Intraocular inflammation, uveitis, vitreoretinal diseases

Objectives

Identification or test for the causes and symptoms of systemic eye diseases by clinical examination and medical history, morphological documentation, laboratory tests and other investigations. Ability to reach correct conclusions and adopt a context-relevant approach.

- Knowledge of retina, uvea, choroid, sclera with emphasis on macular anatomy and physiology.
- Differentiation between congenital, inflammatory (infectious), degenerative, tumoral, traumatic and immunological processes using the following methods:
- Clinical examination and medical history.
- Morphological documentation.
- Ancillary testing concepts of fluorescein, fundus autofluorescence and indocyanine green (ICG) angiography as applied to retinal vascular and other diseases (e.g., indications, basic differential diagnosis based on angiographic patterns).
- Retinal electrophysiology and basic ophthalmic echography.
- Optical coherence tomography (OCT) (e.g., macular anatomy, determine pathophysiology behind structural alterations).
- Indications for and interpret basic electrophysiological tests (e.g., electroretinogram [ERG], electrooculogram [EOG], visual evoked potential [VEP], dark adaptation).
- Interpretation of basic echographic patterns (e.g., rhegmatogenous retinal detachment, tractional retinal detachment, posterior vitreous detachment, choroidal detachment, intraocular foreign body).
- Laboratory tests corresponding to other possible 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.
- Need to call another specialist or institution. When is this required, mandatory or superfluous?

Knowledge to be gained

Disorders affecting the

- Vitreous body
- Choroid
- Retina
- Head of the optic nerve

The vitreous body, retina, choroid, optic nerve head:

- Knowledge of the physical and optic characteristics.
- Knowledge of the anatomy, vitreous body oncology.
- Full knowledge of the clinical examination technique of morphological, functional of frequency of tests.
- Knowledge of vitreous body disorders, adjacent tissue disorders.
- Knowledge of the causal factors and risk factors.
- Treatment options, especially the surgical indication.
- Possibilities and limitations of surgery.
- Explanations for the patient.

Uveitis and Ocular Inflammation

Anatomy and physiology of:

- Retina, uvea, choroid, sclera with emphasis on macular anatomy and physiology

Clinical knowledge of ancillary testing:

- Indications for ancillary testing in the evaluation of uveitis (e.g., fluorescein angiography [FA], indocyanine green [ICG] angiography, optical coherence tomography [OCT], B-scan ultrasonography).
- Indications for a tailored approach (based on clinical features) to laboratory investigations, including obtaining tissue and fluid samples for examination and systemic imaging studies (e.g., x-ray of chest, sacroiliac joint, chest computerised axial tomography [CT or CAT] scan).
- Interpret fluorescein angiography, B-scan ultrasonography, and correlate clinically.
- Interpretation of results of ancillary tests (e.g., fluorescein angiography, OCT, B-scan ultrasonography) for diagnosis.
- Provide patient with all relevant information about proposed ancillary testing procedures for uveitis, including risks and complications.
- Techniques of anterior chamber and vitreous tap and of intravitreal injection of antibiotics in cases of bacterial endophthalmitis.

Clinical knowledge of diagnosis and pathology:

Definition and classification of intraocular inflammation.
Basic principles of history taking:

a. Ocular history

i. Correlation with possible anatomical diagnosis (eg, photophobia and anterior uveitis; floaters and posterior uveitis).

ii. The onset (sudden or insidious).

iii. The duration (limited or persistent).
iv. The course (acute, recurrent, chronic).
v. Investigation and treatment history.

b. Systemic history
i. Known diseases, including immunosuppressed states, such as HIV, malignancy, diabetes mellitus.
ii. Symptoms of recent onset for (eg, fever, chills, and rigors may suggest sepsis).
iii. Systems review, including all medications, past and current.

List the clinical features of:

a. Anterior uveitis
b. Intermediate uveitis
c. Posterior or panuveitis
d. Episcleritis and scleritis (eg, red eye, blurred vision)
e. Anterior segment cell and flare
f. Keratic precipitates (nongranulomatous or granulomatous)
g. Posterior synechiae
h. Vitreous cell and flare
i. Vitreous opacities
j. Snowbank
k Retinal and/or choroidal lesions
l. Retinal vasculitis
m. Retinal detachment (exudative, tractional, and rhegmatogenous)
n. Optic disc changes (eg, optic disc oedema, optic neuritis).

The typical demographic features, clinical features, and differential diagnosis of common, rapidly blinding causes for items 3a-3n above (based on local epidemiological data). For example:

a. Anterior uveitis
i. Infectious (eg, bacterial, viral, protozoal, parasitic)
ii. Inflammatory (eg, sarcoidosis, HLA B27-associated, juvenile idiopathic arthritis, Behçet disease, collagen vascular disease)
iii. Postsurgical uveitis
iv. Post-traumatic
v. Fuchs' uveitis syndrome
vi. Posner-Schlossman syndrome

b. Intermediate uveitis
i. Pars planitis
ii. Toxocariasis
iii. Sarcoidosis
iv. Multiple sclerosis

c. Posterior or panuveitis

i. Infectious (eg, toxoplasmosis, toxocariasis, tuberculosis, acquired and congenital ocular syphilis, acute retinal necrosis)
ii. Inflammatory (eg, sarcoidosis, Behçet disease, Vogt-Koyanagi-Harada disease, sympathetic ophthalmia)
iii. Postoperative uveitis
iv. Endophthalmitis (eg, postoperative, traumatic, endogenous, fungal, phacoanaphylactic)

d. Episcleritis and scleritis

i. Collagen vascular diseases (eg, rheumatoid arthritis, Wegener granulomatosis)
ii. Infection (eg, syphilis, tuberculosis, fungal, parasitic, bacterial)

- Evaluation the typical demographic features, clinical features, and differential diagnosis of uveitis in: Immunosuppressed individuals (eg, cytomegalovirus retinitis, endogenous endophthalmitis), masquerade syndromes, such as vitreoretinal lymphoma.
- Evaluation of common complications of common uveitic syndromes (eg, glaucoma, cataract, band keratopathy, macular oedema).

Signs and symptoms

Evaluation of clinical features of anterior uveitis, including:

a. Corneal pathology (active keratitis or scars, endotheliitis, band keratopathy)
b. Pattern of keratic precipitates (nongranulomatous, granulomatous)
c. Iris changes (rubeosis iridis, gross iris atrophy)
d. Anterior chamber evaluation of cells and flare, including grading according to standardisation of uveitis nomenclature (SUN) working group grading system
e. Differentiation episcleritis from scleritis
f. The activity (active or quiescent)

Regional epidemiology of uveitis and relate this information to the diagnosis.
List the following:

a. Uveitis in immunosuppressed individuals with active and recovered acquired immune deficiency syndrome or pharmacologic immunosuppression (eg, cytomegalovirus retinitis, pneumocystis (carinii)
b. Unusual infectious aetiologies for uveitis (eg, Lyme disease, West Nile fever)
c. Masquerade syndromes such as vitreoretinal lymphoma

Differentiation infective from non-infective causes of uveitis.
More complex complications of common uveitis syndromes (eg, retinal vascular occlusion, retinal neovascularisation and vitreous haemorrhage, inflammatory choroidal neovascularization, hypotony).

Clinical knowledge of therapy

- Indications and contraindications of topical steroids, nonsteroidal anti-inflammatory drugs (NSAIDs) and cycloplegics.
- Indications and contraindications for corticosteroid treatment of uveitis (eg, topical, local, systemic), including risks and benefits of therapy.
- Management of common uveitic syndromes
- Biologics.
- Indications and contraindications for commonly used immunotherapy for uveitis in addition to corticosteroid therapy (eg, azathioprine, cyclosporine A), including risks and benefits of therapy.
- Indications, contraindications and complications for immunosuppressive therapy in uveitis (eg, use of antimetabolites, cyclosporine, alkylating agents, biologic agents).
- Indications, contraindications and complications of intravitreal injection of medications (eg, corticosteroids, antiviral therapy, antibiotics, anti-VEGF, anti-mitotic agents) and drug delivery systems (eg, for corticosteroid, ganciclovir).

Retinal diseases

Diabetic Retinopathy

- Findings of major studies, including the following:

i. Early Treatment Diabetic Retinopathy Study (ETDRS)
ii. Diabetes Control and Complications Trial (DCCT)
iii. United Kingdom Prospective Diabetes Study (UKPDS)
iv. Diabetic Retinopathy Clinical Research Network (DRCRnet) Trials
v. Diabetic Retinopathy Vitrectomy Study (DRVS)

- Principles of laser photocoagulation (eg, laser response to change in power, duration and spot size) different treatment modes (PRP, Focal, Gird).
- Principles, techniques, and safety of intravitreal injections.

Central Vein Occlusion

- Findings of major studies, including the following:

i. Central Vein Occlusion Study (CVOS)
ii. Standard Care vs. Corticosteroid for Retinal Vein Occlusion (SCORE)
iii. Global Evaluation of implaNtable dExamethasone in retina Vein occlusion with macular edemA (GENEVA) Study Group
iv. Central Retinal Vein Occlusion (CRUISE) Study

Branch Vein Occlusion

i. Branch Vein Occlusion Study (BVOS)
ii. Standard Care vs Corticosteroid for Retinal Vein Occlusion (SCORE)
iii. GENEVA Study Group
iv. BRAnch Retinal Vein Occlusion (BRAVO) Trial

Retinopathy of Prematurity

i. Cryotherapy for Retinopathy of Prematurity (CRYO-ROP)
ii. Early Treatment for Retinopathy of Prematurity (ETROP)

Age Related Macular Degeneration

i. Treatment of Age-Related Macular Degeneration with Photodynamic Therapy Study (TAP)
ii. Verteporfin in Photodynamic Therapy Study (VIP)
iii. Minimally Classic/Occult Trial of the Anti-Vascular Endothelial Growth Factor (VEGF) Antibody Ranibizumab in the Treatment of Neovascular AMD (MARINA)
iv. Anti-VEGF Antibody for the Treatment of Predominantly Classic Choroidal Neovascularisation in AMD (ANCHOR)
v. The Comparisons of Age-Related Macular Degeneration Treatments Trials (CATT)

Retinal detachment

i. Knowledge of the anatomy, embryology and physiology of the retina.
ii. Full knowledge of the clinical examination technique – morphological, functional – frequency of examinations.
iii. Correlation of morphology and function.
iv. Different types of retinal detachment (ie, rhegmatogenous, tractional, exudative).
v. Knowledge of disorders of the retina that suspect or predispose to detachment, adjacent tissue disorders (eg, vitreous haemorrhage, posterior vitreous detachment, retinal tears, giant retinal tears, lattice degeneration with atrophic holes).
vi. Knowledge of other causal factors and risk factors.
vii. Treatment options especially the surgical indication.
viii. Possibility and limitations of surgery.
ix. Explanations for the patient.
x. Techniques for retinal detachment repair, including indications, mechanics, instruments, basic techniques, and surgical adjuvants, including heavy liquids, expandable gases, and silicone oil for the following:
- Pneumatic retinopexy
- Scleral buckling
- Vitrectomy

Retinal trauma: diagnosis, evaluation, treatment, and classification open and closed globe trauma (eg, Birmingham Eye Trauma Terminology System).

Evaluation, and treatment postoperative/posttraumatic choroidal detachments and sympathetic ophthalmia.

i. Commotio retinae
ii. Rupture of the choroid
iii. Purtscher retinopathy

Less common diseases

Typical features of:

i. Central Serous Chorioretinopathy
ii. Myopic maculopathy
iii. Serous retinal detachment secondary to optic disc pit
iv. Ocular histoplasmosis syndrome
v. Phenothiazine/tamoxifen/chloroquine toxicity

Hereditary retinal pathologies, e.g., retinitis pigmentosa, main macular dystrophies (eg, Stargardt, Best, cone dystrophy and others).

i. Diagnosis, evaluation and treatment of postoperative/post-traumatic endophthalmitis.
ii. Diagnose, evaluate, treat (or refer) the following retinal vascular diseases:
iii. Macular telangiectasia
iv. Coats disease
v. Acquired retinal macroaneurysms
vi. Ocular ischemic syndrome
vii. Sickle cell retinopathy.
viii. Eales Disease

Eye in Systemic diseases

Knowledge to be gained

(illustrated by a few examples)

- Chromosomal disorders
  i. deletion syndrome
  ii. sex chromosome disorder
  iii. trisomy syndrome

- Heart diseases
- Collagenoses
- Endocrine disorders
- Pituitary disorders
- Gastrointestinal disorders
- Ear disorders
- Haematological disorders
- Immune system disorders (including AIDS)
- Infectious diseases
- Inflammatory disorders of unknown aetiology (sarcoidosis/Boeck's disease)
- Malignant tumours / disorders of the lymphoreticular system, metastases, Non-Hodgkin's lymphomas, "Remote Effects of Cancer"
- Metabolic disorders
- Muscular disorders
- Neuro-muscular transmission disorders
- Phacomatoses
- Physical and chemical effects
- Pregnancy
- Lung disorders – Renal disorders
- Skeletal disorders
- Facial malformations
- Other developmental disorders
- Skin and mucous membrane disorders
- Connective tissue disorders (see also collagenosis)
- Pigmentation disorders
- Vascular disorders – vitamin-related disorders.