Conjunctival and Scleral Disorders

Last updated: May 9, 2019

ACUTE CONJUNCTIVITIS .......................................................... 2
Etiology .................................................................................. 2
Clinical Features ................................................................. 2
Diagnosis .............................................................................. 2
Treatment ............................................................................ 2

VIRAL CONJUNCTIVITIS ..................................................... 2

BACTERIAL CONJUNCTIVITIS ........................................... 3
Diagnosis .............................................................................. 3
Treatment ............................................................................ 3

OPHTHALMIC NEONATUM (S. BLENNORRHEA NEONATORUM, NEONATAL CONJUNCTIVITIS, INFANTILE PURLENTIC CONJUNCTIVITIS) .................................................. 3
Etiology .............................................................................. 3
Diagnosis .............................................................................. 3
Treatment ............................................................................ 3

CHRONIC CONJUNCTIVITIS .................................................. 3
Episcleritis ........................................................................... 4
Scleritis ............................................................................... 5
EPISCLERITIS ........................................................................ 5
Clinical Features ................................................................. 5
Treatment ............................................................................ 5

OCULAR CICATRICIAL PEMPHIGOID – see p. 2991 >>

ERYTHROMA

Diffuse conjunctival hyperemia (mainly posterior conjunctival blood vessels) – movable bright red irregular vessels, fading toward cornea; both bulbar and tarsal conjunctiva; vessels constrict with topical vasconstrictors – conjunctivitis.

Circumcorneal (perilimbal) deep hyperemia (branches of anterior ciliary artery) – nonmovable. dilated, fine, straight, deep vessels that regularly radiate 1-3 mm out from limbus – iritis, acute glaucoma, keratitis.

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)
• absorbed spontaneously (usually within 2 wk).
• reassurance is adequate therapy (topical corticosteroids, antibiotics, vasoconstrictors, compresses do not speed reabsorption).

CONJUNCTIVAL INJECTION .................................................. 6
Chiliary INJECTION ............................................................... 6
ACUTE GLAUCOMA ............................................................... 6

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).

Last updated: May 9, 2019
ACUTE CONJUNCTIVITIS

ETYLOGY
1. Viruses
2. Bacteria
3. Allergy – seasonal allergic conjunctivitis see p. 1665 (1-2) >
4. Irritation (wind, dust, smoke, air pollution, intense UV, reflection from snow, eyelid pathology), foreign bodies.

CLINICAL FEATURES

<table>
<thead>
<tr>
<th>Discharge (cells)</th>
<th>ACUTE CONJUNCTIVITIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>clear, watery</td>
<td>VIRAL</td>
</tr>
<tr>
<td>purulent</td>
<td>BACTERIAL</td>
</tr>
<tr>
<td>clear, mucoid,</td>
<td>ALLERGIC</td>
</tr>
<tr>
<td>copy</td>
<td></td>
</tr>
</tbody>
</table>

| Lid swelling    | +                      |
| Preauricular node swelling | +/–                      |
| Itching         | –                      |

- ocular irritation (photophobia, foreign-body sensation), diffuse hyperemia & 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) pharyngoconjunctival 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.
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.
- lasts up to 3 wk without treatment and 1-2 days with topical treatment (qid for 7-10 days):
  a) SULFACETAMIDE SODIUM 10%
  b) TRIMETHOPRIM / POLYMYXIN B
  c) GENTAMICIN (Zymactron®) 0.5% - FDA approved
  d) POLYMYXIN (Resivance®) 0.6% ophthalmic suspension - FDA approved
N.B. poor clinical response after 2-3 days - insensitive bacterium, virus, or allergy.

OPHTHALMIA NEONATORUM (k. BENOSSIRADEK BEADOW, 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-K (2-4% live births – no prophylaxis is currently used); account 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 implies colonization rather than infection.

3. Viral infection - herpes simplex virus types 1 and 2 - herpetic keratoconjunctivitis see p. 256 (5) >>
e.itiology is difficult to distinguish on clinical grounds alone.

DIAGNOSIS
Chlamydia ophthalmia - conjunctival tissue culture, direct monoclonal antibody tests and ELISA; on smear - mononuclear reaction with no mlo.
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-sb 2 wk).
Gonorrheal ophthalmia – systemic ERYTHROMYCIN (25-50 mg/kg IM) + frequent saline irrigations (topical ab are not needed).
Other bacteria - topical POLYMYXIN + BACTRACEIN, ERYTHROMYCIN, TETRACYNCELINE
Herpetic keratoconjunctivitis - systemic ACYCLOVIR (30 mg/kg/day q12 2-3 wk) + topical TRIFLURIDINE OR VIDARABINE while awake + DOXURIBINE 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: follicle formation of conjunctiva that looks like sago grains.

Source of picture: *Clinical Atlas 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.

**Vernal Conjunctivitis**

- **Follicular conjunctivitis** - upper lid has been everted showing giant papillae.

**EPISCLERITIS**

- **occurs in young adults; tends to recur.**
- **cause** can be any inflammatory systemic condition (e.g. RA, Sjögren syndrome, coccidioidomycosis, syphilis, zoster, 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!

**EPISCLERITIS**

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

**Diffuse episcleritis in Epidemic Keratoconjunctivitis (hyperemic conjunctival and episcleral vessels):**
CONJUNCTIVAL AND SCLERAL DISORDERS

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 >>