: Does adjuvant physiotherapy help in recovery

Corneal Sensory Loss in Leprosy
Is it real and how important is it?
Corneal Sensation - The LOSOL Experience

- Cotton wisp is not a good method in estimating corneal sensation
- Longitudinal Study – Patient response to repeated corneal sensory testing
- Clinic setting / Field setting
Corneal Sensation

Handheld esthesiometer - Cochet-Bonnet $500

Noncontact air puff technique
Chemical stimulation using capsaicin
Thermal stimulation with a carbon dioxide laser
Surrogate testing for corneal sensation?

- **Face Patch**

  Ct  Dr Margaret Hogeweg

- **Face anesthesia**

  Ct  Dr Chandrasekhar
Testing Corneal Sensation
CATARACT IN LOSOL

- 3 main ways to cataract: Age, Uveitis and Steroids

INCIDENT CATARACT (<6/18) IN LOSOL PATIENTS

- Age (per decade): $aHR = 2.50 (1.82-2.78)$ $p < 0.001$
- Uveal involvement: $aHR = 3.52 (1.42$ to $8.67)$ $p = 0.006$
- Grade 2 Deformity: $aHR = 3.17 (1.12$ to $8.97)$ $p = 0.029$

- Oral Steroids were not associated

- All incident blindness related to cataract
- Surgery successful IOL >6/18 unaided vision
RESEARCH QUESTIONS RELATED TO CATARACT IN LEPROSY

- Does cataract occur earlier and more in leprosy patients?
- Do leprosy patients have good access to surgery?
RESEARCH QUESTIONS RELATED TO CATARACT IN LEPROSY

- Is sub-clinical inflammation a problem with good vision outcomes after surgery?
- 1990. Recent advances in cataract surgery – how do they fare in leprosy patients?
  ICCE, ECCE, Phacoemulcification - clear corneal, SICS, Femtosecond laser, IOLs
Intractable Iridocyclitis

- Increased oral steroids
- Subconjunctival injections of steroids
- Mycophenolate Mofetil, Azathioprine, Cyclosporine, Methotrexate, Cyclophosphamide


GRADING EYE COMPLICATIONS
Present WHO Grading of Hands and Feet Deformity

0  No anaesthesia: No visible deformity or damage

1  Anaesthesia present: No visible deformity or damage

2  Visible deformity or damage present.
Present Eye Deformity Grading

0  No eye problems due to leprosy and no evidence of visual Impairment

1  Eye problems due to leprosy are present. Vision 6/60 or better, The patient can count fingers at 6 meters.

2  Severe visual impairment (vision less than 6/60, the patient is unable to count fingers at 6 meters), lagophthalmos, iridocyclitis and corneal opacities.
Problems with Present Eye Deformity Grading

- Difficult to differentiate leprosy related eye problems from non-leprosy related eye problems: Cataract, Lagophthalmos, uveitis
- Patients living longer with diseases associated with old age such as Diabetes and Hypertension can alter vision < 6/60 without obvious visible eye manifestations.
Proposed Eye Deformity Grading

0  No visible eye manifestations. Patient visual acuity $\geq 6/60$

1  Visible eye manifestations present. Patient visual acuity $\geq 6/60$

2  Visible eye manifestations present or absent. Patient visual acuity $<6/60$
Problems with the new proposed grading

- No near vision estimation which is very important to most patients

- Will require carrying a near vision card and recording the near vision
BIOPSY SPECIMENS & THE ARMADILLO
Acknowledgements

P. Yowan, Padma Vijayakumari, C. Kumar, Maheshwari, Thirupurasundary, Shirley Chacko, Sheena Koshy

Margaret Brand
Timothy ffytche
Douglas Soutar