

# Glaucoma

## Objectives

Knowledge of the embryology and anatomy of the anterior segment. Differentiation between congenital, inflammatory (infectious), degenerative, tumoral, traumatic and immunological processes using the following methods:

- Clinical examination and medical history
- Morphological documentation
- Laboratory tests corresponding to other potential investigations

Ability to reach the correct conclusions and adopt a context-relevant approach, with particular emphasis on:

- Diagnosis and differential diagnosis
- Monitoring, can/cannot treat
- Conservative therapy and surgery
- Recognition of the need to call another specialist or institution
- When are these procedures indicated, mandatory or superfluous?

## Clinical knowledge of diagnosis and pathology

Disorders of the

1. conjunctiva
2. sclera
3. cornea
4. anterior chamber
5. irido-corneal angle
6. ciliary body
7. zonules and lens
8. production and circulation of the aqueous humour

## Glaucoma

### Objective

Understanding the physiopathology of the various forms of glaucoma and their presentation. Differentiation of simple ocular hypertension and the risk of conversion to glaucoma. Understanding glaucomatous optic neuropathy as opposed to other optic neuropathies with focus on the main risk factors of the disease. Recognising signs and symptoms of the disease with diagnostic tests at the slit lamp as well as functional and structural analysis. Management of acute and chronic presentation, including various therapeutic options (medical and surgical) and follow-up. Psychology and management of patients presenting a chronic progressive, potentially blinding disease.

## Knowledge to be gained

Epidemiology of glaucoma and the various forms of the disease

Classification of the disease:

- a. Ocular hypertension/Primary open-angle suspect.
- b. Primary open-angle glaucoma (POAG).
- c. Primary juvenile glaucoma (JG).
- d. Primary congenital glaucoma.
- e. Secondary open-angle glaucoma (pigmentary, pseudoexfoliative, lens induced, corticoid induced, haemorrhage induced, uveitic, increased episcleral venous pressure).
- f. Primary angle closure (patient at risk, primary angle closure suspects, primary angle closure, angle closure glaucoma).
- g. Iris plateau configuration and syndrome/glaucoma.
- h. Secondary angle closure/glaucoma (neovascular, lens/IOL induced, uveitic, traumatic).
- i. Malignant glaucoma.
- j. Developmental glaucomas with associated anomalies.
- k. Axenfeld-Rieger syndrome, Aniridia, Peter's Anomaly.
- l. ICE syndromes (Chandler Syndrome, Essential/Progressive Iris Atrophy, Iris Naevus/Cogan Reese Syndrome).

## Diagnostic procedures (indication, procedure, analysis):

### IOP measurements:

- Goldmann applanation tonometry
- Dynamic contour tonometry (Pascal)
- Air-puff
- Ocular Response Analyser
- Tono-pen
- Rebound tonometry

### Pachymetry

### Gonioscopy

- Indirect gonioscopy (Goldmann 3-2-1 mirror lenses)
- Direct gonioscopy (Koeppel lens etc)
- Dynamic gonioscopy (Zeiss, Posner, Sussmann lens)

### Tests of visual function

- Standard automated perimetry (SAP) – Humphrey or Octopus
- Goldmann perimetry
- Frequency doubling technology (FDT) perimetry

### Test of the structure of the ON and RNFL

- Evaluation of disc and RNFL photography
- Evaluation with:
  - Optical Coherence Tomography (OCT)

- Heidelberg Retina Tomograph (HRT)
- Glaucoma Diagnosis scans (GDx)

#### Anterior segment imaging

- Anterior segment OCT
- Ultrasound Biometry (UBM)
- Electrophysiology for the diagnosis of glaucoma

### **Management**

Indications for the various management options (no treatment, medical/laser/surgical treatment)

#### Medical treatment of glaucoma

Various available classes of medications and their:

- Modalities and various forms of administration
- Mechanism of action
- Indications
- Limitations
- Side-effects
- Quality of life
- Adherence/compliance
- Advise to chronic patients

Classes of medical therapy:

- Beta-receptor antagonists (selective, non-selective), Prostaglandin analogues, Prostaglandin synthase inhibitors, Prostaglandin synthase inhibitors, Carbonic anhydrase inhibitors (topical, systemic), Alpha-2 adrenergic agonists, Cholinergic agents (parasympathomimetics)
- Preservative and preservative free agents

#### Surgical treatment of glaucoma

- Indications
- Complications
- Side-effects
- Quality of life

#### Laser procedures

- Trabeculoplasty (ALT and SLT)
- YAG iridotomy
- Peripheral iridoplasty
- Laser suture lysis

#### Incisional surgery

- Trabeculectomy
- Indication and use of antimetabolites and anti-VEGF
- Aqueous shunts (non-valved and valved)
- Non-penetrating procedures
- MIGS
- Cyclodestructive procedures
- Examination under anaesthesia for congenital glaucoma
- Goniotomy and Trabeculotomy

Follow-up

Modality and frequency of examinations

Evaluation and signs of progression

Rate of progression

Evaluation of the patient's needs and individual management