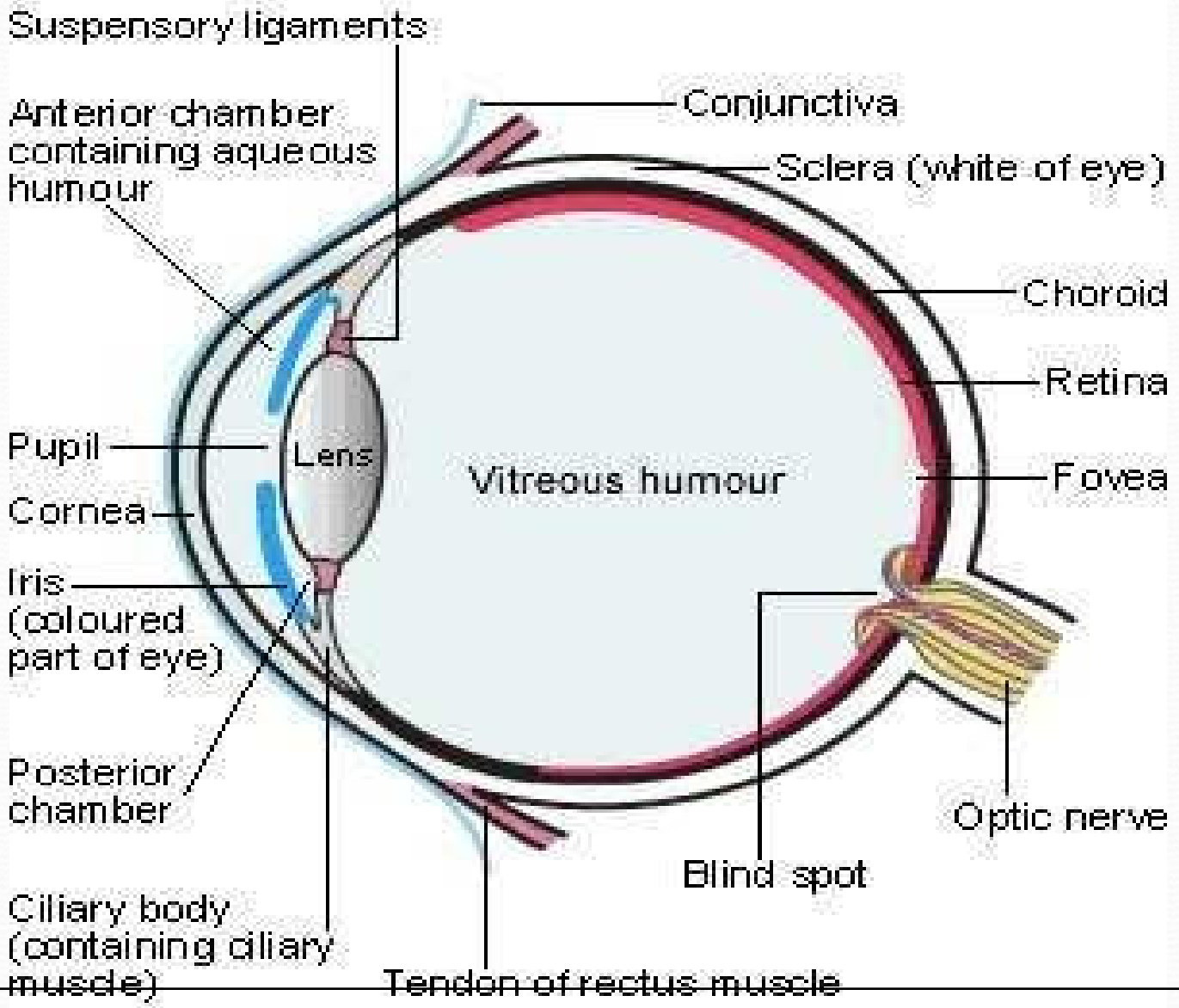
Introduction

Uveitis :

- inflammation of uveal tract (iris, ciliary body & choroid) and of neighbouring structures(retina, vitreous, optic nerve)



IUSG classification

Group	SubGroup
Infectious	Bacterial Fungal Viral Parasitic Others
Non Infectious	Known Systemic Association No Known Systemic Association
Masquerade	Neoplastic Non Neoplastic

Anatomical classification

Type	Primary Site	Includes
Anterior Uveitis	Anterior Chamber	Iritis, Iridocyclitis Anterior cyclitis
Intermediate Uveitis	Vitreous	Pars Planitis Posterior cyclitis Hyalitis
Posterior Uveitis	Retina or Choroid	Focal,Multi Focal or Diffuse Choroiditis Chorioretinitis Retinitis Retinochoroiditis Neuroretinitis
Pan Uveitis	Anterior Chamber,Vitreous and Retina or choroid	

Pathological Classification

Granulomatous	Non granulomatous
Large greasy mutton fat KPs Iris nodules-Koeppe & Busacca	Confluent, fine white coloured small(lymphocyte,plasma cells pigments)

Descriptors of Clinical Behaviour

Type	Descriptor	Definition
Onset	Sudden Insidious	
Duration	Limited Persistent	≤3 Months ≥3Months
Course	Acute Recurrent Chronic	Sudden Onset+Limited Duration Repeated Episodes,inactive periods ≥3 months off treatment Persistent,Relapse in <3 months off treatment

Approach to patient of Uveitis

Symptoms	Anterior : photophobia, redness, watering, pain,↓VA; may be asymptomatic Intermediate: floaters, photopsia, ↓VA Posterior: ↓VA,Photopsia, floaters, scotomata
POH	Previous episodes and investigation; surgery/trauma
PMH	Arthropathies (e.g. Ankylosing sponylitis), Chronic infections (e.g. HSV, tuberculosis), systemic inflammation(e.g.sarcoid,Behcet,s disease)
SR	Detailed review of all systems

Approach to patient of Uveitis

FH	Family members with Uveitis or related diseases
SH	Travel/residence abroad, pets IV drugs, sexual Hx
DX	Including any systemic immunosuppresion
AX	Allergies or relevant drug contraindictions
Visual acuity	Best-corrected/pin-hole;near
Visual Function	Check for RAPD, colour vision
Conjunctiva	Circumcorneal injection
Cornea	Band keratopathy, keratic precipitates (distribution,size, pigment)

Approach to patient of Uveitis

AC	Flare/ cells, fibrin, hypopyon
Gonioscopy	PAS (consider if ↑IOP)
Iris	Loss of pattern,Transillumination defects/sectoral atrophy, miosis, posterior synechiae, heterochromia, Koeppe or Busacca nodules ,NVI
Lens	Pigment on ALS,cataract, aphakia/ pseudophakia
Tonometry	
Dilated fundoscopy	(non-contact handheld lens ±indirect/indenting)
Vitreous	Haze, cells, snowballs, opacities, subhyaloid precipitates (KP-like but on posterior vitreous face)
Optic disc	Disc swelling, glaucomatous changes, atrophy

Approach to patient of Uveitis

Vessels	Inflammation (sheathing, leakage), ischaemia (BRAO, B/CRVO, retinal oedema), occlusion
Retina	CMO, uni/multifocal retinitis (blurred white lesions may progress oedema,)occlusion
Choroid	Uni/multifocal choroiditis (deeper yellow-white lesions), associated exudative retinal detachment

Ocular Signs

Anatomical location	Condition
Forehead & Adnexa	
Vesicles	Herpes Zoster Ophthalmicus
Poliosis	VKH
Nodules	Sarcoid, Leprosy
Madarosis	Leprosy
Conjunctiva	
Granulomas	Foreign body granulomas Sarcoid
Cornea	
Dendritic keratitis, SPK	Viral uveitis
Sclero Kerato uveitis	Syphilis, tuberculosis, Hansen's & viral
Exposure and neurotrophic keratitis	Leprosy
Band Keratopathy	Juvenile rheumatoid arthritis, Sarcokdosis

Ocular signs

Anatomical location	Condition
Iris/Pupil	
Miotic and irregular pupils	posterior synechiae (but the response of the pupil to light and near is symmetric),Festooned pupil,seclusio pupillae,occlusio pupillae,ectropion pupillae
Relative Afferent Pupillary Defect	Asymmetric disc involvement as a result of disc edema due to uveitis or optic atrophy as a result of chronic uveitis
Sectoral iris atrophy	Herpetic uveitis (irregular constriction of pupil)
Argyl Robinson pupil	Neurosyphilis

Ocular signs

Anatomical Location	Condition
Gonioscopic evaluation	
Peripheral Anterior Synechiae	Sarcoid, Tuberculosis
Iris nodules	Sarcoid, Tuberculosis
Hyphema	Herpetic
Foreign body	Trumatic uveitis

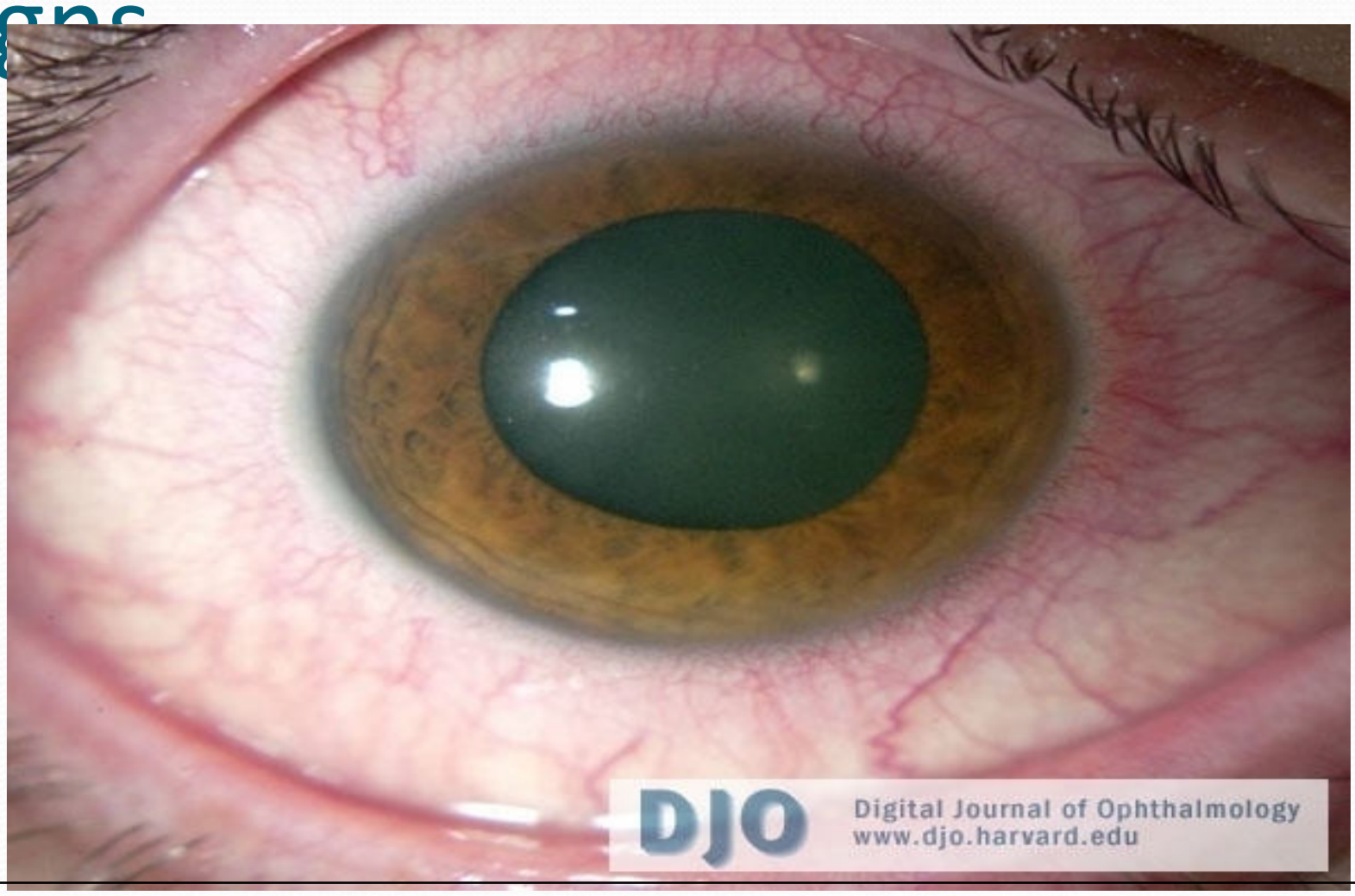
Grading of AC cells

Grade	Description
0	None
1+	Faint (just detactable)
2+	Moderate (iris+lens clear)
3+	Marked (iris+lens hazy)
4+	Intense (fibrin or plastic aqueous)

Grading of AC Flare

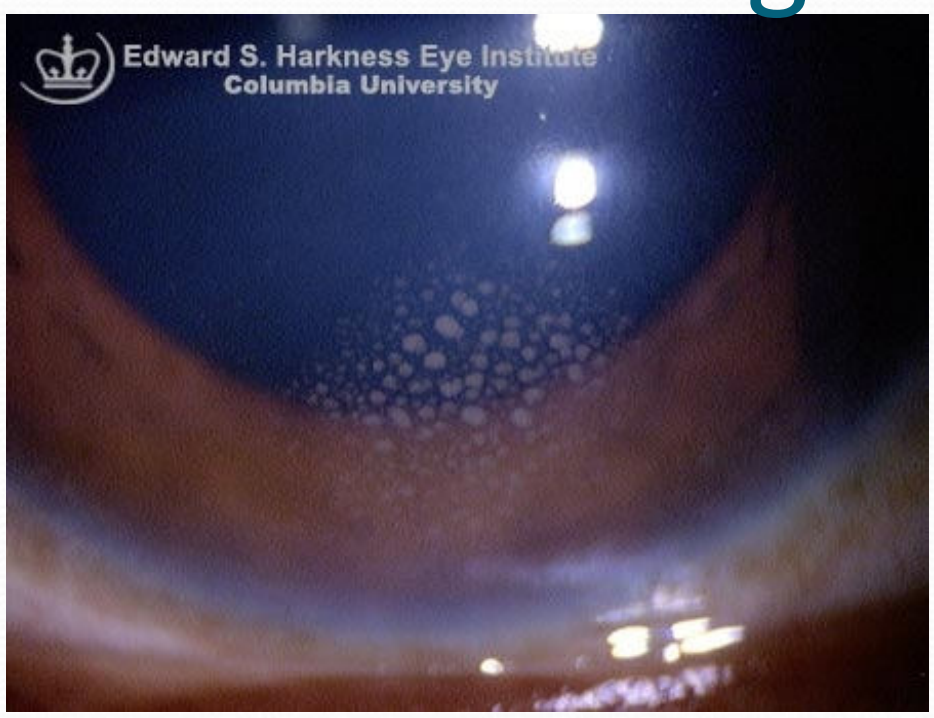
Activity	Cells
0	<1
0.5+	1-5
1+	6-15
2+	16-25
3+	26-50
4+	>50

Signs



Signs

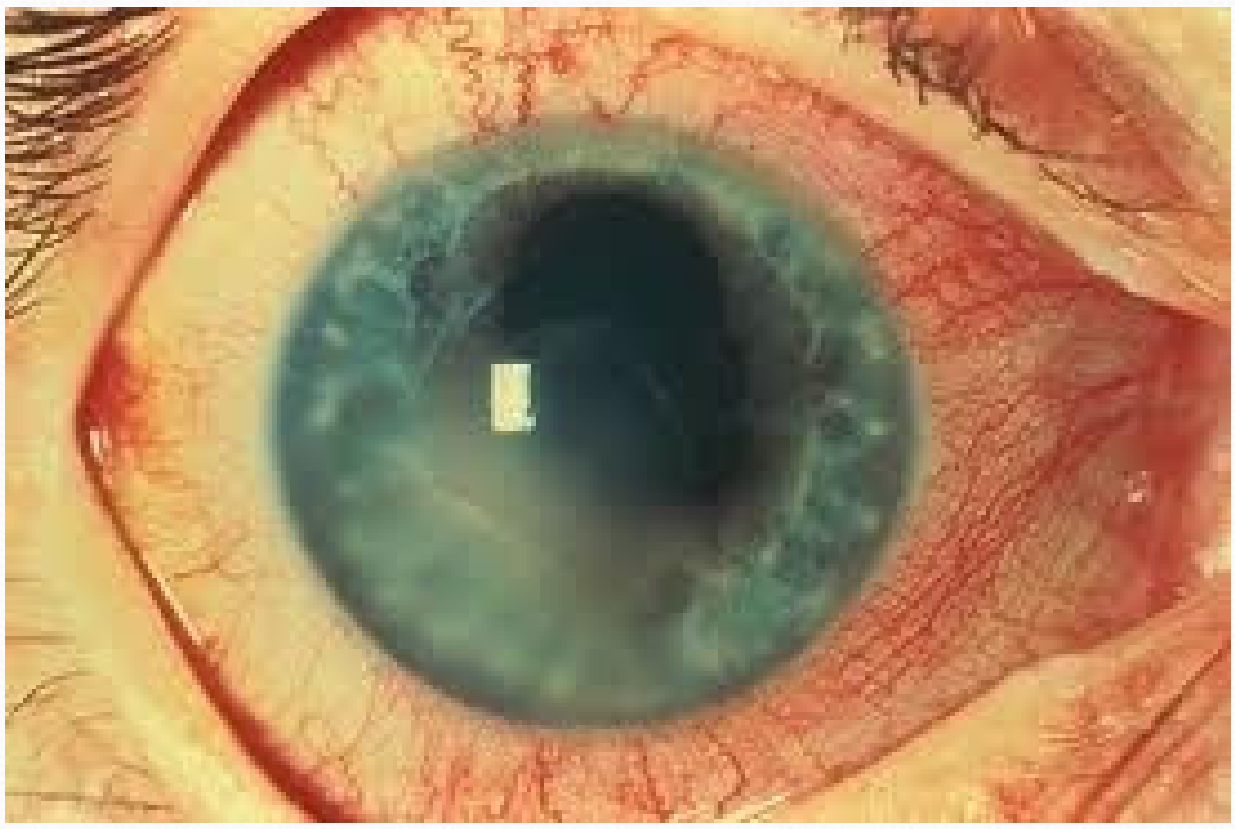
KP: fibrous deposits on the posterior surface of the cornea, usually associated with uveitis.



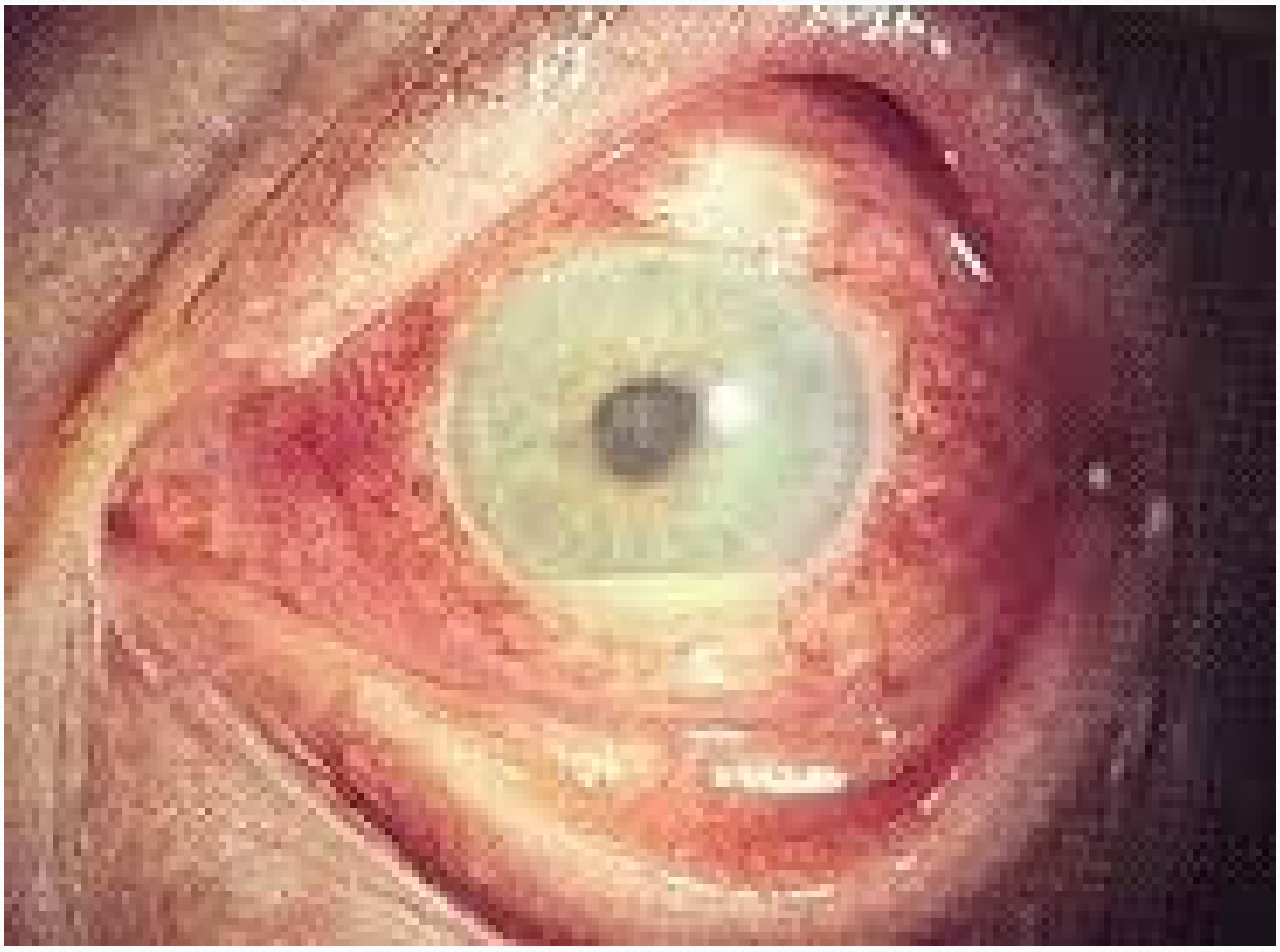
Both the size and distribution of keratic precipitates are helpful in the differential diagnosis.

White, yellowish greasy precipitates of inflammatory cells
Typically distributed in a wedge-shaped region on the inferior corneal endothelium, known as Arlt's triangle

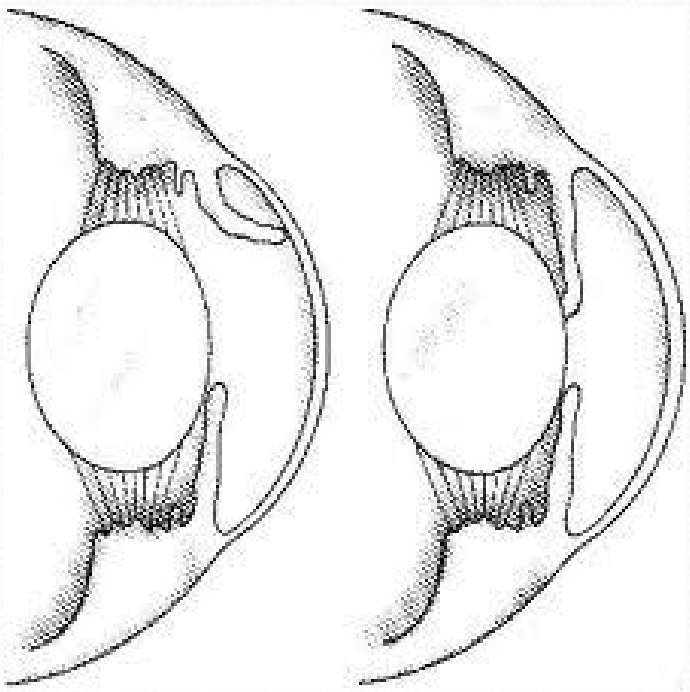
AS

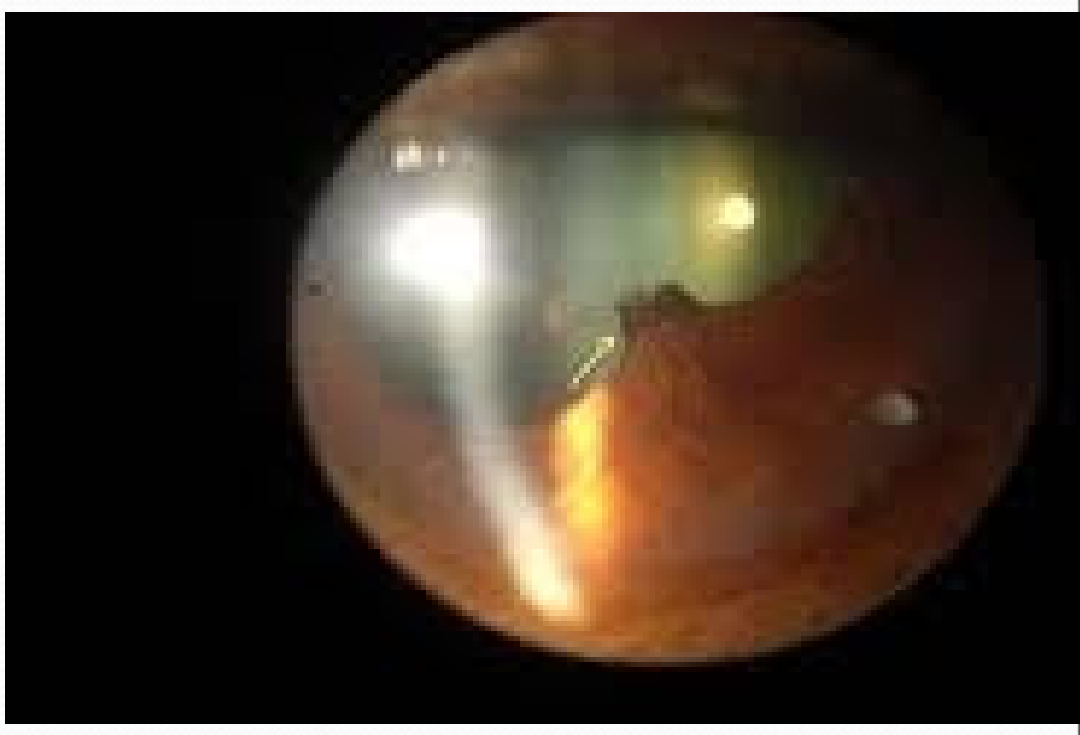


Fibrin clot and posterior synechiae in a patient with acute, anterior uveitis and ankylosing spondylitis .

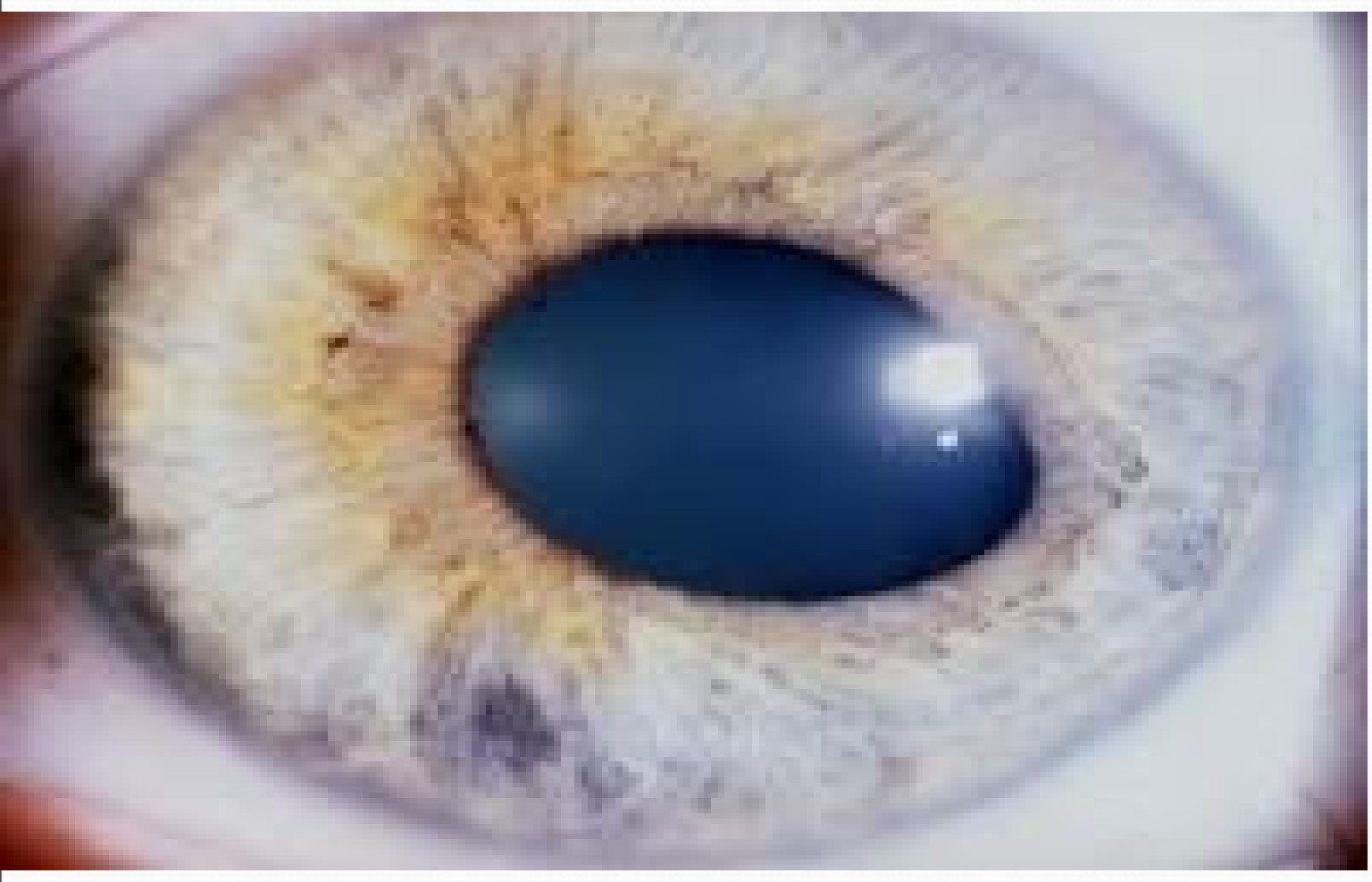


Signs





Iris atrophy in a patient with herpes simplex virus–associated anterior uveitis.



Etiology of anterior uveitis

- Acute
  - Idipathic
  - HLA-B27 associated
    - Ankylosing Spondylitis
    - Reiter's syndrome
    - IBD
    - Psoariasis
  - Herpetic anterior uveitis(HSV and VZV)
  - Posner Schlossman Syndrome
  - Systemic diseases associated
    - Diabetes
    - Sarcoidosis
    - TINU, IgA Nephropathy

Etiology of anterior uveitis

- Chronic
  - Fuch's Heterochromic uveitis
  - JIA

Systemic signs

Systemic sign	Differentials
Poliosis	VKH, Sympathetic ophthalmia
Loss of Hair	SLE, VKH and Syphillis
Hypo-pigmentation of the skin	Leprosy,Sympathetic ophthalmia, VKH harada's
Rash	Vascuitic disease, SLE, Behcet's Disease, Syphilis
Erythema nodosum-tender violaceous subcutaneous nodules in lower extremities	I BD, sarcoidosis, TB, Behcet's
Scaling of the skin	SLE, Psoriatic arthritis, Syphilis and Reiter's syndrome
Discoid lesions	SLE, Psoriatic arthritis, Syphilis, Reiter's
Nail abnormalities	Psoriatic arthritis, reiter's,Vasculitis
Oral ulcers alone	SLE& IBD
Urethral discharge	Reiter's s, Syphilis, HSV, Gonococcal Urethritis

Systemic sign	Differentials
Epididymitis	Behcet's , TB
Prostatitis	Reiter's , AS and Gonococcal
Nephritis	Vasculitis (Wegener's, SLE, Behcet's),Sarcoidosis,TB
Arthritis	Sero negative spondyloarthropathies, JRA, Behcet's, Sarcoidosis, SLE, Leprosy, Relapsing polychondritis
Cartilage loss	Relapsing polychondritis,Syphilis, Gonococcal, Wegener's
Nasopharyngeal manifestation	Wegener's , Sarcoidosis, Whipple's, Mucormycosis
Cystitis	Whipple's, Reiter's
Lymph nodes	TB, Sarcoidosis, Lymphoma
Neuropathy	Leprosy, HZV, Sarcoidosis, MS, Syphilis

Systemic sign	Differentials
Hearing loss	VKH, Sarcoidosis
Respiratory Symptoms	TB, Sarcoidosis, Wegener's
Bowel disease	Whipple's, Crohn's, Ulcerative colitis
Fever	Collagen vascular disease, TB, Leptospirosis

Nongranulomatous Vs granulomatous Uveitis

	Non-granulomatous	Granulomatous
Onset	Acute	Insidious
Evolution	Spontaneous regression (mostly)	Chronic
Keratic precipitates	Confluent, fine white coloured small(lymphocyte,plasma cells pigments)	Non confluent, large mutton fat keratic precipitates (epithelioid cells, hystiocytes)
Iris	Occasionally Koeppe's nodules	Frequent Koeppe's and Busacca's nodules
Flare	Intense	Mild
Synecthiae	Easy to break with mydriatics in early stages.	Dens broad based, difficult to break
Vitreous exudates	Fine punctuate opacities in vitreous	Heavy vitreous exudates

Differential Dignosis

Feature	Acute conjunctivitis	Acute iridocyclitis	Acute congestive glaucoma
Onset	Gradual	Usually gradual	Sudden
Pain	Mild discomfort	Moderate in eye and along the first division of trigeminal nerve	Severe in eye and the entire trigeminal area
Discharge	Mucopurulent	Watery	Watery
Coloured halos	May be present	Absent	Present
Vision	Good	Slightly impaired	Markedly impaired
Congestion	Superficial Conjunctival	Deep ciliary	Deep ciliary
Tenderness	Absent	Marked	Marked
Pupil	Normal	Small and irregular	Large and vertically oval

Differential dignosis

Anterior chamber	Normal	May be deep	Very shallow
Iris	Normal	Muddy	Oedematous
Intraocular pressure	Normal	Usually normal	Raised
Media	Clear	Hazy due to KPs, aqueous flare and pupillary exudates	Hazy due to oedematous
Constitutional symptoms	Absent	Little	Prostration and vomiting

When to Investigate

In general, Investigations may be performed for:

- Diagnosis : by identifying causative or associated systemic disease;by identifying a definite aetiology
- Management:monitoring disease activity/complication(e.g.OCT for macular oedema);monitoring potential side-effects of treatment (e.g. Blood tests for some immunosuppressants.)

Role of investigation

Monitoring disease

- OCT
- FFA
- EDTs
- Visual fields

Role of Investigation

Monitoring

- Regular BP
- Weight
- BM
- Urinalysis
- Blood test

Investigations in diagnosis of Uveitis types

Investigation	Consider
Base-line FBC, ESR	
Syphilis serology	Syphilis
ANA (in children)	JIA
Urinalysis	TINU (Protein),diabetes (glucose)
CXR	TB, sarcoidosis
ACE	Sarcoidosis
ANCA	Wegener's(PR3)
Toxoplasma serology	Toxoplasmosis
Toxocara ELISA	Toxoplasmosis
Borrelia serology	Lyme disease
HLA-B27	B27-associated disease
HLA-A29	Birdshot retinochoroidopathy
Mantoux test	TB, sarcoidosis
Fundus Fluorescein angiography	

Investigations in diagnosis of uveitis type

Electrophysiology	
Ultrasound B-scan	
High- resolution CT thorax	Sarcoidosis
CT orbits	
MRI head scan	Demyelination, sarcodosis, lymphoma
Gallium scan	Sarcoidosis
Lumbar puncture	Demyelination,Lymphoma
Conjunctival biopsy	Sarcoidosis
PCR of intraocular fluid	Infection
Vitreous biopsy	Infection, Lymphomia
Choroidal biopsy	Lymphoma

Complications

- Band keratopathy
- Cataract
- CMO
- Glaucomaous optic neuropathy
- Vitreous debris
- Retinal detachment
- Non-glaucomatous optic Neuropathy
- Choroidal neovascularization
- Subretinal fibrosis

Treatment

Medical or surgical

- Medical therapy

➢ Corticosteroid

i. Topically
ii. Perioculary
iii. Intravitreally
iv. Systemically

➢ Cycloplegics

➢ Systermic immunosuppressants
-Resistant,sight-threatening cases

➢ The use of anti-VEGF agents
-Macular oedema

- Secondary ↑IOP

i. Topical therapies

-Avoid those causing uveitis and CMO

- Surgery

➢ Cataract, glaucoma

➢ Vitreoretinal procedures

Fuchs heterochromic uveitis

- Rare , chronic ,young adults
- Unknown cause , no systemic association
- Mild ant uveitis,no signs of conjunctival inflamation, no ant synechia
- KPs diffusely distributed over the cornea
- Heterochromic iris due to loss of pigment epithelial cells.
- Inflamed vitreous
- 70% catarct
- Steroids are not effective and not prescribed,cataract surgery is done when indicated,and patients usually respond well

Immune-mediated systemic disorders

Spondyloarthritides such as ankylosing spondylitis and reactive arthritis ,are the **most common systemic immune disorders associated with uveitis**

- 20-40 %
- Male >female
- typically **unilateral**,
- **tends to resolve within three months of its onset**.
- **Recurrences are common, and can occur in the contralateral eye.**
- The prognosis for this form of uveitis is **generally excellent provided that acute attacks are treated early and vigorously**

Immune-mediated systemic disorders

- 7% **psoriatic arthritis** and 2 to 9 % of patients with **IBD** may develop uveitis,
- is frequently bilateral,
- posterior to the lens,
- insidious in onset,
- chronic in duration
- more common in females than males

Immune-mediated systemic disorders

Juvenile idiopathic arthritis (JIA) may be associated with uveitis, particularly in the subset of patients with pauciarticular disease and a positive antinuclear antibody.

- majority of patients asymptomatic.(white eye but with signs of uveitis present)
- usually bilateral
- insidious in onset,
- chronic in duration,
- anterior.
- commonly associated with complications such as band keratopathy, posterior synechiae , cataract formation, and glaucoma.

Immune-mediated systemic disorders

80 percent of patients with **Behcet's disease** develop uveitis

- typically bilateral.
- frequently episodic,
- generally does not resolve completely between episodes
- Retinal vasculitis is a frequent manifestation

Behcet

Male,young,bilateral , hypopyon