Demystifying Ophthalmology

By Darlene Jones, Nurse

May 2017
Disclosure of potential conflict of interest

- Darlene Jones, Nurse
  - I have no conflict of interest
Course objectives

- Become familiar with the different pathologies in ophthalmology
- Become familiar with techniques for conducting a good eye exam
- Demystify ophthalmology
External anatomy of the eye

Source: Ruston Eye & Laser Institute
Reproduced and translated with permission

Source: http://www.infovisual.info
All reproduction rights are reserved and strictly limited
Internal anatomy of the eye

The retina


Source: Health Canada
The orbit

Normality
- The orbits are symmetrical in size and position

Abnormality
- Artificial eye
- Position and alignment:
  - Exophthalmos (Graves' disease)
  - Ocular tumors
- Asymmetry:
  - Cranial nerve paralysis
  - Non-Paralytic Strabismus

Source: Patrick J. Lynch, medical illustrator
The eyelids

Physical examination

- Thickness, uniformity and lesions
- Width of the palpebral fissures
- Condition and direction of the eyelashes

Normality

- The upper eyelid covers the upper portion of the cornea when the patient looks straight ahead
- The eyelashes move outwards
- The edges of the eyelids are juxtaposed to the orbits
The eyelids

Abnormality

- Blepharitis: common and persistent inflammation with scales and debris
- Edema: sinusitis, allergy, kidney failure, APO
- Blister: myxedema
- Ptosis: diminution of the palpebral fissure
- Ectropion: outward-facing eyelashes
- Entropion: inward-facing eyelashes
- In-growing eyelashes
- Stye: inflammation of a sebaceous gland on the edge of the eyelid
- Chalazion: small inflammatory cyst on the edge of the eyelid
- Xanthelasma: yellow spot on the eyelid
Eyelid abnormality
The conjunctiva and the sclera

Physical examination
- Ask the patient to look up
- Gently pull the lower lid down
- Examine the conjunctiva and the sclera
- Note translucency and colour
- Look for nodules and swelling

Normality
- The sclera is white
- The palpebral conjunctiva appears pink
- The translucency of the conjunctiva is reflected when it is not pathological
The conjunctiva and the sclera

Abnormality

- Sclera and bulbar conjunctiva:
  - Yellow = jaundice (hereditary hemolytic anemia)
  - Pterygium: triangular thickening of the conjunctiva growing on the cornea near the nose
  - Pingeuclea: yellowish triangular nodule on each side of the iris (age)
  - Subconjunctival haemorrhage: extravasation of blood producing a red hematogenic zone, sharply outlined and capable of covering the full conjunctiva (idiopathic cough)

- Conjunctive palpebral:
  - Pallor: anemia
  - Redness and pus: diffuse dilatation of the vessels tending to be maximal in the periphery (conjunctivitis)
  - Ciliary infection: vascular radiations or purplish redness around the limbus (acute iritis, acute glaucoma, corneal lesion or infection)
Red eye

Conjunctivitis

Keratitis or corneal abrasion

Uveitis

Glaucoma

Subconjunctival haemorrhage

Refer to Appendix 1 for the red eye table
The cornea, the lens and the iris

Physical examination

- Apply tangential light
- Inspect the cornea for opacities. The opacities in the lens can be visualized through the pupil
- Inspect the iris: illuminate directly from the temporal side
- Look for a growing shadow on the inner part of the iris
The cornea, the lens and the iris

**Normality**

- The cornea is transparent, smooth, shiny and avascular
- The anterior chamber is clear with aqueous humour
- The iris is flat and forms a relatively open angle with the cornea, i.e. the light illuminates the iris without casting a shadow. No opaqueness of cornea and lens is observed.
The cornea, the lens and the iris

**Abnormality**

- **Cornea:**
  - Ulceration
  - Scarring
- **Anterior chamber:**
  - Acute (angle closed) glaucoma
- **Lens:**
  - Cataract
  - Dislocation
  - Aphakia
  - Artificial lenses
- **Iris:**
  - Acute iritis
The pupils

Reaction to light (PERLA)

- Ask the patient to look at a distant object
- Inspect the size, shape and symmetry of the pupils
- Flash an oblique light on each pupil and observe the constriction
- Flash a light on one pupil and observe the constriction of the other pupil
- Repeat with the other eye
The pupils

Normality

- Inequality less than 0.5 mm (anisocoria) in 20% of normal people
- Vary in diameter from 3 to 5 mm
- Pupil constricts quickly in response to light
- The pupils have consensual constriction

Abnormality

- Small:
  - Unilateral: Horner’s syndrome
  - Bilateral: morphine, mitotic drops
- Dilated:
  - Unilateral: oculomotor nerve trauma
  - Bilateral: atropine, severe brain damage, deep hypoxia, alcohol
- Loss of accommodation: glasses
- Irregular forms: iridectomy, Argyle Robertson pupils
- Loss of reflex:
  - In direct light (blindness, optic nerve or retinal disease)
  - Consensual
Eye dryness

Does a dry eye produce more tears?

Anyone can experience eye dryness at some point in life, but some factors increase the risk.

- Aging
- Excessive computer use
- Hormonal changes
- Medication
- Wearing contact lenses
- Environmental conditions
Eye dryness

Symptoms may range from mild discomfort to severe pain:

- Burning, tingling, itching, feeling of sand in the eye, eye fatigue, blurred vision, watery eyes, presence of mucus, sensitivity to wind and extreme cold, etc.

Untreated dryness can become chronic and impair vision

Treatments:

- Protecting the eyes with sunglasses, safety glasses at work, etc.
- Frequent blinking of the eyelids increases the lubrication of the eye
- Using artificial tears
Emergency consultations

Symptoms:

- Pain:
  - sharp and sudden in one eye
  - periocular, unilateral, intense
- Photophobia
- Persistent blurred vision
- Reduced vision
- Nausea and vomiting accompanying other visual symptoms
Emergency consultations

Signs:
- Reduced visual acuity
- Exophthalmos
- Abnormal reflection of light by the cornea
- Non-reactivity of the pupil in direct light
- Blurry appearance in the border of the iris
- ↑ pls, ↑PA
- High intraocular pressure
- Foreign body located inside the globe
- Excavation of the optic disc
Appendices

See Word document

Appendix 1: Red eye table

Appendix 2: Conversion scale

Appendix 3: Guide to interpreting the ophthalmology consultation

Appendix 4: Glossary of the main terms used in ophthalmology

Donald Novey, Guide to Physical Examination – 2nd Edition

My gang at Blanc Sablon
Des Questions?