

Trachoma

A large, stylized sun graphic in shades of yellow and orange is positioned on the right side of the page, partially overlapping the text area.

A specific communicable keratoconjunctivitis usually of chronic evolution caused by the chlamydia trachomatis, primarily affecting the superficial epithelium, characterized by formation of follicles, papillary hyperplasia and pannus, the natural resolution of which is by cicatrization involving potentially considerable visual disability. (Duke-Elder)

It means rough (Greek)

Epidemiology

Worldwide

500 million affected
2 million are blind
15.5 % of global blindness

Nepal

6.5 % (1 million) of population affected
2.4 % of blindness
commonest in western and far western terai (Bheri & Seti zone) Chetry, Magar & Tharu

Disease Characteristics

Poverty, dirt, flies, poor sanitation, etc.
F > M
Transmission by direct inoculation by finger, flies and fomites.
Prevalence a fly population in a region
Incubation period is 5 – 12 days
Age commonest in childhood
Reservoir of infection children with active disease

Chlamydia trachomatis

A, B, Ba & C ® Trachoma (commonest is C)
D – K ® Inclusion conjunctivitis
L1, L2 & L3 ® Lymphogranuloma venereum
Elementary body (300 nm, don't divide, infectious) ® Reticulate body (1000 nm, divide, non-infectious) ® intracytoplasmic inclusion body (Halberstaedter – von Prowazek)

Pathology

Primary epithelial lesion of conjunctiva and cornea
Chronic inflammation characterized by papillary hypertrophy of epithelium and lymphoid infiltration of subepithelial tissue.

Follicle

Mass of mononuclear cells surrounded by phagocytes, giant phagocytes (Leber's cells), polymorphs, mast cells and eosinophils.
 May be large (upto 5 mm)
 Central necrosis ® mature (Sago grain) ® cicatrization
 Many follicles may coalesce ® Folliculoma of Pascheff

Papillae

Epithelium undergoes hypertrophy and is thrown in folds to form papillae.
 Between adjacent papillae pseudoglands may form ® retention cysts and concretions

Pannus

Subepithelial infiltration and vascularization of peripheral cornea contiguous with the limbus first between epithelium and the Bowman's membrane followed by destruction of the latter.

Other changes

Increased Goblet cells
 Cellular infiltration of tarsus ® thickening ® degeneration ® softening
 Lacrimal gland infiltration
 Infiltration of lacrimal sac and dacryolith formation
 Decrease Tear lysozyme
 Increase C3 & Factor B in tears and corresponding decrease in serum.

Clinical Features**Conjunctiva**

Congestion, irritation, watering, discharge & photophobia
 Follicles gray white nodule with surrounding blood vessels
 upper trasal conjunctiva
 Upper fornix
 less commonly in the lower fornix, plica & bubar conjunctiva
 Papillary Hyperplasia of epithelium each with a central twig of vessel
 give rise to a velvety appearance of conjunctiva
 formation of concretions
 Scarring
 Stellate
 Mosaic pattern
 Arlt's line

Cornea

Follicles at limbus (Herbert's follicles)
 surrounded by vessels (Herbert's rosettes)
 Pannus
 Progressive: infiltration extends beyond vascularisation
 Regressive: vascularisation extends beyond infiltration

Types of Trachomatous Pannus

- ▶ Pannus tenuis: recent and thin
- ▶ Pannus vasculosus: highly vascular
- ▶ Pannus crassus: thick & fleshy
- ▶ Pannus ciccus: cicatricial

Other types of Pannus

- ▶ Pannus trachomaous
- ▶ Pannus leprosus (leprosy)
- ▶ Pannus scrofulous (phlyctenular conjunctivitis)
- ▶ Pannus degenerativus (atrophic bulbi, glaucoma, etc.)

Superficial keratitis & punctate epithelial defects
 Herbert's pits: scarring of limbal follicles initially gives rise to a depressed scar which later fills up and gets pigmented
 Opacification of cornea

Classification of Trachoma

McCallan (1908)

Stage I Incipient Trachoma (Infiltration)

Immature follicles on upper tarsus
 Minimal papillary hypertrophy
 Faint subepithelial opacities with diffuse punctate keratitis
 Early pannus

Stage II Established Trachoma (Florid infiltration)

- Ia Follicular Hypertrophy Predominant
 Mature well defined sago grain follicles
 Advanced keratitis
 Limbal follicles
 Advanced pannus with subepithelial infiltration and corneal haze
- Iib Papillary Hypertrophy Predominant
 Papillary hypertrophy obliterating the follicles
 Intense cellular infiltration
 Pannus & infiltration of upper limbus
 Necrosis of follicles at limbus and tarsus

Stage III Cicatrising Trachoma (Scarring)

Follicular necrosis & scarring with island of follicles & papillae inbetween
 Beginning of entropion and trichiasis
 Gross pannus
 Usually denotes re-infection

Stage IV Healed Trachoma (Sequelae)

Tarsal conjunctiva completely scarred but pattern smooth, mosaic or Arlt's line
 Cornea free of infiltrates and staining
 Sequelae

WHO Classification (1987)

Meant to be used by field workers
 TF Trachomatous Inflammation Follicular
 > 5 follicles (> 0.5 mm diameter) on upper tarsal conjunctiva
 TI Trachomatous Inflammation Intense
 inflammation & papillary hypertrophy obscuring > ½ of tarsal vessels
 TT Trachomatous Trichiasis
 at least 1 trichiatic cilia rubbing on the globe or evidence of its recent removal

TS Trachomatous Scarring
 obvious trachomatous scarring of upper tarsal conjunctiva
 CO Corneal Opacity
 Trachomatous corneal opacity at least a part of which extends over the pupil
 Diagnostic Criteria

At least 2 of following:

1. Follicles on upper tarsal conjunctiva
2. Limbal follicles or Herbert's pits
3. Typical conjunctival scarring
4. Vascular pannus most marked in the superior limbus

Sequelae

1. Distortion of lids
2. Entropion
3. Trichiasis
4. Ectropion (hypertrophy of conjunctiva)
5. Herbert's pits
6. Ptosis (tylosis & infiltration of LPS)
7. Madarosis
8. Posterior symblepharon
9. Parenchymatous xerosis
10. Defective lid closure, lid deformity & deficient tear film ® corneal damage.
11. Cicatrization involving lacrimal drainage & dacryolith formation ® epiphora
12. Glaucoma (perilimbal fibrosis & infiltration of the outflow channels)

Secondary Infection

H. aegyptius (commonest)

Complications

1. Corneal ulcer
2. Iritis

Differential Diagnosis

1. Folliculosis
2. Toxic follicular conjunctivitis: Molluscum contagiosum, Topical drugs, Eye cosmetics
3. Bacterial e.g. Moraxella
4. Axenfeld's Follicular Conjunctivitis
5. Chronic follicular Conjunctivitis
6. Perinaud's Oculoglandular Syndrome
7. Vernal Conjunctivitis

Laboratory Diagnosis

Detection of HP bodies on smear

1. Iodine stain
2. Giemsa stain
3. Immunofluorescent stain
4. Cytology

Isolation of Chlamydia

1. Yolk sac culture
2. Tissue culture on irradiated McCoy Type II cells

Serology

1. Complement fixation test
2. Immunodiffusion Assay
3. Radioisotope Assay
4. Microimmunofluorescence
5. ELISA
6. Serial Radial Hemolysis

Cutaneous Hypersensitivity

Treatment

Historical

1. Copper Sulphate
2. Silver Nitrate
3. Gonococcal pus
4. Scarification
5. Lid Excision

Current

Topical

- Oint. Tetracycline 1 % 2-4 times/day for 6 weeks
- Oint. Erythromycin 1 % 2-4 times/day for 6 weeks
- G. Sulphacetamide 20 % QID for 6 weeks

Systemic

- Tetracycline 250 mg QID PO for 3-4 weeks
- Erythromycin 250 mg QID PO for 3-4 weeks
- Doxycycline 250 mg BD PO for 3-4 weeks
- Azithromycin 20 mg / kg body weight single dose

Surgical Treatment

- Concretions are removed with hypodermic needle
- Trichiasis is dealt with by epilation, electrolysis or cryotherapy
- Entropion by appropriate operation
- Mild to Moderate: Wedge resection of tarsus (Fox's modification of Streetfield – Snellen's Operation)
- Moderate to Severe: Tarsal Fracture (Ballen's modification of Burrow's operation)

Prophylaxis

Mass or Blanket Therapy

Criteria

Prevalence > 5 % in children < 10 years of moderate to severe trachoma

Schedule

Ointment Tetracycline OD for 10 days or BD for 5 days, every month for 6 months.

Public health Measures

Water supply to promote general hygiene

Better sanitation

Controlling fly population

Health & hygiene education of school children

Vaccine

Major Outer Membrane Protein (MOMP) Vaccine (under investigation)