Conjunctival and Scleral Disorders

ACUTE CONJUNCTIVITIS

EYEHYPERMIA
Diffuse conjunctival hyperemia (mainly posterior conjunctival blood vessels) – movable bright red irregular vessels. Fading toward cornea, both bulbar and tarsal conjunctivae; vessels constrict with topical vasoconstrictors. 

CONJUNCTIVAL INJECTION
CHILARY INJECTION
ACUTE GLAUCOMA

CIRCUMCORNEAL (PERILIMINAL) DEEP HYPEREMIA


CIRCUMCORNEAL (PERILIMINAL) DEEP HYPEREMIA

Large patch of deep hyperemia (involving 20-100% of bulbar surface without hyperemia of tarsal surface) – episcleritis, scleritis.

Subconjunctival hemorrhages
- gross blood extravasation beneath conjunctiva.
  - appears as nonmovable homogenous red patch (vessels are not visible).
  - may occur after minor trauma / straining / sneezing / coughing; rarely, spontaneously.
  - no pathologic significance!!! (if recurs – consider bleeding diathesis)
  - reabsorption is adequate therapy (topical corticosteroids, antibiotics, vasoconstrictors, compresses do not speed reabsorption).

CONJUNCTIVAL EDEMA
Bulbar conjunctiva
- translucent, bluish, thickened conjunctiva.
CHEMOSIS
- gross edema with conjunctiva ballooning & prolapse.
Tarsal conjunctiva
- fine, minute projections (papillae), giving conjunctiva velvety appearance.

HYPERPLASIA OF LYMPHOID FOLLICLES
(most commonly in inferior tarsal conjunctiva) - small bumps with pale centers.

BENIGN NEOPLASMS OF CONJUNCTIVA
PINGUECULA
- raised yellowish white mass (connective tissue accumulation) on bulbar conjunctiva, adjacent to cornea (at 3- and/or 9-o’clock position); unsightly but does not grow onto cornea (need not be removed); may become inflamed (responds to topical steroids).
PTERYGIUM
- fleshy triangular bulbar conjunctiva growth onto cornea (at 3- and/or 9-o’clock position) - may spread across and distort cornea → astigmatism, change in refractive power (H: removal).

ACUTE CONJUNCTIVITIS

ETIOLOGY
1. Viruses
2. Bacteria
3. Allergy – seasonal allergic conjunctivitis
4. Irritation (wind, dust, smoke, air pollution, intense UV, reflection from snow, eyelid pathology), foreign bodies.

CLINICAL FEATURES
CONJUNCTIVAL AND SCLERAL DISORDERS

ACUTE CONJUNCTIVITIS

VIRAL

<table>
<thead>
<tr>
<th>Discharge (cells)</th>
<th>clear, watery (mononuclear cells)</th>
<th>purulent (polymorphonuclear cells)</th>
<th>clear, mucoid,ropy (eosinophil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye swelling</td>
<td>++</td>
<td>++</td>
<td>+</td>
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<tr>
<td>Preauricular node swelling</td>
<td>+/–</td>
<td>–</td>
<td>–</td>
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<tr>
<td>Itching</td>
<td>+</td>
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• ocular irritation (photophobia, foreign-body sensation), diffuse hyperaemia & edema (bulbar + tarsal).
• discharge; eyelids are stuck together on awakening.
• cornea*, iris, pupils, vision intact.
* focal corneal inflammation is possible → residual corneal scarring (0.5–1.0 mm) may be visible by slit lamp for up to 2 yr. (may result in decreased vision and significant glare).

N.B. always perform corneal fluorescein staining!

VIRAL CONJUNCTIVITIS

Adenoviruses
1) pharyngocconjunctival fever (serotypes Ad 3, 4, 7)
2) epidemic keratoconjunctivitis (serotypes Ad 8, 19, 37, 5):

injection, follicles and edema of conjunctiva. subepithelial infiltrates of cornea:

Enterovirus type 70 - outbreaks of acute hemorrhagic conjunctivitis.

Herpesviruses
Coxsackieviruses

May be unilateral!

DIAGNOSIS - although cultures can be taken, special tissue culture facilities are necessary; secondary bacterial infection is very rare (if suspected → stained eye smears, cultures).

TREATMENT
• no treatment is needed or available!
• self-limiting, lasting 1-3 wk in severe cases.
• highly contagious!! - wash hands thoroughly, avoid touching noninfected eye after touching infected eye or nasal secretions, avoid sharing towels or pillows.
• eyes should be kept free of discharge and should not be patched.
• severe conjunctivitis associated with pseudomembranes, vision-limiting corneal inflammation / scarring → topical corticosteroids (N.B. can exacerbate ocular herpes simplex virus infections!!).

BACTERIAL CONJUNCTIVITIS

Neisseria gonorrhoeae - gonococcal conjunctivitis see p. 229 (9) >>
Chlamydia trachomatis (type D-K) - inclusion conjunctivitis see p. 244 (4) >>
Staphylococcus aureus
Streptococcus pneumoniae
Haemophilus influenzae.

DIAGNOSIS - discharge should be cultured, smears should be stained with Gram stain (to identify bacteria) and with Giemsa stain (to determine leukocytic response).
TREATMENT
• bacteria are contagious - spread by hand-to-eye and fomite inoculation.
• last up to 3 wk without treatment and 1-2 days with topical treatment (qid for 7-10 days):
  a) SULFACETAMIDE SODIUM 10%
  b) TETRACYCLINE / POLYMYXIN B
  c) GATIFLOXACIN (Zymaxid®) 0.5% - FDA approved
  d) SEPSEFLOXIN (Bristol-Meyers) 0.6% ophthalmic suspension - FDA approved
N.B. poor clinical response after 2-3 days - insensitive bacterium, virus, or allergy.

OPHTHALMIA NEONATORUM (E. BORENORHA OR BORRHEA PATERNALIS, NEONATAL CONJUNCTIVITIS, INFANTILE PURULENT CONJUNCTIVITIS)
- bacterial conjunctivitis within first 10 days of life.

ETIOLOGY
• in decreasing order:
  1. Chemical injury - secondary to instillation of silver nitrate drops (for ocular prophylaxis); appears within 6-8 h after instillation, disappears spontaneously within 1-3 d.
  2. Bacterial infection (acquired during parturition):
     a) Chlamydia trachomatis type D (2-4% live births - no prophylaxis is currently used); accounts for 30-50% of conjunctivitis in infants < 4 wk; occurs 5-14 days after birth
     b) Haemophilus influenzae
c) Neisseria gonorrhoeae (gonorrheal ophthalmia); appears 2-5 days after birth (or earlier with premature rupture of membranes) see p. 229 [9] >>
     Isolation of other bacteria (e.g. S. aureus, Str. pneumoniae) usually represents colonization rather than infection.
  3. Viral infection - herpes simplex virus types 1 and 2 - herpetic keratoconjunctivitis.

DIAGNOSIS
Chlamydial ophthalmia - conjunctival tissue culture, direct monoclonal antibody tests and ELISA; on smear - mononuclear reaction with no m/o.
Gonorrheal ophthalmia - culture and Gram stain of conjunctival specimen.
Herpetic keratoconjunctivitis - immunofluorescence in conjunctival cultures (N.B. diagnosis is crucial - disease may disseminate to CNS and other organs!!!).

TREATMENT
Chlamydial ophthalmia – systemic ERYTHROMYCIN ethylsuccinate (50 mg/kg/day po q6-8 h 2 wk).
Gonorrheal ophthalmia – systemic CETRIOXONE (25-50 mg/kg IM) + frequent saline irrigations (topical a/b are not needed).
Other bacteria - topical POLYMYXIN + BACITRACIN, ERYTHROMYCIN, TETRACYCLINE.
Herpetic keratoconjunctivitis - systemic ACYCLOVIR (30 mg/kg/day q8h 2-3 wk) + topical TRIFLUORIDINE OR VIDARABINE while awake + IDOXURIDINE ointment at bedtime.
N.B. ointments containing corticosteroids may seriously exacerbate eye infections due to Chlamydia trachomatis or herpes simplex virus!

CHRONIC CONJUNCTIVITIS
- exacerbations and remissions that occur over months or years.
• causes - similar to acute conjunctivitis;
  Chlamydia trachomatis (types, A-C) - trachoma see p. 244 (3) >>
  allergy; giant papillary conjunctivitis see p. Eye72 >>
  vernal keratoconjunctivitis, perennial allergic conjunctivitis see p. 1665 (1-2) >>
• symptoms = acute conjunctivitis but less severe (may be without discharge).

Trachoma: Soliflaccion formation of conjunctiva that looks like suro grains.

Source of picture: "Online Journal of Ophthalmology" >>

Trachoma; conjunctival cicatrization with shrinkage (esp. conjunctival side of upper lid), entropion and trichiasis; thickened epithelium near limbus, cornea opacified due to xerosis, formation of pannus and trichiasis:
CONJUNCTIVAL AND SCLERAL DISORDERS

Eye78 (4)

CONJUNCTIVAL AND SCLERAL DISORDERS

SOURCE OF PICTURE: "ONLINE JOURNAL OF OPHTHALMOLOGY"

Vernal Conjunctivitis

Follicular conjunctivitis - upper lid has been everted showing giant papillae:

- therapy depends on cause.
  - irritating factors must be eliminated.
  - overtreatment may produce drug sensitivity!

EPISCLERITIS

- occurs in young adults; tends to recur.
- cause can be any inflammatory systemic condition (e.g. RA, Sjogren syndrome, coccidioidomycosis, syphilis, reiter tuberculosis); most often etiology cannot be determined.
- tenderness, irritation, mild photophobia, some lacrimation.

LOCALIZED CONJUNCTIVAL HYPEREMIA - bright red patch just under bulbar conjunctiva (simple episcleritis) or hyperemic, edematous, raised nodule (nodular episcleritis).

N.B. palpebral conjunctiva is normal!

- self-limited - treatment options:
  - no treatment
  - topical vasoconstrictors (e.g. tetrahydrozoline HCl) + topical corticosteroid OR oral NSAID.

Epidemic Keratoconjunctivitis (hyperemic conjunctival and episcleral vessels)
SCLERITIS

- severe, destructive, vision-threatening* inflammation of deep episclera and sclera.

*14% lose significant visual acuity within 1 yr!

**CLINICAL FEATURES**

- most common in 4-6th decades.
- **extreme deep PAIN** - interferes with sleep and appetite!
- tenderness, photophobia, lacrimation.
- **BULBAR HYPEREMIA**:
  - deep beneath conjunctiva, more bluish than in episcleritis!
  - surrounding and overlying bulbar conjunctiva is hyperemic (palpebral conjunctiva is normal!)
  - sectoral or widespread (diffuse scleritis);
  - may contain hyperemia, edematous, raised nodule (nodular scleritis);
  - may contain avascular area (necrotizing scleritis) → globe perforation and eye loss may ensue.
- associated connective tissue disease (RA, gout) in 20% (in 50% with necrotizing scleritis).

N.B. necrotizing scleritis in association with RA → 50% mortality in 10 yr (mostly from MI)!

necrotizing scleritis with severe RA: superficial and deep injection:

nodular scleritis - elevated, hyperemic, painful:

scleritis and scleromalacia in RA:
CONJUNCTIVAL AND SCLERAL DISORDERS

necrotizing scleritis - areas of pallor within diffuse areas of redness indicating ischaemia.

posterior scleritis - posterior fundus shows choroidal folds caused by thickened sclera which pushes choroids inward.

TREATMENT
- systemic corticosteroid.
  - if unresponsive or necrotizing scleritis + RA → systemic immunosuppression (e.g. cyclophosphamide, azathioprine).

BIBLIOGRAPHY for ch. “Ophthalmology” → follow this LINK.