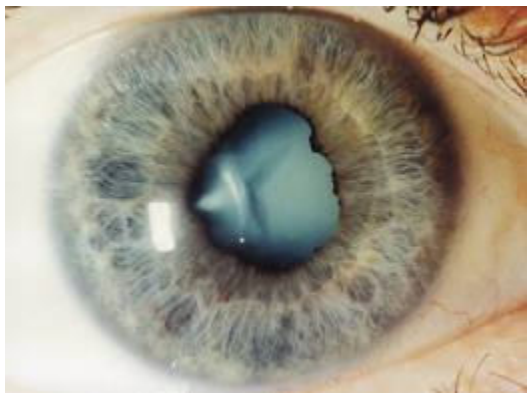
Anterior uveitis

Ophthalmology

DEFINITION:-

The inflammation of uveal tract.



Classification-

- I. ANATOMICAL CLASSIFICATION
- II. CLINICAL CLASSIFICATION
- III. ETIOLOGICAL CLASSIFICATION
- IV. PATHOLOGICAL CLASSIFICATION

A. Anatomical Classification – (IUSG) International Uveitis Study Group

- 1) Anterior Uveitis – Inflammation of iris and anterior part of ciliary body.
- 2) Intermediate Uveitis – Involvement of posterior part of ciliary body and extreme periphery of retina. (Pars planitis)
- 3) Posterior uveitis – Retinochoroiditis, choroiditis, retinitis, chorioretinitis
- 4) Diffuse or pan uveitis – Involvement of entire uveal tract

B. Clinical Classification -

- 1) Acute – sudden symptomatic onset. Persists for 3 weeks or less.
- 2) Chronic – Frequently insidious and asymptomatic. Persists for months or years.
- 3) Recurrent

C. Etiological Classification

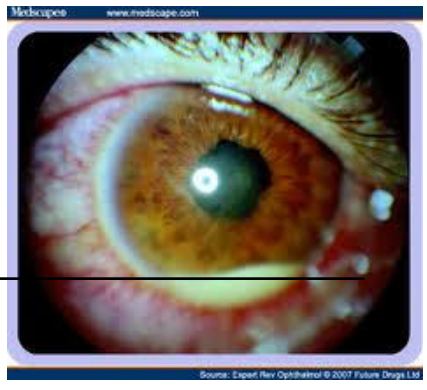
One of the most difficult problems in ophthalmology.

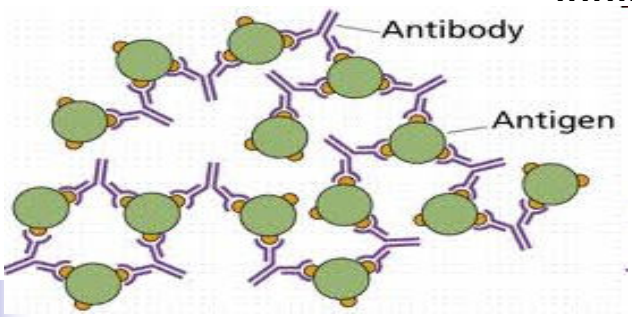
In most of the cases, probably, allergy is the cause.

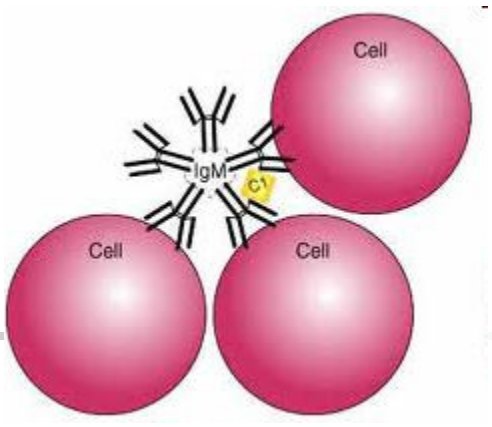
- 1) Exogenous-

  Introduction of organism into the eye through a perforating wound or ulcer.
- 2) Secondary infection-

  Due to direct spread from adjoining structures-
  - Cornea
  - Sclera
  - Retina







3) Endogenous

4) Allergic inflammation: Result of an antigen-antibody reaction occurring in the eye due to previous sensitization of uveal tissue to some allergen. The allergen is a foreign protein.

- Most of the cases of iridocyclitis do not have any specific cause and are probably allergic in nature.

5) Auto-immune -

Immune disorders

e.g. rheumatoid arthritis, SLE, ankylosing spondylitis, Reiter's syndrome, Behcet's Syndrome.

D. Pathological Classification

	Granulomatous	***Non-granulomatous***
1. ***Aetiology***	Organismal invasion	Antigen-antibody reaction
2. ***Course***		
a) Onset	Insidious	Acute
b) Duration	Chronic	Short
c) Inflammation	Moderate	Severe
3. ***Pathology***		
a) Lesion	Circumscribed	Diffuse
b) Iris	Focal reaction	Diffuse reaction
c) Keratic precipitates	Mutton fat	Fine plenty
d) Iris adhesions	Coarse, few, thick	Fine, plenty, thin
4. ***Investigations***	May be positive	Negative

PATHOLOGY AND CLINICAL SIGNS-

Fig. 10.2
Ciliary injection in acute anterior uveitis

Inflammation of iris and ciliary body

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Dilatation of blood vessels

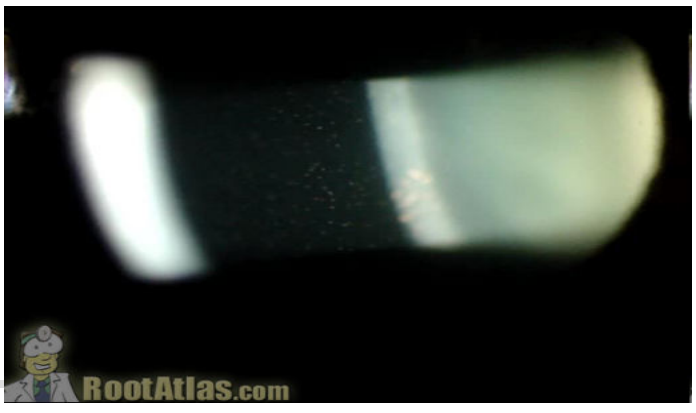
↓

Iris stromal edema.

SIGNS - Iris pattern altered.Iris colour altered. Iris thickened.Also accompanied by, ciliary congestion, conjunctival hyperaemia and chemosis of conjunctiva.

SIGNS –

- Iris pattern and colour altered.
- Iris thickened accompanied by, ciliary congestion, conjunctival hyperaemia and chemosis of conjunctiva.



Exudation of fibrin-rich fluid and inflammatory cells in the tissues

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Exudates escape into anterior chamber

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- Plasmoid aqueous
- **SIGNS - Aqueous flare (like the beam of projector in smokey theatre)**

Nutrition of corneal endothelium is affected due to toxins

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Corneal endothelium becomes sticky and edematous

↓

Cells desquamated at places

↓

Inflammatory cells stick to endothelial layer as cellular deposits .

SIGN – Keratic precipitates

In very intense cases, polymorphs pour out to sink to bottom of anterior chamber

SIGN – Hypopyon

Exudates cover the iris as a thin film and spread over pupillary area

SIGN – Irritation of iris musculature constrictor being more powerful than dilator, spasm results in miosis.

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If exudate is profuse

SIGN – Plastic iritis

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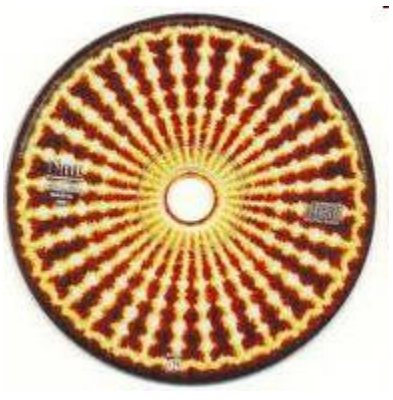


Blockage of pupil

SIGN – impairment of sight.

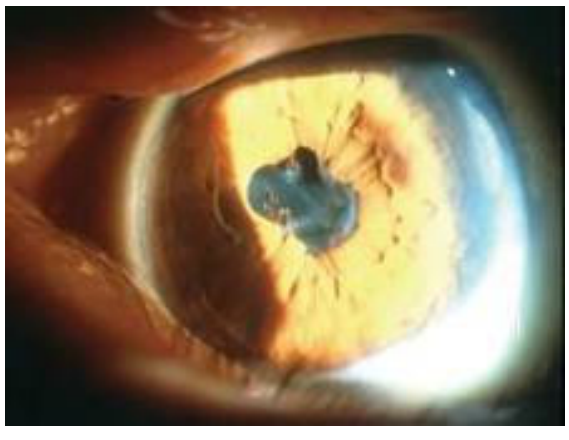
In early stages, there is adhesion of iris to lens capsule (Atropine may free the iris)

SIGN – Spots of exudate or pigment derived from posterior layer of iris left permanently upon anterior capsule of lens (valuable evidence of previous iritis)

Later on, the organization of the adhesion leads to formation of fibrous bands between pupillary margin of iris and lens capsule (atropine cannot rupture them)

SIGN – Posterior synechiae (more in lower part of pupil due to effect of gravity)

When adhesions are localized and a mydriatic is instilled, it causes intervening portions of circle of pupil to dilate.



SIGN– Festooned pupil (due to irregular dilatation and is a sign of present or past iritis.)

Pigment epithelium on posterior surface is pulled around pupillary margin so that patches of pigment on anterior surface of iris are seen.

SIGN – Ectropion of uveal pigment (due to contraction of organizing exudates upon iris)

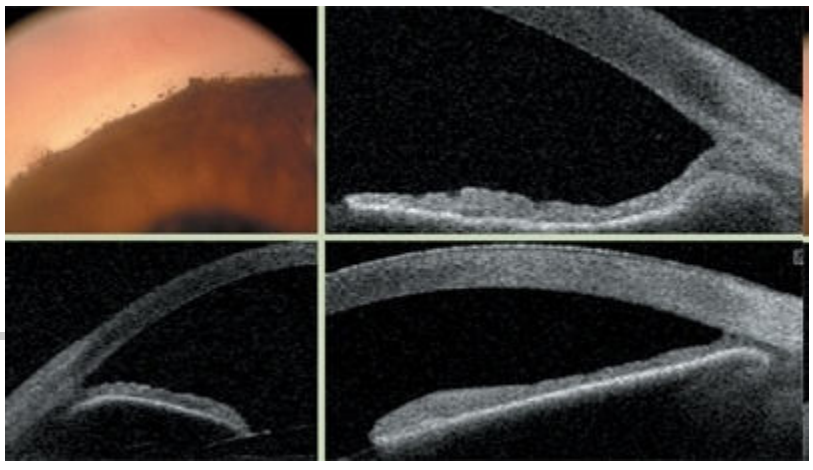
With recurrent attacks or severe cases, the whole circle of pupillary margin gets tied to lens capsule.

SIGNS – Annular or ring synechiae or Seclusio pupillae

Collection of aqueous behind iris since aqueous drainage is hampered.

Iris is hence bowed forwards like sail.

SIGN – Iris Bombe (anterior chamber is funnel shaped i.e. deepest in centre, shallowest at periphery)



As iris bulges forward and comes into contact with cornea

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Adhesions of iris to cornea at periphery develop

SIGNS – Peripheral anterior synechiae

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Obliteration of filtration angle (Hypertensive iridocyclitis)

SIGNS – Rise in IOP (secondary glaucoma)

When exudate is more extensive

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Organization of exudate across entire pupillary area

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Film of opaque fibrous tissue in pupillary area

SIGNS – Occlusio pupillae or Blocked pupil

Exudates fill up posterior chamber if there is much of cyclitis

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When these adhesions organize, the iris adheres to lens capsule.

SIGNS – Total posterior synechiae

When these adhesions organize, the iris adheres to lens capsule.

SIGNS – Total posterior synechiae

↓

Retraction of peripheral part of iris

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Anterior chamber is abnormally deep at periphery

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In worst cases of plastic iridocyclitis

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Cyclitic membrane formed behind lens

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Finally, degenerative changes in ciliary body

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Vitreous becomes fluid

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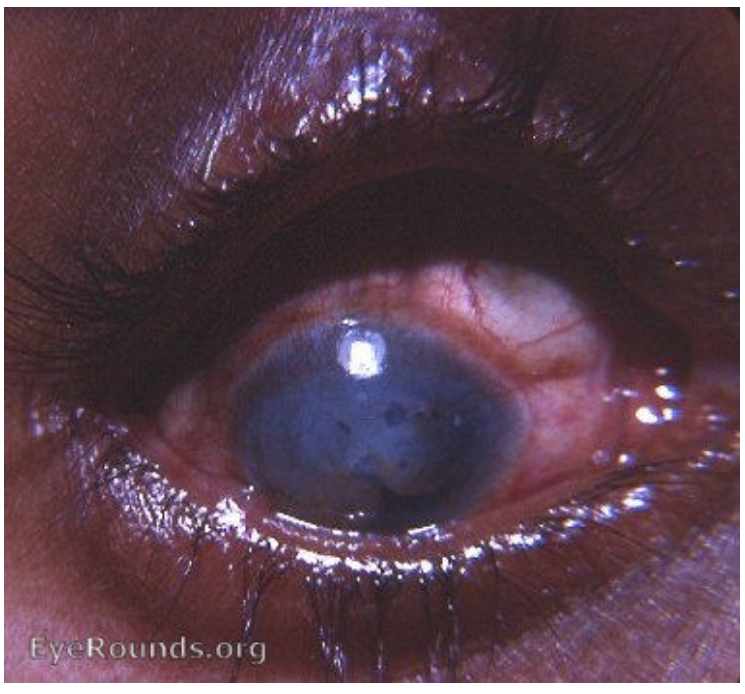
Nutrition of lens impaired

SIGNS – Complicated cataract



Phthisis bulbi will be the eventuality.

In final stages, there is interference with secretion of aqueous

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Fall in IOP

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Eye shrinks (development of soft eye is an ominous sign)

SIGNS – Phthisis bulbi

Clinical Features

SYMPTOMS

- Pain
- Diminished vision
- Redness of eye
- lacrimation
- photophobia

SIGNS

- Signs of vascular congestion
- Signs of exudation
- Signs of pupillary changes

Clinical Features

SIGNS

- *Lid oedema*
- *Circumcorneal congestion*
- *Corneal signs*
- *Anterior chamber signs*
- *Iris signs*
- *Pupillary signs*
- *Lenticular changes*
- *Changes in the vitreous*

Clinical Features

SIGNS

- ***Corneal signs***
  - Corneal oedema
  - Keratic precipitates (KPs)
    - Mutton fat, granular, red & old KPs
  - Posterior corneal opacity

Clinical Features

SIGNS

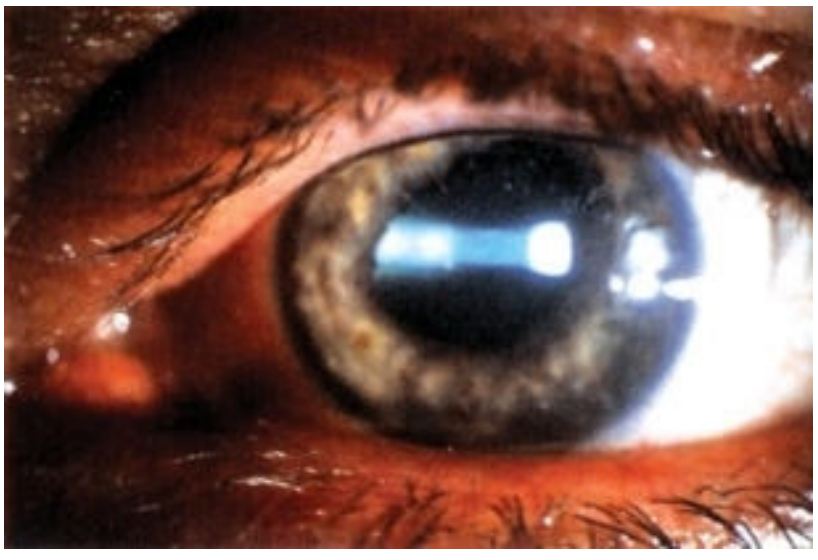
- ***Anterior chamber signs***
- **1. *Aqueous cells. It is an early feature of iridocyclitis.***
- − = 0 cells,
- ± = 1–5 cells,
- +1 = 6–10 cells,
- +2 = 11-20 cells,
- +3 = 21–50 cells, and
- +4 = over 50 cells

Clinical Features

2. Aqueous flare. It is due to leakage of protein particles into the aqueous humour from damaged blood vessels. It is demonstrated on the slit lamp examination by a point beam of light passed obliquely to the plane of iris.

- Grade :
- 0 = no aqueous flare,
- +1 = just detectable;
- +2 = moderate flare with clear iris details;
- +3 = marked flare (iris details not clear);
- +4 = intense flare (fixed coagulated aqueous with considerable fibrin).

- Aqueous Flare



Clinical Features

SIGNS

- ***Anterior chamber signs***

3. ***Hypopyon.*** When exudates are heavy and thick, they settle down in lower part of the anterior chamber as hypopyon (sterile pus in the anterior chamber)

4. ***Hyphaema*** (blood in the anterior chamber): It may be seen in haemorrhagic type of uveitis.

- Hypopyon in anterior uveitis

Clinical Features

SIGNS

- ***Iris signs***

1. *Loss of normal pattern.*
2. *Changes in iris colour.*
3. *Iris nodules*
4. *Posterior synechiae.*
5. *Neovascularsation of iris*

Clinical Features

SIGNS

- ***Pupillary signs***

1. *Narrow pupil.*
2. *Irregular pupil shape.*
3. *Ectropion pupillae*
4. *Sluggish pupillary reaction*
5. *Occlusio pupillae*

Clinical Features

SIGNS

- ***Lenticular signs***

1. *Pigment dispersal over anterior lens capsule*
2. *Exudates*
3. *Complicated cataract*

- ***Change in the vitreous***

Anterior vitreous may show exudates and inflammatory cells after an attack of acute iridocyclitis.

- Fuch’s heterochromic iridocylitis
- Posner Schlossman syndrome.

Fuch’s heterochromic iridocylitis

- Fuchs’ heterochromic iridocyclitis is a chronic nongranulomatous type of low grade anterior uveitis.
- It typically occurs unilaterally in middle-aged persons.

Fuch's heterochromic iridocylitis

- The disease is characterised by:
- (i) heterochromia of iris,
- (ii) diffuse stromal iris atrophy,
- (iii) fine KPs at back of cornea,
- (iv) faint aqueous flare,
- (v) absence of posterior synechiae,

- (vi) a fairly common rubeosis iridis, sometimes associated with neovascularisation of the angle of anterior chamber
- (vii)comparatively early development of complicated cataract and secondary glaucoma (usually open angle type).
- ***Treatment. Topical corticosteroids .***

Posner Schlossman syndrome.

- Recurrent attacks of acute rise of intraocular pressure (40-50 mm of Hg) without shallowing of anterior chamber associated with,
- fine KPs at the back of cornea, without any posterior synechiae,
- epithelial oedema of cornea,
- a dilated pupil, and a white eye (no congestion).

Posner Schlossman syndrome.

- The disease typically affects young adults, 40 percent of whom are positive for HLA-BW54.
- ***Treatment. It includes medical treatment to lower IOP*** along with a short course of topical steroids.

Differential Diagnosis

Character	Conjunctivitis	Iridocyclitis	Glaucoma
Infection	Superficial	Deep	----
Secretion	Mucopurulent	Watery	Watery
Pupil	Normal	Small, irregular	Large, Oval
Media	Clear	Sometimes pupil opaque	Corneal oedema
Tension	Normal	Usually normal	High
Pain	Mild	Moderate with first division of trigeminal	Severe and entire trigeminal

Character	Conjunctivitis	Iridocyclitis	Glaucoma
Tenderness	Absent	Marked	Marked
Vision	Good	Fair	Poor
Onset	Gradual	Usually gradual	Sudden
Systemic complications	Absent	Little	Prostration and vomiting

Complications of Uveitis

- Hypertensive uveitis – Secondary glaucoma
- Endothelial opacities in cornea due to formation of keratic precipitates
- Hypopyon and hyphaema
- Suppurative uveitis may progress to end-ophthalmitis or pan-ophthalmitis
- Toxic matter goes into lens – complicated cataract.
- Post inflammatory atrophy of zonules – subluxation of lens
- Vitreous – opacification of vitreous, liquification of gel, shrinkage of gel, retinal detachment

Contd..

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- macular edema
- optic neuritis – undergoes atrophy – optic nerve atrophy
- occlusive pupillae
- seclusion pupillae
- Ectropion of uveal pigment
- Hypotony – atrophic bulbi
- Secondary squint
- Iris atrophy

Investigations

- Local
  - Vision, refraction, fundus examination
  - IOP by Schiotz Tonometer
  - Slit Lamp examination
- Focal –
  - ENT, Dental, Genito-urinatory examination for septic focus.

- For associated systemic disorders –
  - CBC, ESR, MT, X-ray chest – Tuberculosis
  - Urine, Blood examination-Diabetes
  - VDRL, Kahn Test – syphilis
  - Urethral smear – gonorrhoeae
  - Urine culture – for UTI
  - Blood culture – Septicemia
  - ASLO Titre, C-reactive protein – for rheumatic disorders
  - Screening test for auto immune disorders

Treatment

1. Of iridocyclitis
2. Of complications and sequelae.

Treatment of Iridocyclitis

- Drugs used –
  - Mydriatics
  - Steroids
  - Cytotoxic agents
  - Cyclosporin

Essentials of treatment of anterior uveitis

Dilatation of pupil with atropine

- Hot application
- Control of acute phase of inflammation with steroids

Atropine

- Acts in 3 ways
  - by keeping the iris and ciliary body at rest
  - by diminishing hyperaemia
  - by preventing formation of posterior synechiae and breaking down any already formed.

Method of administration and dose:

- Atropine may be used in form of drops or ointment (1%) ,every four hours is usually sufficient.
- When pupil is well dilated, twice a day suffices.
- If atropine irritation ensues, one or the other substitutes for this drug may be used.

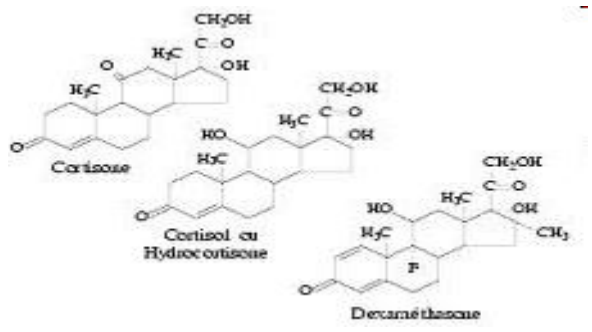
e.g. Homatropine, Cyclopentolate.

Mydriasis -the sub-conjunctival injection of 0.3 ml. of mydricaine, a mixture of atropine, procaine and adrenaline.

To avoid relapse-Atropine, or its equivalent -continued for at least 10 days to a fortnight after the eye appears to be quiet.

- Hot application
  - extremely soothing to patient by diminishing the pain.
  - of therapeutic service in increasing the circulation.

Corticosteroids



- Administered as drops or ointment, or more effectively as subconjunctival injections are of great value in controlling the inflammation in the acute phase.
- Occasionally, results are dramatic and eye becomes white with great rapidity.
- Minimize damages of antigen antibody reaction.

Aspirin

- Is very useful in relieving pain but if it is intense, stronger preparation are required.

- Cyclosporin

  -T-cell immunosuppressive drug. Used in resistant cases.
- Broad spectrum antibiotic

  - In case of suppurative uveitis.
- Specific Chemotherapy for Tuberculosis, syphilis, gonorrhoea.
- Increasing body resistance by multi-vitamins.

Treatment of complications and sequelae-

- Secondary glaucoma-
- Before formation of posterior or peripheral synechiae,- intensify atropinisation in order to allay the inflammatory congestion.
- Corticosteroids - topically and acetazolamide - systematically are very useful in such cases..

Annular synechiae-

- Iridectomy `
- (No operative procedure of this kind must be undertaken during an acute attack of iritis if it can be avoided. Reason – operation will set up a traumatic iritis which will result in the opening getting filled with exudates.)
- preventive iridectomy- Since ring synechiae is the result of recurrent attacks, iridectomy can be performed during quiescent interval.
- Difficulty – iris is atrophied, friable. Haemorrhage is common. Synechiae can be broken with YAG Laser.

- Hypopyon and Hyphaema may need evacuation and A.C. Wash.
- End-ophthalmitis – intravitreal injection of Decadron and Gentamicin
- Pan ophthalmitis – Evisceration
- Iris Bombe

Medical – 1. Atropine 2. Diamox

Surgical – 1. 4-dot Iridotomy

- using von Graefe's knife
- YAG Laser for breaking posterior synechiae

THANK YOU!