Ocular manifestations of leprosy

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Introduction

- Chronic granulomatous inflammation caused by the acid-fast bacillus *Mycobacterium leprae* (discovered by Gerhard Hernick Armauer Hansen in Norway in 1873)

- One of the oldest recorded infections affecting humanity (2000 BC)

- Primarily affects superficial tissues
  - Skin
  - Peripheral nerves

- Global Disease burden: 181,941 cases at the end of 2011
Why to detect ocular leprosy ??

- 10 – 15% of patients with ocular leprosy end up in blindness

- Prevalence of blindness due to leprosy - 4.7% in India

- Early stages → asymptomatic

- Early detection & appropriate treatment is essential
**Modes of ocular involvement**

- **Direct invasion** of ocular tissue by bacilli

- **Lepra reaction**

- **Involvement of nerves**
  - *Trigeminal nerve*: ↓corneal sensations
  - *Facial nerve*: weakness of orbicularis oculi
External structures

Eyebrows & Eyelashes:
- Superciliary madarosis
  loss of eyebrows (lateral half)
- Ciliary madarosis
  - Loss of eye lashes

Trichiasis
- In turning of eye lashes
- Rub against bulbar conjunctiva & Cornea.
- corneal abrasions and ulcers
Eyelids

- **Thickening of lid margins : Tylosis**
  - diffuse infiltration of skin & eyelid structures
  - loss of elasticity of skin
  - heavy drooping of upper eyelid

- **Entropion**: In-turning of eyelid margins

- **Ectropion**: Outward turning of Lid margin
Eyelid changes (contd..)

- Macule/nodule on the eyelids

- Atrophy of the tarsal plate & pre-tarsal muscles

- Infiltration and atrophy of meibomian glands: → dryness of eyes
Lacrimal apparatus

- Dacryocystitis:
  - Blockage of Naso-lacrimal duct
  - Due to bacillary infiltration in nasal mucosa /ulceration/ scarring
Conjunctiva

- Lepromatous nodule may appear on conjunctiva
- Occurs with type II Lepra reaction – Erythema Nodosum Leprosum
Cornea

Corneal inflammation

Bacillary infiltration / Lepra Reaction

1) Superficial punctate keratitis
2) Interstitial Keratitis

Involvement of nerves

1) Corneal beads
2) Neurotrophic keratitis

Neuroparalytic keratitis
Secondary to Bacillary infiltration/Lepra reaction

Superficial punctate keratitis:

- Mild irritation and watering

- **Miliary leproma** : Punctate greyish superficial spots (aggregated bacilli)

- **Pannus** formation
  (Superficial vascularisation)

Treatment:
- Topical antibiotic drops
- Lubricants
Interstitial keratitis:

- Stromal infiltration extending from limbus to central cornea
- Deep vascularization
- Vision is severely affected
- Cornea is thickened due to excessive infiltration

Treatment:
- Topical steroids
- Cycloplegics
- Lubricants
- Keratoplasty in late stages
Paresis / Paralysis of Facial nerve

Lower eyelid ectropion:
- Involvement of Zygomatic and Temporal branch of Facial nerve
  → weakness of Orbicularis oculi

Lagophthalmos (paralytic)
- Incomplete closure of eyelids
- Causes exposure keratitis
Neuroparalytic ulcer:
- Occurs due to Lagophthalmos following VII nerve involvement

**Symptoms:**
- Dry eye symptoms

**Signs:**
- Epithelial punctate lesions & epithelial defect
- Inferior 1/3rd of cornea involved initially
- Stromal melting & Secondary infections

**Treatment:**
- Lubricating eyedrops
- Taping of eyelids
- Bandage contact lens
- Tarsorrhaphy
Ocular lesions due to involvement of the nerves

Paresis of Trigeminal Nerve

- **Corneal beads** - 1st detectable sign

- **Neurotrophic keratitis:**
  - Reduced / loss of corneal sensation
  - Abnormal epithelial turnover &
  - Reduced reflex tearing

Clinical features:

- Red eye, Foreign body sensation, Blurred vision
- Marked conjunctival congestion
- Corneal edema
- Epithelial defect/ulcer with rolled up edges
Treatment
-Lubricating eyedrops
-Bandage contact lens
-Tarsorrhaphy
Sclera

Episcleritis:

- Benign inflammation of sub conjunctival, Tenon’s & episcleral tissue overlying Sclera

- Mild pain, redness, lacrimation and ocular discomfort

- Hard, yellow nodule commonly on upper outer quadrant

**Treatment:**
- Lubricants
- Mild topical steroids (fluorometholone)
- Oral NSAIDs
Scleritis

- Inflammation of the sclera
- Associated with iridocyclitis
- Severe deep circum-orbital pain radiating back to temple
- Deep red, tender scleral patch → scleral thinning → Ciliary Staphyloma → Globe perforation

- Treatment: - Oral NSAIDs & steroids
  - Topical steroids & Lubricant drops
Iris & Ciliary body

Acute / Chronic inflammation can involve any part of Uvea

**Acute Iridocyclitis:**

- Part of ENL reaction (Type 2 lepra reaction)

**Symptoms:**
- Pain, photophobia, redness, Lacrimation,
- Blurring of vision

**Signs:**
- Circumcorneal congestion
- Corneal edema, fine keratic precipitates
- AC cells & flare
- Miotic, sluggishly reacting pupil
- Iris Pearls: Chalk particle like glistening lesions near pupillary margin
Chronic Iridocyclitis:

- Direct invasion of anterior uvea by bacilli

**Symptoms:** Dull pain in the eye

**Signs:**
- Mutton fat Keratic precipitates
- Iris pearls, Iris atrophy & nodules
- Pupil: miotic, non-reactive, irregular
- Posterior synechiae
- Complicated cataract
Lens – Cataract

- Common in cases of multi-bacillary leprosy with chronic uveitis

Occurs due to
- Intraocular invasion by bacilli
- Iridocyclitis
- Steroids (systemic/local)
Intraocular pressure

IOP may be raised due to

- Steroid induced (when used to treat lepra reactions)
- Sequelae to repeated iridocyclitis – Secondary Glaucoma
Posterior segment

- 1 in 20 cases of ocular leprosy
- Believed to spread from ciliary body

Retinal Pearls
- Discrete, circular, waxy
- Occasionally pedunculated nodules
- Similar to iris pearls
- **Chorioretinitis**
  - White, waxy, highly refractile deposits at ora serrata
  - Retinal scarring & retinal vessels sheathing and fibrosis

- **Endophthalmitis**

- **Panophthalmitis**
In a Nutshell..

- Ocular leprosy is a severely incapacitating condition
- Most of the cases of ocular leprosy are secondary to Lepra reactions
- Ocular leprosy treatment includes MDT + Specific measures
- About 20% of leprosy patients on MDT develop ocular complications
  - 11% of them are vision threatening
- Ophthalmological monitoring is required following initiation of MDT
Thank you