

# Differential diagnosis of the red eye /PGS (VPL)

## Anamnesis

- Pain, whether preceded by injury, contact with a patient with infectious conjunctivitis, allergies, general symptoms (vomiting in acute glaucoma).

## Examination

- Examination of the front part of the eye, if a foreign body in the eye is suspected, turn the lid, the color of the secretion and its consistency, when watery corresponds to the allergic or viral origin, purulent to greenish-yellow corresponds to the bacterial origin, mucous foamy when the dry eye is irritated.
- We will perform palpation to approximately examine the intraocular pressure.
- Vision examination.
- Conjunctival swab – the cultivation of the causative agent and detection of susceptibility, in case of suspicion of bacteria or mycosis before starting the therapy, in case of suspicion of gonococcal infection in Gram staining.
- When in doubt – a recommendation to an ophthalmologist.

## Types of injections - „conjunctival injection“

- **Conjunctival injections** – noticeable widening of brick-red vessels, the redness disappears from the limbus towards the edge, the vessels can be moved by moving the conjunctiva.
- **Ciliary injections** – bluish-red ring pericorneally, blood vessels are not bounded.
- **Mixed injection** – rick-red conjunctival vessels, under which a bluish-red coloration is evident.



Conjunctivitis - conjunctival injections

## Classification based on pathogenesis

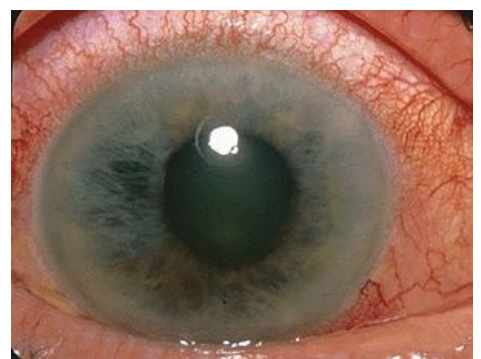
The usual cause of "red eye" is trauma or inflammation. By location:

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## Etiology of the red eye

### Acute glaucoma

It is accompanied by severe pain in the orbit, ev. headache, general nausea, vomiting, fever, reduced vision (perhaps only to the movement of the hand), injection of congestive hyperemia, increased intraocular pressure (the eye is very hard), wide pupil – oval dilated, unresponsive to light, an increased filling of the conjunctival vessels is present, the cornea is without gloss (matte), the iris is erased.



Acute glaucoma

### Acute conjunctivitis

- Mostly bilateral disability (with one-sided onset – especially in viral conjunctivitis). It is accompanied by eyelid spasms, photophobia, burning eyes, foreign body sensation, tearing, in good general condition vision is unchanged, injection is conjunctival, conjunctiva with manifestations of chemosis and secretion.

### Etiology

- *Infectious* – the most common viruses (conjunctivitis epidemica), pneumococcus, staphylococcus, streptococcus, gonococcus, chlamydia, Corynebacterium diphtheriae;
- *non - infectious* – mechanical (after irritation with a dust/foreign body), UV radiation, chemical (acids and alkalis, irritating gases), allergic, caterpillar hair (conjunctivitis nodosa), eye defect.

### Infectious

- **Viral conjunctivitis** – common, so-called conjunctivitis epidemica,
  - usually begins unilaterally, strongly reddish swollen caruncula and plica semilunaris with watery secretion;

- can be complicated – corneal damage, ev. corneal scars (slightly impaired vision);
- generally accompanied by subfebrile and fatigue.
- **Therapy:** isolation of the patient (it is infectious! Children are not allowed in school or kindergarten), symptomatically sympathomimetics (e.g. naphazoline Sanorin-Analergin gtt oph., Etc.), topical corticoid to heal corneal scars (given by an ophthalmologist).



Viral conjunctivitis

- **Bacterial conjunctivitis** – most often streptococcal
  - Differential diagnostics is essential:
    - conjunctival haemorrhage - especially in pneumococcal infection;
    - pseudomembranes - streptococcal infections, but also consider diphtheria (Cave!: general signs and examination of the larynx);
    - flaky purulent secretion with saga-like swelling - chlamydial infections (from public swimming pools - "swimming conjunctivitis");
    - creamy pus, planar stiff eyelids, conjunctival edema - gonococcal infection (Cave: highly infectious!)
  - **Complications:** there is a risk of corneal breakdown.
  - **Therapy:** immediate referral to a specialist ophthalmologist + cover a healthy eye sterile!

### **Non-infectious conjunctivitis**

- **Therapy:** non-specific - we are looking for a foreign body, which we would then remove, rinse the eye with lukewarm water, local astringent (e.g. tetrazoline gtt oph. ( $> 0.05\%$ ), do not administer for too long, they can also have local side effects.
- When the eyes and eyebrows are attacked by a lice – inflammation is caused by lice excrement.
  - **Therapy:** locally parasymphomimetics (e.g. 1% pilocarpine solution... paralyzes lice muscle) or lice are removed mechanically with tweezers, additionally local treatment.
- Caterpillar hairs or burdock hooks can catch on the surface of the cornea and form small nodules there.
  - **Therapy:** removed by a specialist.
- Keratoconjunctivitis photoelectrica - UV damage (in the mountains, especially in winter, arc welding), clinically with an interval of 6-12 hours (mostly at night) manifests itself in acute eye pain, foreign body sensation, photophobia, eyelid cramps, tearing, redness and water secretion.
  - **Therapy:** support of epithelialization (e.g. Ophthamo-Azulen ung., Solcoseryl gel ...) or ointment with dexpanthenol (Bepanthen eye and nasal ointment) 2-3 times a day, total analgesics (e.g. paracetamol tbl./rct. Supp. 400 mg 1-3 times a day), may be complicated by keratitis or corneal erosions, the prognosis of cure is 1-2 days.
- Allergic conjunctivitis - manifested by itching, burning, foreign body sensation, photophobia, eyelid cramps and increased tearing, conjunctival injection, conjunctival chemosis (ie it's swelling), we diagnose on the basis of a detailed allergological history (seasonal hay fever), working history, living conditions, conditions, nutrition, medications and cosmetics, contact lenses and contact lens care products), allergy testing (but **cave:** risk of anaphylaxis!) and determination of IgE and specific IgE in serum can be tested.
  - **Therapy:** in the period of allergy or during ongoing hyposensitization, topical application of sodium chromoglycan (e.g. Allergocrom gtt., Cromhexal gtt.), Medication only if necessary, definitely not treated for a long time, systemic antiallergics e.g. Zyrtec or Dithiaden tbl., In severe cases topically and/or systemically corticoids (Cave: glaucoma after long use of corticoids), prognosis mostly chronicity, in case of allergy or hyposensitization we can expect relief from the problems.

### **Acute keratitis**

- Accompanied by pain, photophobia, eyelid cramps, foreign body sensation, the visa is usually severely reduced, injection mixed or ciliary, hyperemia and conjunctival chemosis, cornea by cause, iris normal or erased pattern in associated iritis.



Non-ulcerative keratitis

### **Etiology**

- **Exogenous** inflammation of the cornea with hypopyema (pus at the bottom of the anterior chamber of the eye) in bacterial infection after a corneal defect, foreign body injury, mycosis or viral infection (herpes simplex, involvement in herpes zoster ophthalmicus).
- **Endogenous** inflammation by specific infection (TBC, lues), inflammation **of incomplete eyelids**, keratoconjunctivitis **in acne rosacea**.

### **Diagnostics**

- Pathological reflex, corneal clouding in lateral light, surface defects (fluorescein staining), decreased corneal sensitivity in herpes simplex infection, and neuromyolytic keratitis.

### **Complication**

- There is a risk of corneal perforation (especially in inflammation with hypopia), secondary glaucoma.

## Therapy

- Always send to a specialist - severe cases to the inpatient eye department - general long-term measures, or also systemically ATB, mydriatics, bandage, if after the inflammation subsides, centrally located saturated scars of the cornea remain keratoplasty (ie transplantation).

## Acute iritis

(possibly iridocyclitis - inflammation of the iris and ciliary body)

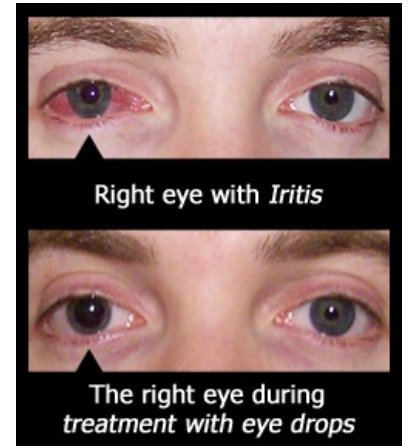
- Pain, photophobia, tearing, eyelid spasm is present, vision is significantly reduced, ciliary injections, intraocular pressure normal or slightly lower, the pupil is narrow (miosis from irritation), slowly reacting, precipitates on the back of the cornea, the iris is dirty gray with erased drawing.

## Etiology

- It is often not clear, e.g. It is a concomitant iris inflammation of the cornea or a systemic disease (such as Bechterew's disease, sarcoidosis, Reiter's syndrome, chronic arthritis), sometimes occurs after corneal perforation or surgery, possibly infectious etiology (toxoplasmosis, TB, lues, CMV).

## Clinical picture

- Pseudoptosis, ciliary or mixed conjunctival injection, miosis for irritation, slow pupil reaction, pain, photophobia, tearing, visual disturbances, dirty corneal gray, turbidity of the aqueous humor.



Iritis

## Complication

- Synechia (ie adhesions between the edge of the iris and the lens), secondary glaucoma, cataract, atrophy of the bulb of the eye.

## Diff. dg.

- Acute glaucoma (palpated, wide pupils),
- conjunctivitis (normal pupil reaction, conjunctival injection).

## Therapy

- We always go to a specialist – the first choice are mydriatics (e.g. 1% atropine 1-2 times a day 1-2 gtt);
  - **Cave!** contraindications: acute glaucoma.

## Hyposphagma (subconjunctival hemorrhage)

## Etiology

- Spontaneous - in atherosclerosis, DM, hypertonic disease, hemorrhagic diathesis.
- Sneezing, pushing (e.g. during childbirth), whooping cough, contusion of the bulb of the eye.

## Clinical picture

- It is manifested by sharply demarcated flat lacquer reds under the conjunctiva.

## Therapy

- No therapy is needed - the bleeding disappears spontaneously within a few days.

## Injury

- Corneal erosion, foreign body, eye burns, perforating eye injuries.

## Wrong position of eyelids

- Entropion.
- Ectropion.



Hyposphagma

## Links

## References

- GESENHUES, S – ZIESCHÉ, R. *Vademecum lékaře*. 1. Czech edition. Praha : Galén, 2006. ISBN 80-7262-444-X.