

Acute visual loss

Objectives

- Questions to ask the patients
- Use optimum techniques to get to the diagnosis : Pupillary response, visual field, ophthalmoscopy
- How to get to the most likely diagnosis

Why such a process need to be done?

- To the patient, it is devastating to lose the vision so abrupt.
- To us the proper diagnosis and management may reduce the degree of vision loss if done in early stage
 - Such diseases are
 - acute close angle glaucoma
 - Giant cell arteritis

What will consider to be acute visual loss?

- Hours to days
- Not more than a few weeks
- Question
 - Does the finding of reduced vision accidentally (no idea when it happen but found out because close the good eye and can't see) or really reduced (previous good vision)

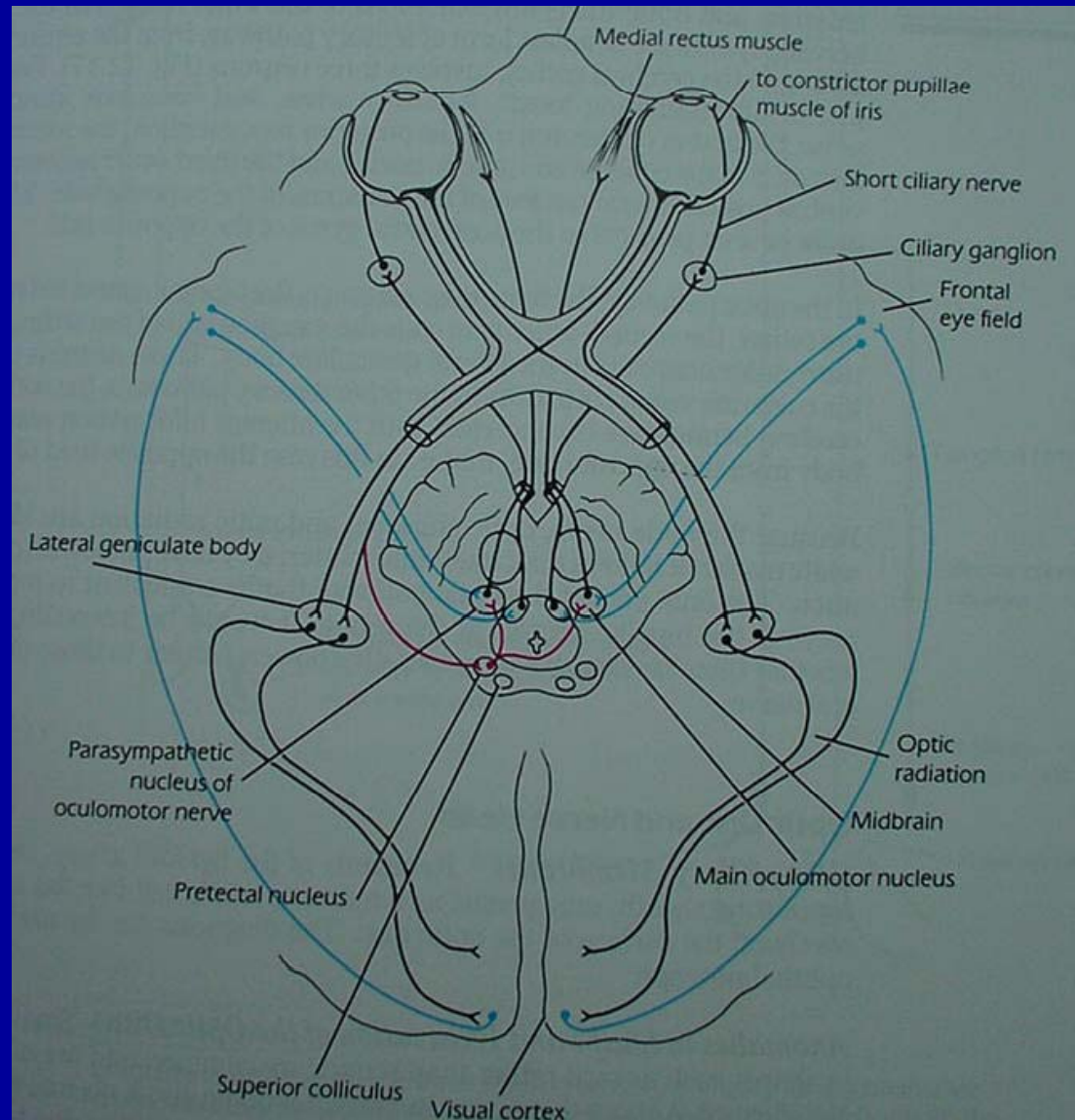
Basic Information(to ask)

- Is the visual loss
 - Transient or permanent
 - Monocular or binocular
 - Abrupt or gradual
 - Age and medical status(inc. medication) of pt.
 - Good vision previously?

Tools to use to find out (Ocular examination)

- Visual acuity testing
- Confrontation field testing
- Pupillary reaction
- Ophthalmoscopy
- Penlight examination
- Tonometry

Pathway of visual perception



Ocular examination

- Visual acuity testing
 - Best corrected visual acuity (BCVA)
 - Only a comparison to the norm so
 - VA 20/200 in dense cataract may be less dangerous than 20/40 in optic neuritis
 - So the speed of visual loss is important
 - And the underlying condition of the patient (cataract, myopia, AMD)
 - Combined the result with other finding
 - If the vision is not good ?? Lazy eye or amblyopia previously.
 - How to test the vision
 - What about lowering the contrast

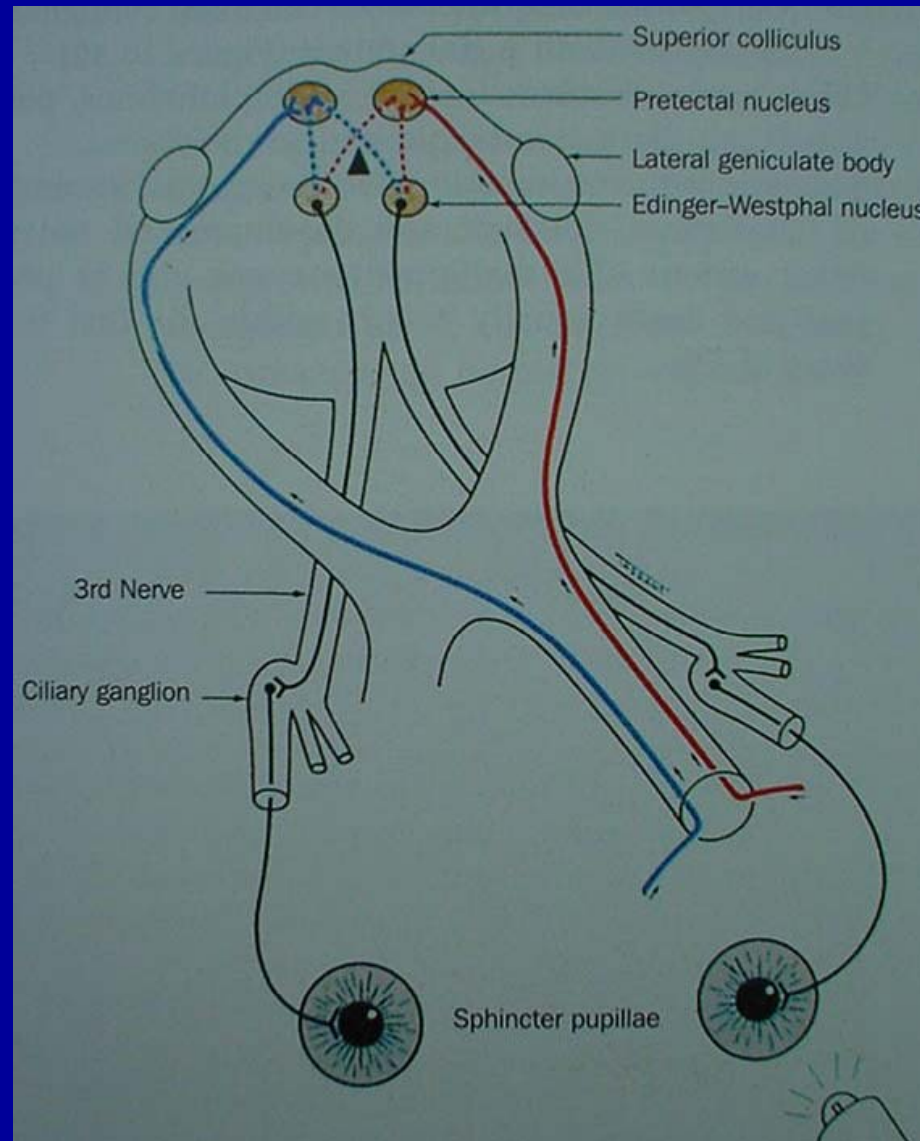
Ocular examination

- Confrontation field testing
 - Fact : Visual acuity only represents the central vision.
 - Visual field will let us know more of the extent.
 - How to do the test
 - Certain condition cause VF defect
 - Pathology of the visual pathway
 - Pathology of the peripheral retina

Ocular examination

- Pupillary reaction
 - Direct light reflex
 - Consensual light reflex
 - Marcus Gunn (relative afferent pupillary defect : RAPD)
- Afferent pathway CN II
- Efferent pathway CN III
- See again the visual pathway

Visual pathway



How to interpret the reflex

- Poor direct poor consensual?
- Poor direct good consensual?
- Marcus Gunn +ve
 - Don't forget the fact that
 - Medication(atropine,etc) may cause fixed dilated pupil
 - Lesion at the brain may have normal light reflex

Penlight examination

- Should come before direct ophthalmoscopy
- At least we see anterior part of the eye and see what could be the cause
- Fact! The pathway of light is clear throughout until reaching the retina so
 - Any defect from the front can cause blurred such as

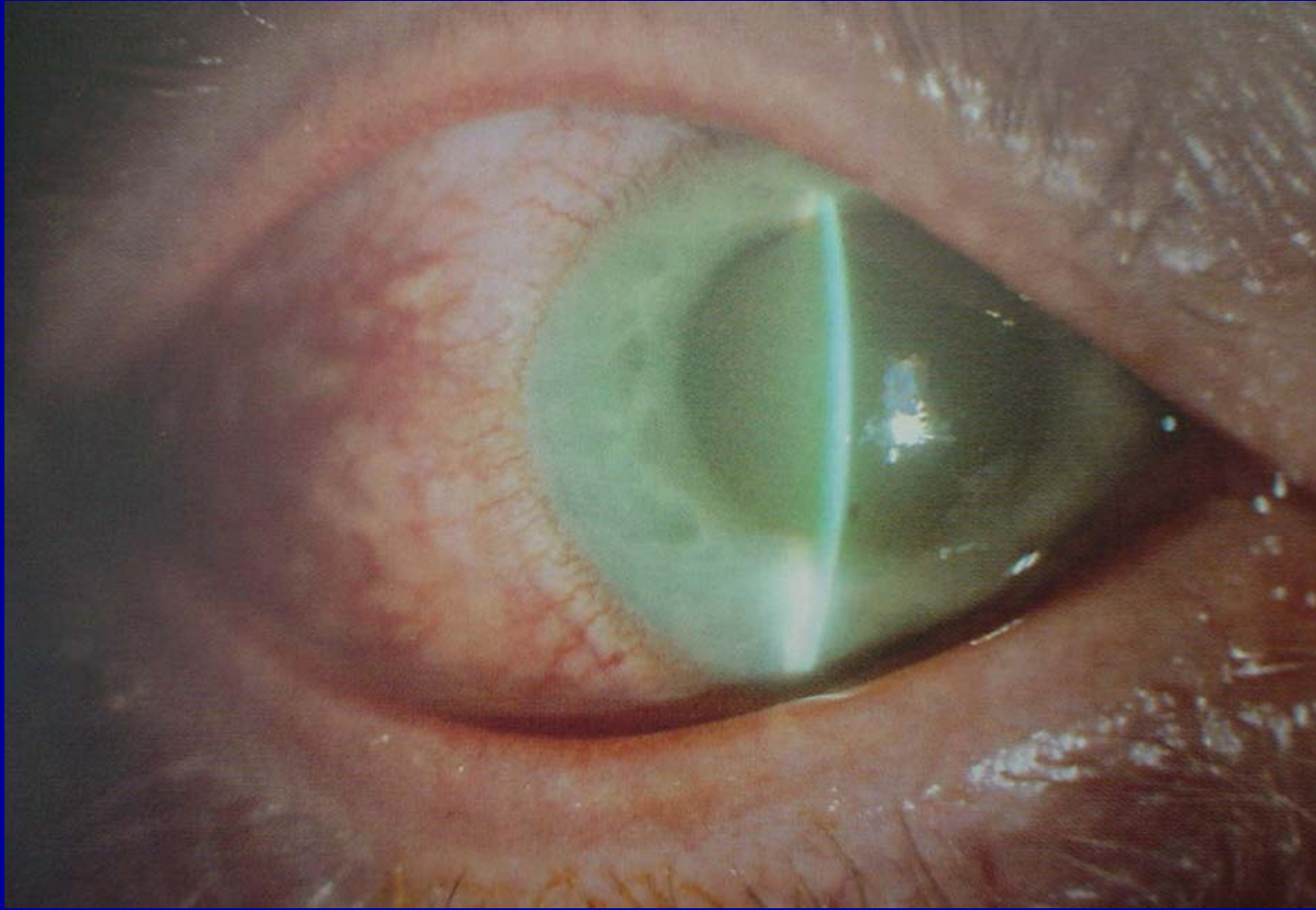
Penlight examination

- Cornea
 - Corneal edema (secondary to glaucoma)
 - If so what you gonna check next?
 - Corneal ulcer
 - Corneal abrasion

Fact : Cornea is highly innervated so pathology at the cornea usually associated with

- Pain (presenting symptom)
- Conjunctival injection (ciliary flush)

Corneal edema from AACG



Corneal ulcer



Penlight Examination

- Anterior chamber

- Bleeding

- Hyphema

- Inflammation and Infection

- Uveitis (difficult to see with penlight)
 - Hypopyon

NB. : hyphema usually have Hx of trauma, rarelt the condition happens spontaneously

: Uveitis will associate with pain and photophobia and ciliary flush

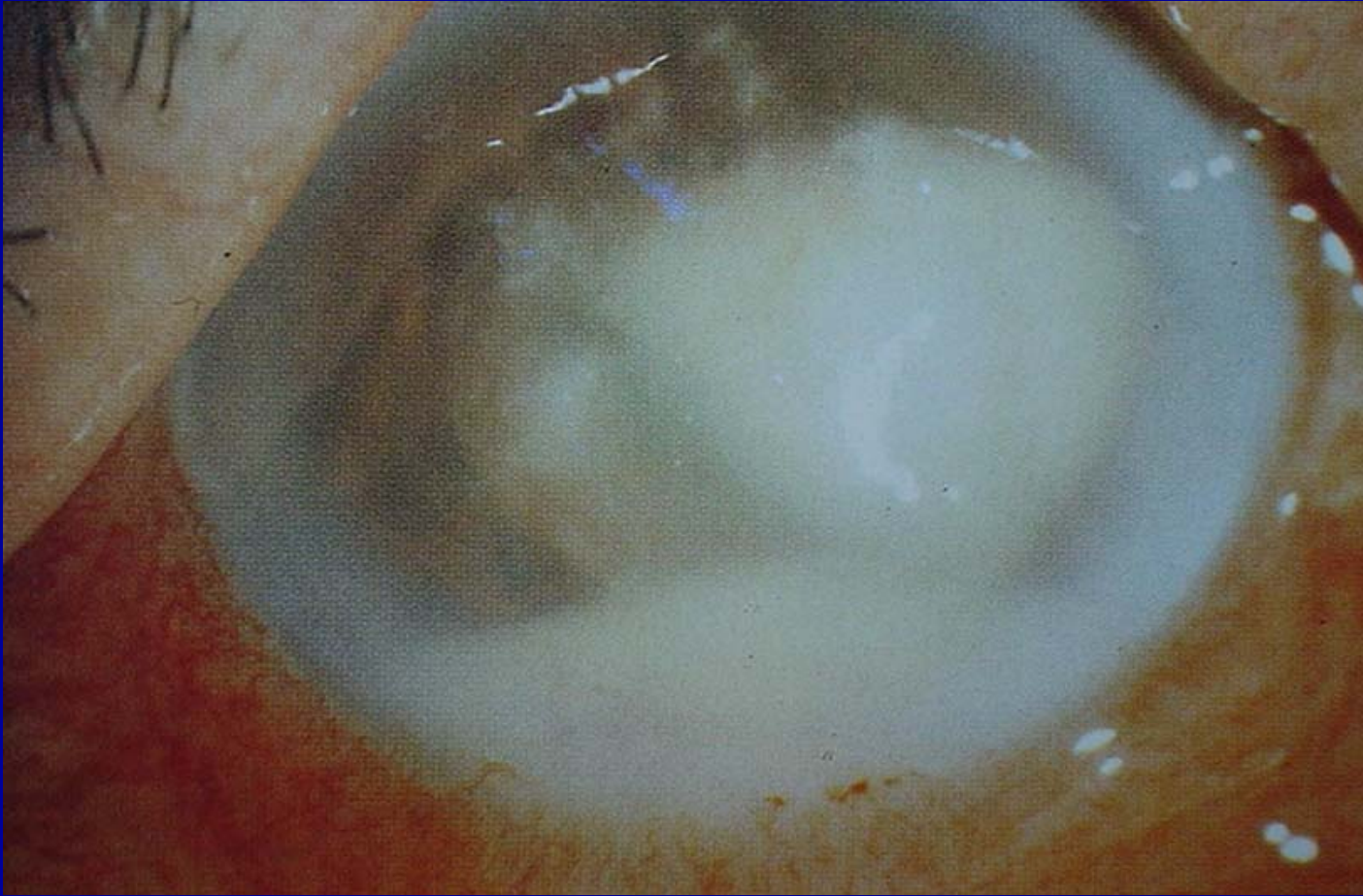
Hyphema



Penlight examination

- Anterior chamber inflammation
- Uveitis
- Endophthalmitis

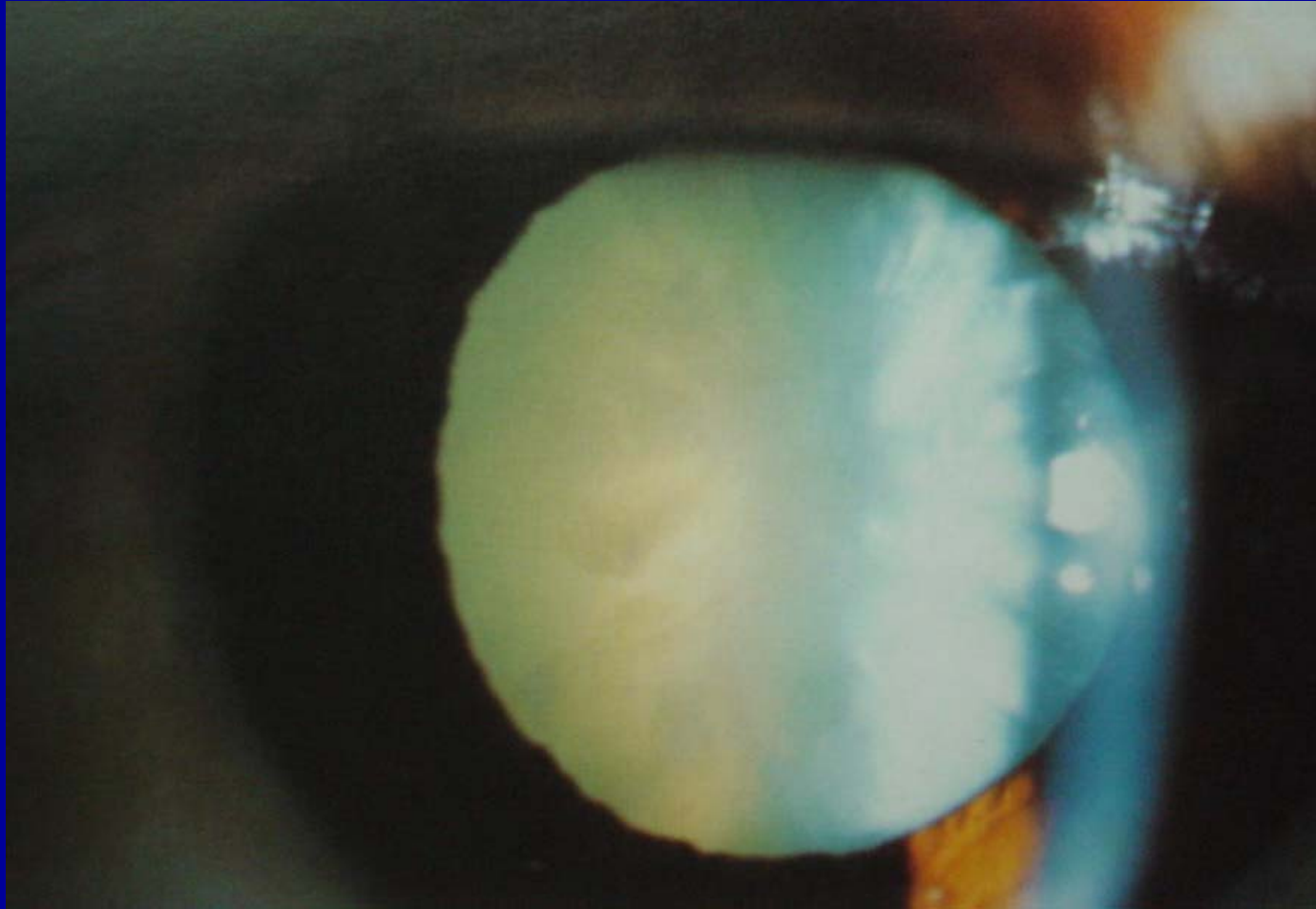
Hypopyon



Penlight Examination

- Lens
 - Cataract (rarely cause acute visual loss)

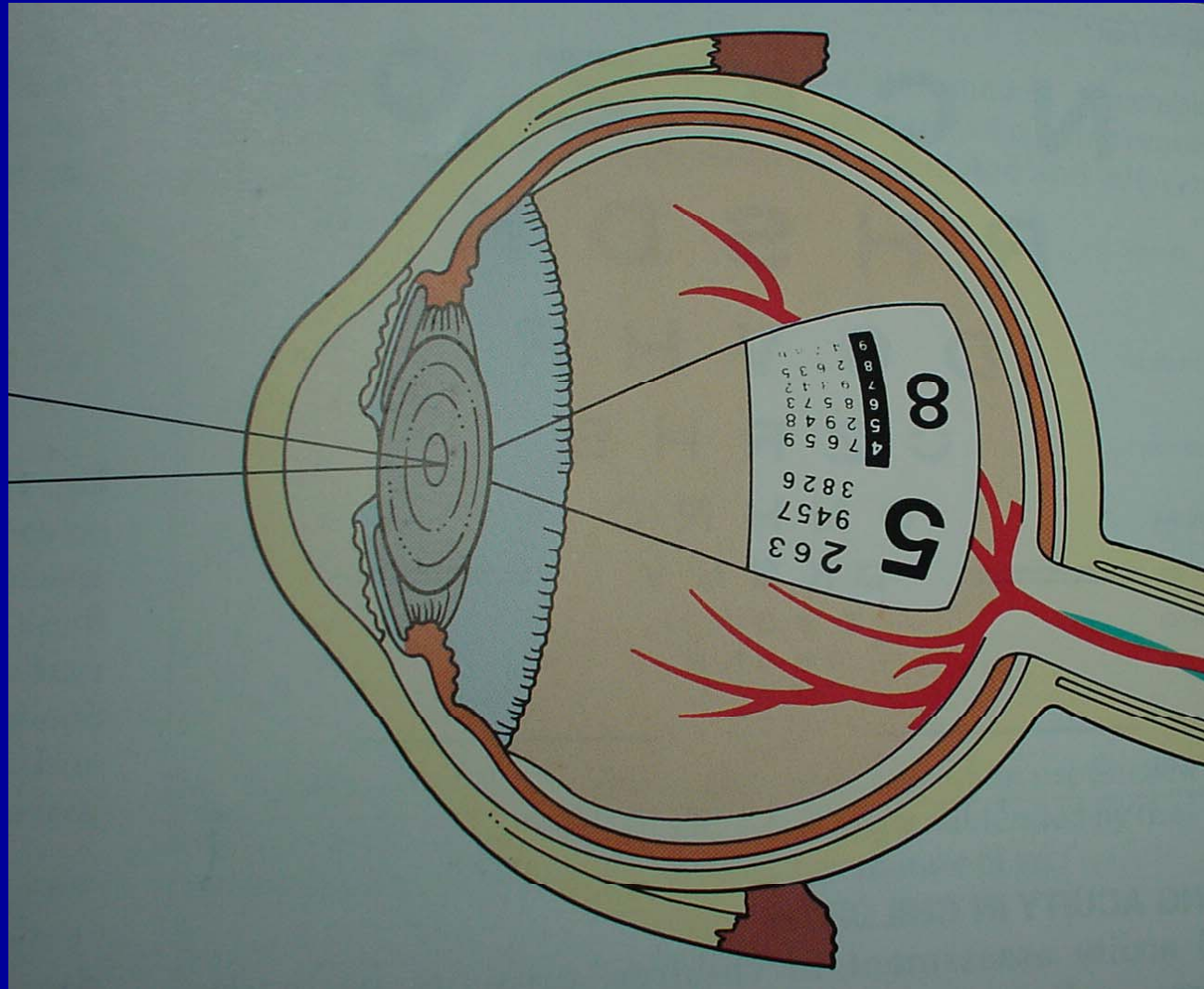
Cataract



Ophthalmoscopy

- The way to see the lesion inside the eye.
- Combined with the symptom may guide us what to pay a particular attention to
- Again! Back to see the visual pathway and how a picture forms in the eye
- Helpful to evaluate the vitreous and retina.
- Don't forget the media should be clear to see the details of the retina

Image formed on retina

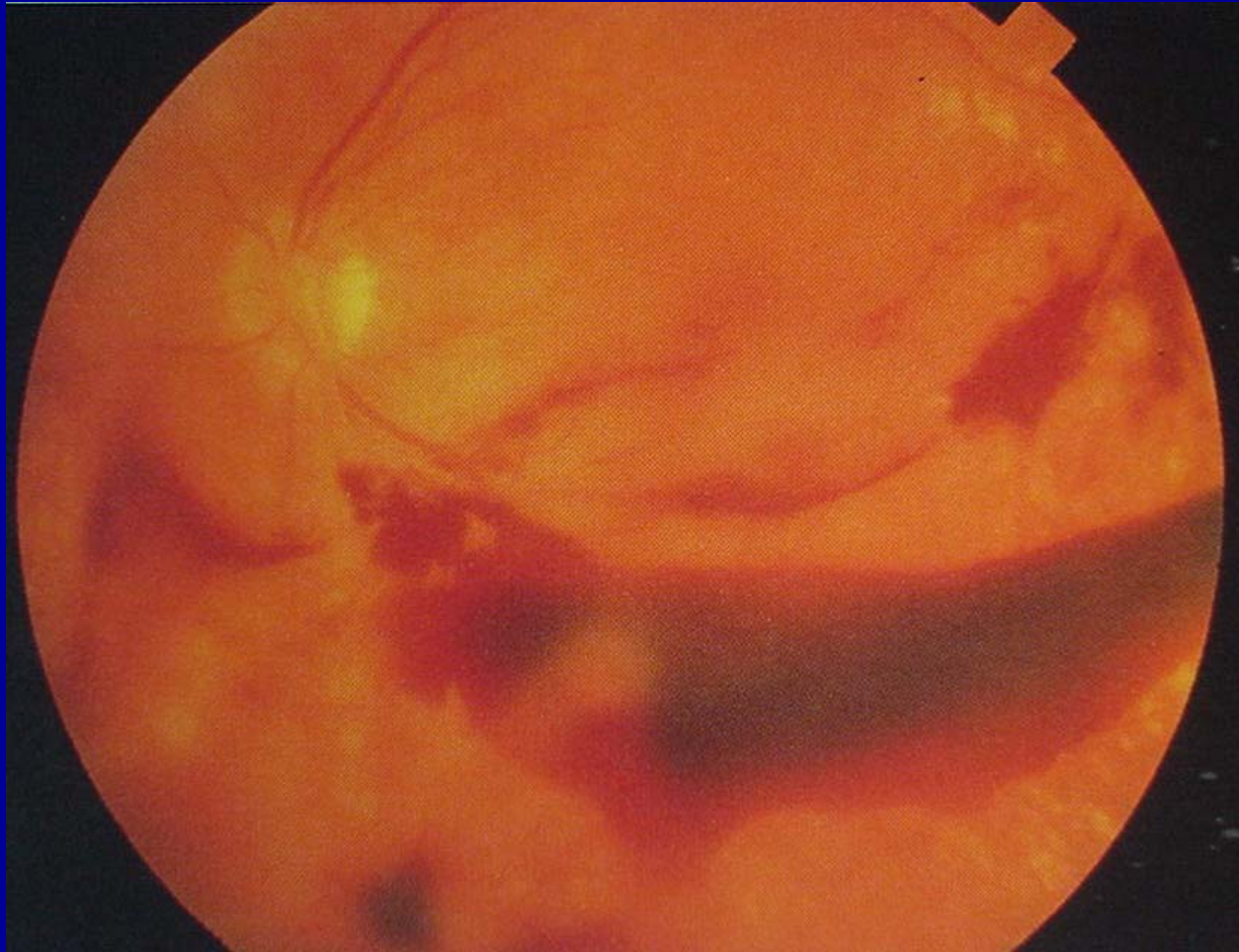


So what happen if we don't see anything at all

- Check the red reflex if the red reflex is good,
 - you might use the ophthalmoscope wrongly
 - The pupil may be too small

If the reflex is not good there may be vitreous hemorrhage

Vitreous Hemorrhage



Vitreous Hemorrhage

- Where the blood comes from
 - Of course, from the vessel (Retinal vessels)
 - Now Vein or artery?
 - The problem is that you hardly know which one if you see the hemorrhage blocking your view.
 - However you have to ask a few more questions (if not asked before)

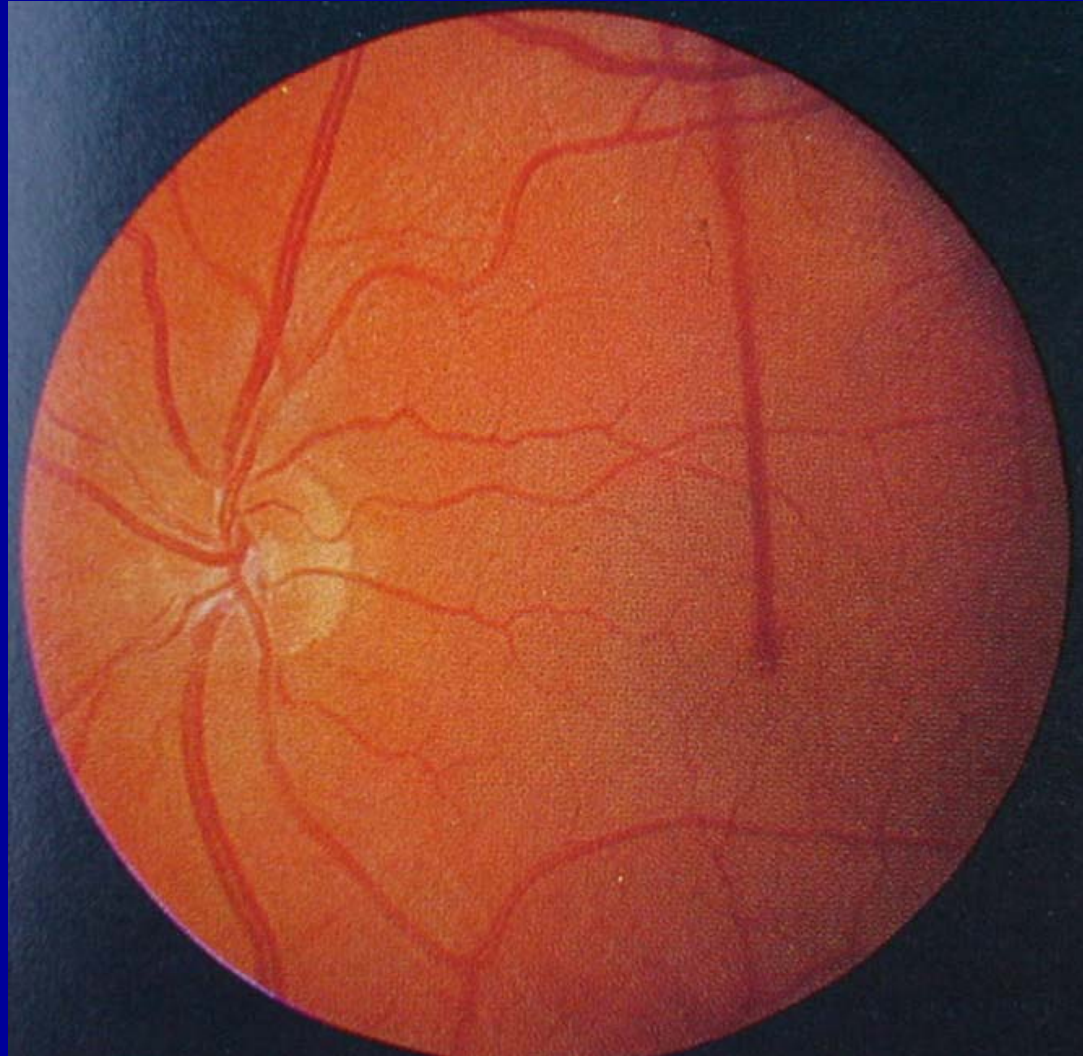
Vitreous hemorrhage patients

- What to ask
 - Trauma
 - Diabetes mellitus
 - Hypertension
 - Blood disease
 - Medication (that prolongs clotting time)
 - Then He/she should be on the way to see the eye specialist

If the vitreous is clear

- Is there any abnormality of the retina causing blurred vision?
- Review your normal retina anatomy

Retina(normal)



What can be wrong?

- Vessels
 - Artery
 - Vein
- Retina
 - overall
 - Macula
 - (NB. Abnormal of the disc will be group in the following group)
 - If all are intact : could be the lesions behind
 - See further

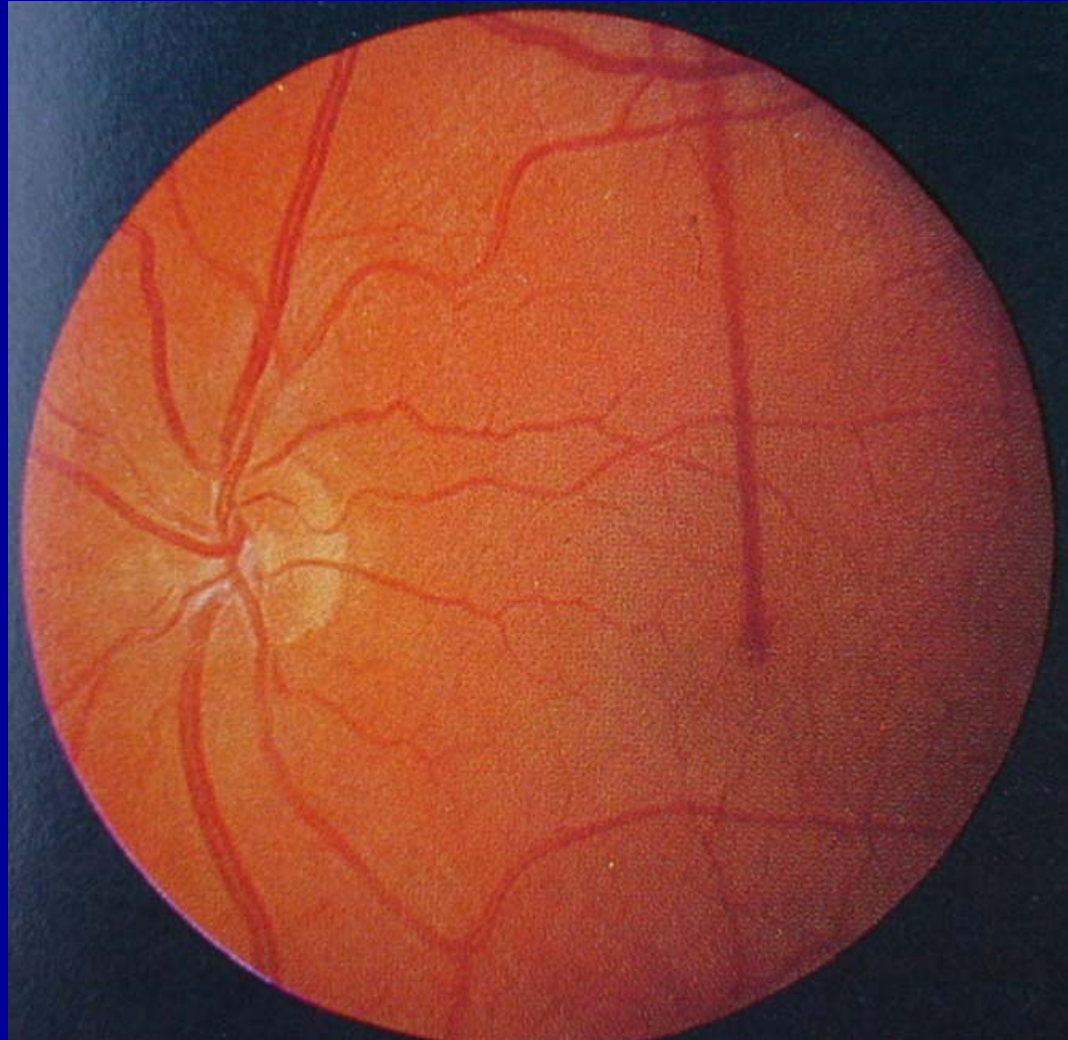
How does it happen?

- Vessels
 - There is a blockage in the lumen. Just like a stroke! (don't forget that the eye is a part of a brain)
 - If it happen in artery then it causes
 - Central retinal artery occlusion
 - Branch retinal artery occlusion
 - If it is in the vein it causes
 - Central retinal vein occlusion
 - Branch retinal vein occlusion

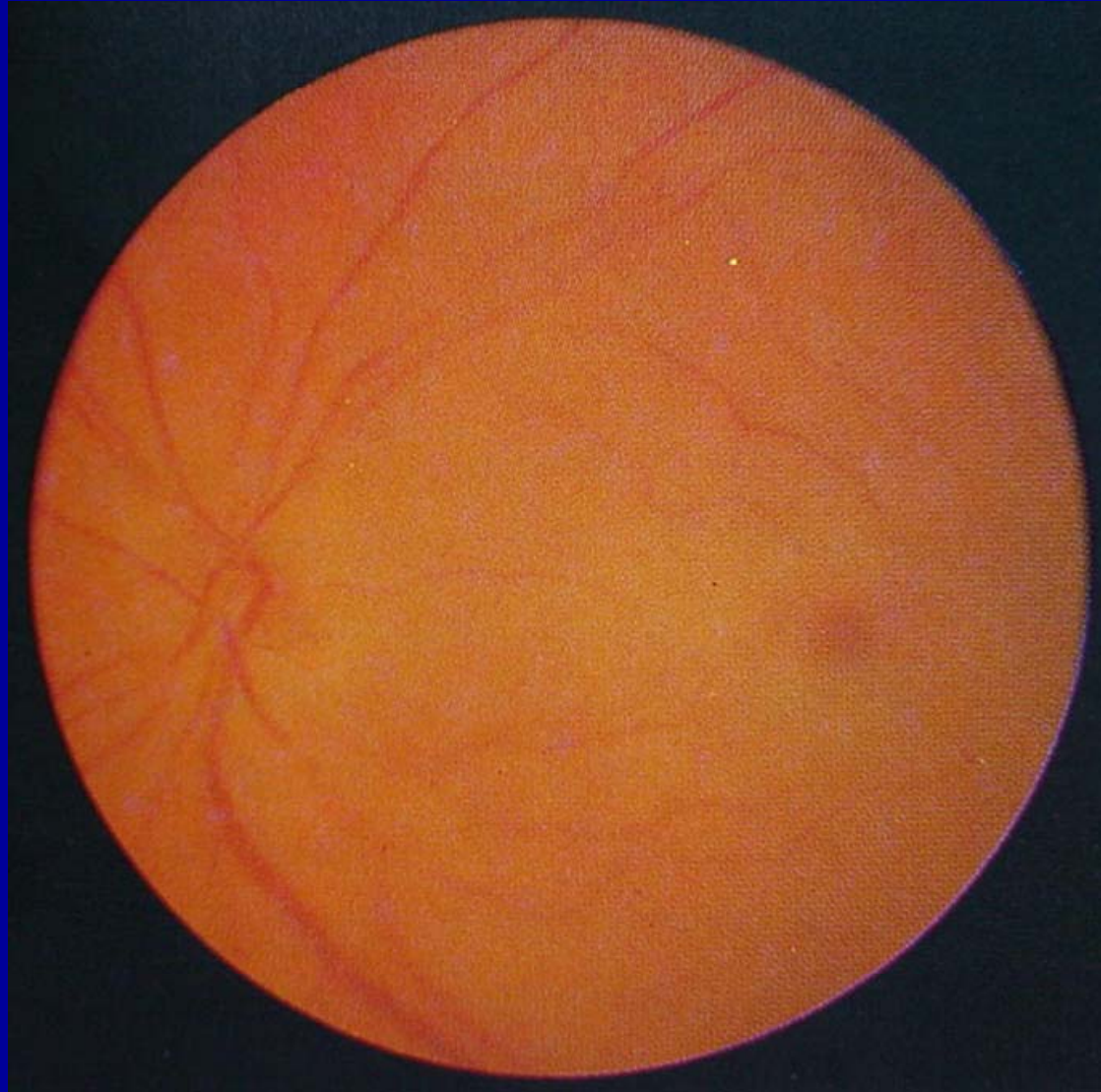
Retinal vessels occlusion

- Although these conditions are found less than retinal detachment but the symptom is more abrupt and emergency treatment is needed when recognized such as central retinal artery occlusion.

Normal retina



Central retinal arterial occlusion



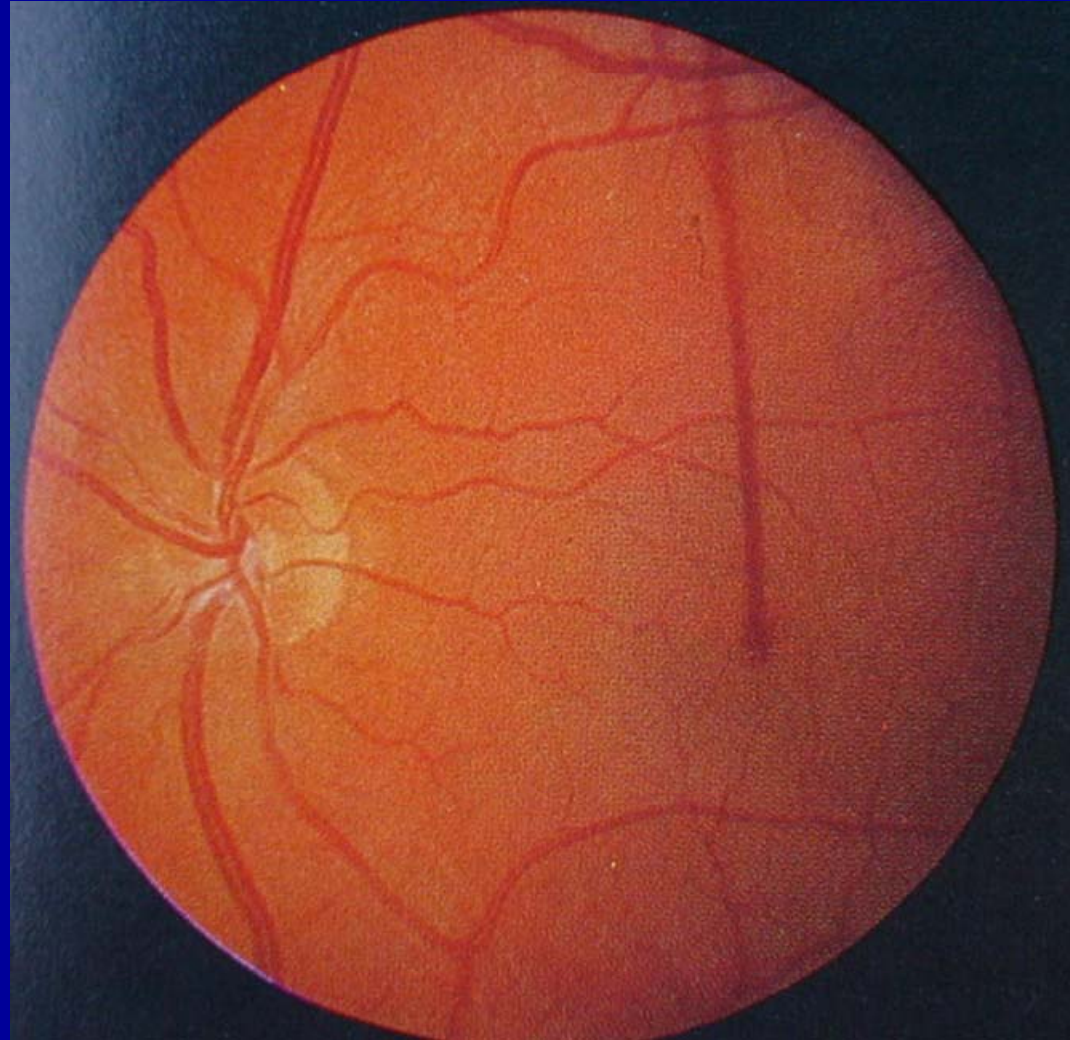
Branch retinal artery occlusion



Retinal artery occlusion

- A sudden acute painless loss of vision
- May see
 - Vessel stasis (in hours)
 - Retinal edema with 'cherry red spot'
 - Pale disc (late manifestation)
- True emergency! Quick referral.
- Rx
 - Ocular massage
 - Acetazolamide (Diamox)
 - Paracentesis(done by ophthalmologist)

Normal retina



Central retinal vein Occlusion



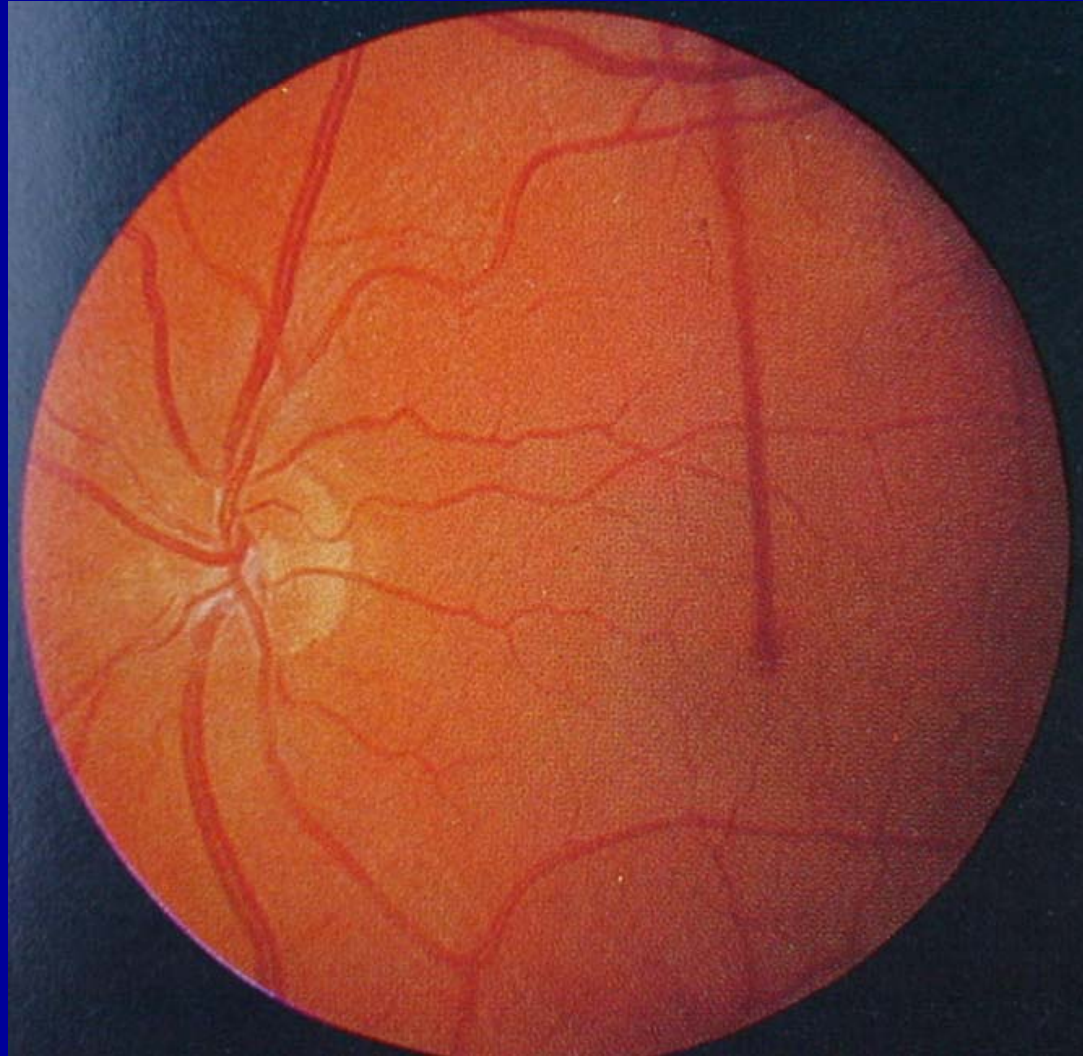
Branch Retinal vein occlusion



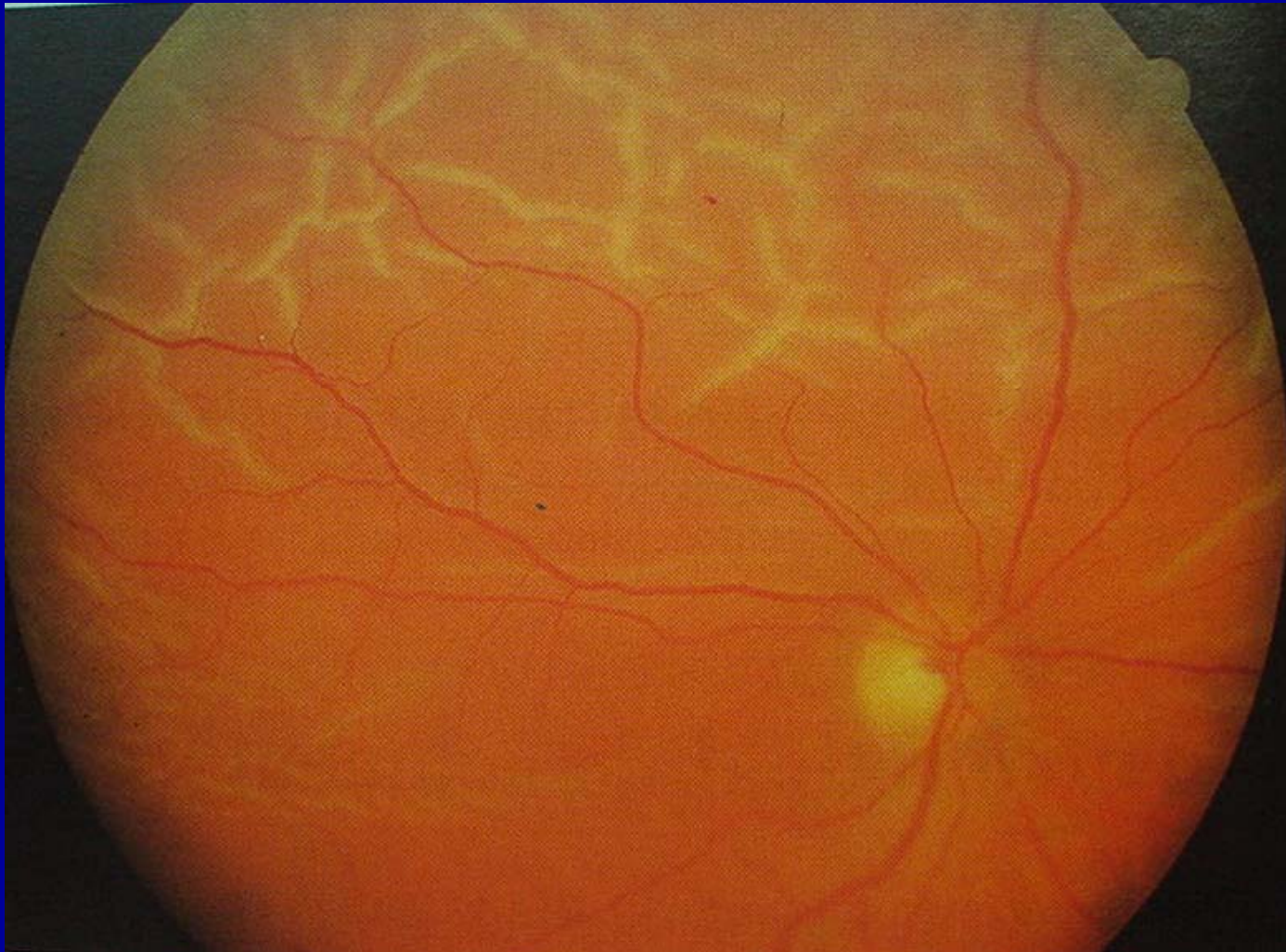
Retinal vein occlusion

- Cause stasis of the circulation > hemorrhage > ischemia
- Not a true emergency
- Exam shows
 - Hemorrhage
 - Cotton wool spot
 - Retinal edema
- Rx there is time enough to send to the specialist for the proper treatment
- Aim of treatment
 - To restore vision – follow up and observe : depend on the lesion is ischemia or not may need further investigation such as FFA
 - To prevent complication – Neovascular glaucoma

Normal retina



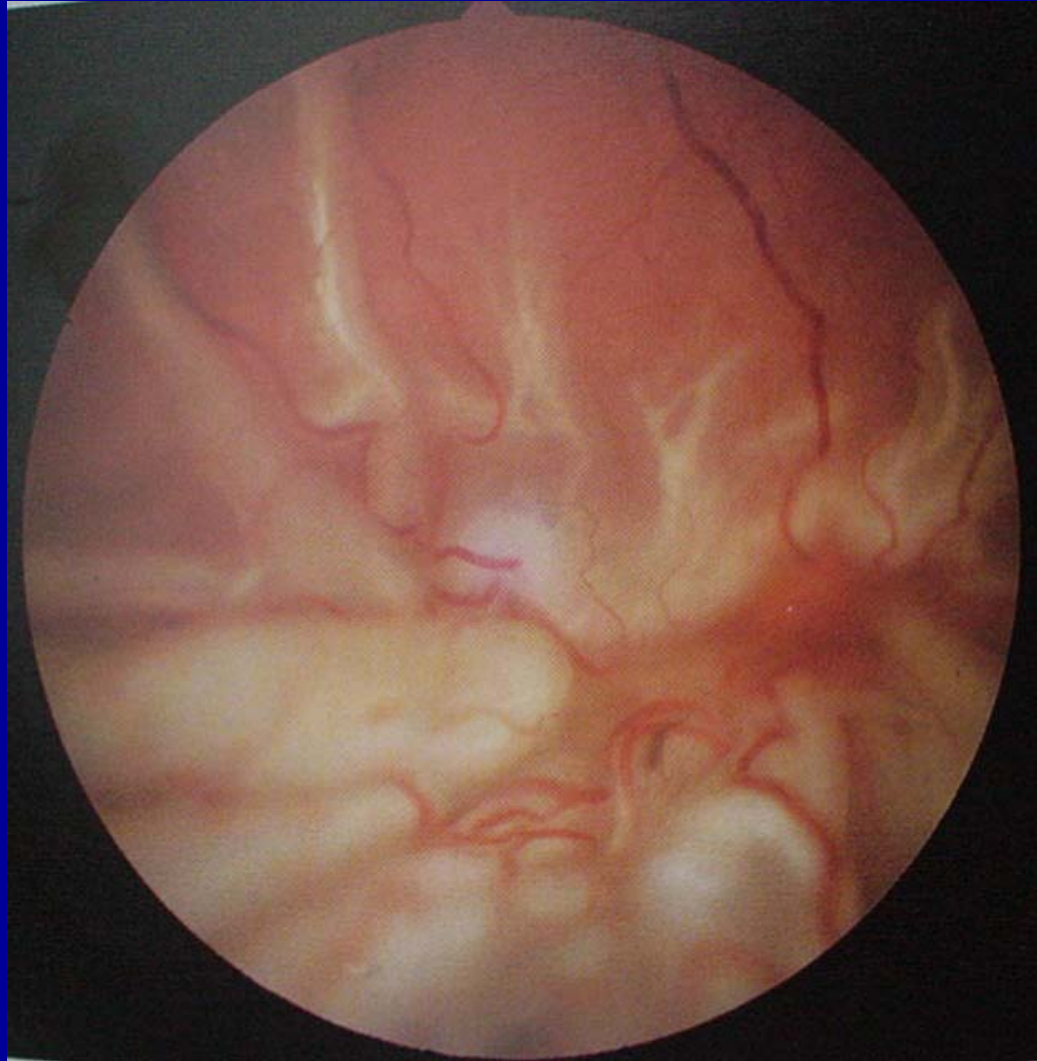
Retinal detachment



Retinal detachment



Retinal detachment



How does it happen?

- Abnormal when
 - There is a hole(s)
 - There is traction on the retina
 - There is fluid underneath the retina

So far the most common cause is the first naming Rhegmatogenous retinal detachment

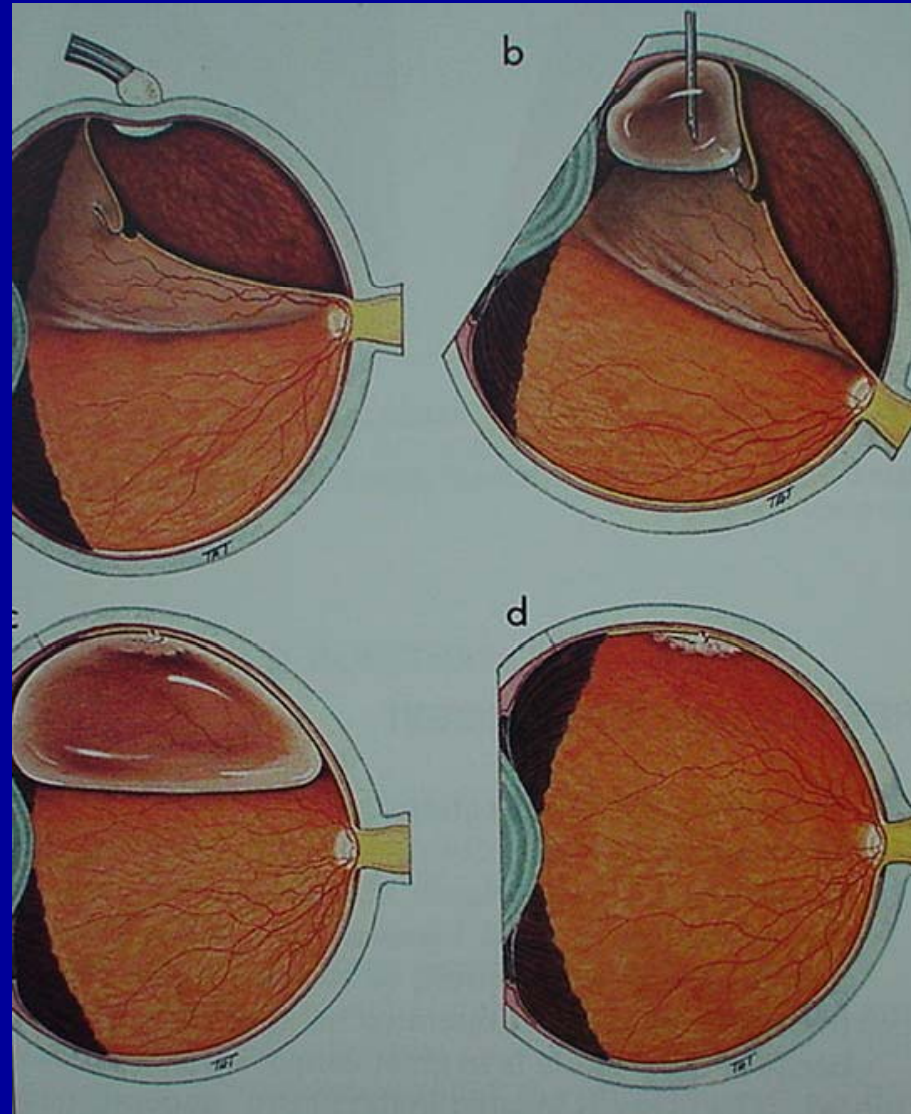
Retinal detachment

- How?
- The liquified vitreous go thru the hole lift up the retina from the bed and cause out off focus picture
- So
- When we treat is to put the hole back to it position, make it approximate to the wall and fix it with laser or cryo (the fluid will normally absorbed and the retina flatten to it proper position

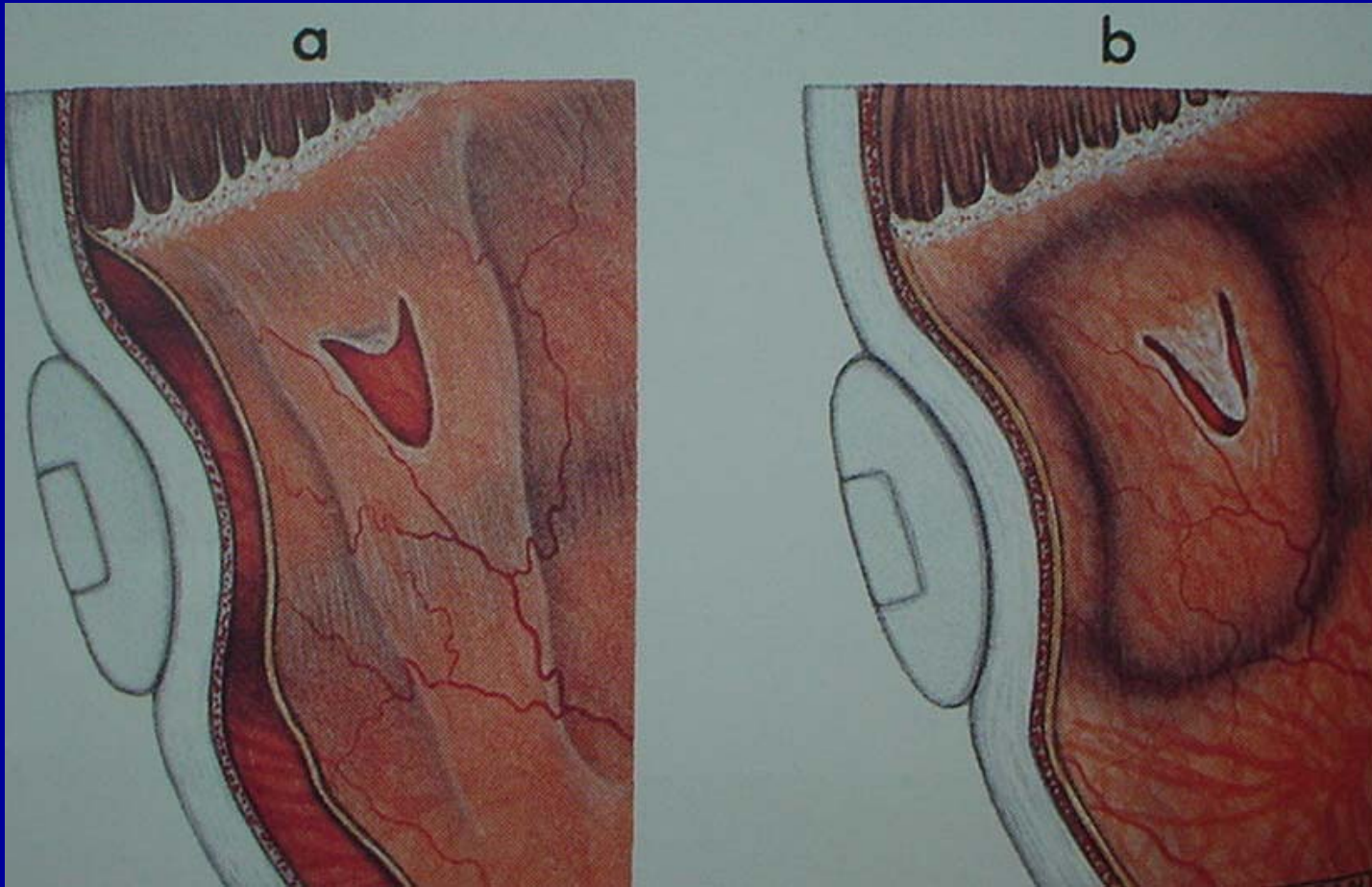
Methods of treatment

- The main idea of treatment has been mentioned
- The method depend on the position of the hole, size of the hole, and many other factors
- Examples
 - Gas injection with cryo/laser
 - PPV with laser
 - Scleral buckling

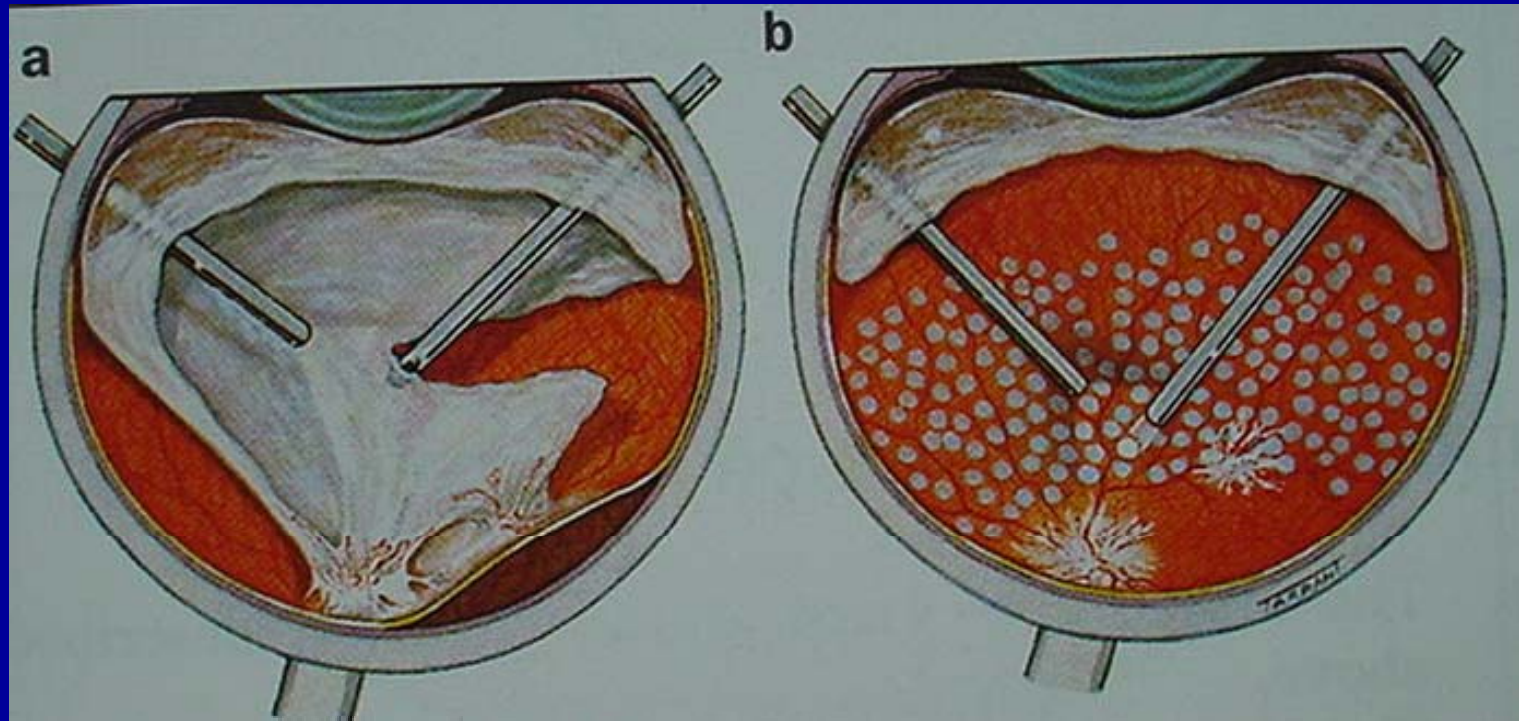
Gas injection



Scleral buckling

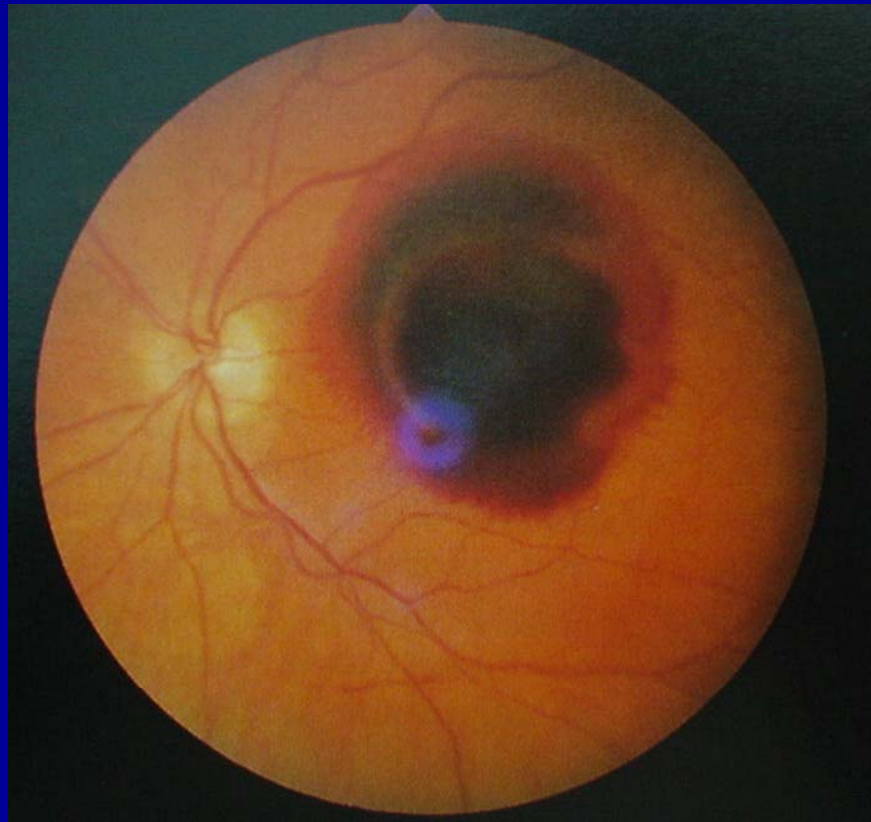


Pars plana vitrectomy (PPV)



Macular disease

- Macular degeneration
 - Normally gradual unless bleed



Optic Nerve lesion

- Optic neuritis
- Ischemic optic neuropathy
- Giant cell arteritis

Optic neuritis

- Decreased VA
- Color vision defect
- Decreased contrast sensitivity
- +ve Marcuss Gunn
- Disc findings depend position of lesion
- Associated with Multiple sclerosis
- Intravenous steroid has a benefit

Optic neuritis

- Retrobulbar
 - May cause by compressive lesion
 - May or may not have disc swelling
 - +ve Marcus Gunn pupil
- Papillitis and papilledema
 - Two terms are different
 - Papilledema mean disc swelling from increased intracranial pressure (normally bilateral), -ve Marcus Gunn pupil, VA normally normal
 - Papillitis is the inflammation of optic nerve near disc cause disc swelling and +ve Marcus Gunn pupil, VA normally reduced

Ischemic optic neuropathy

- Ischemic process of the nerve
- Happen mostly in elderly
- Disc swelling, and later pale
- Loss of visual field (upper half or lower half: so called Altitudinal)
- Associated with artherosclerosis
- No specific treatment.
- Steriod treatment may have a role in some cases

Giant cell arteritis

- Elderly and female predominant
- Inflammation of cranial artery
- Scalp pain, jaw claudication, Acute loss of vision
- High ESR, CRP
- Temporal arterial biopsy if in doubt
- Prompt steroid treatment may prevent symptom in the other eye.

Visual pathway disorder

- Usually the neurological signs are prominent.
- Such as stroke
- May cause blindness if involve extensive area of visual cortex or visual pathway in these cases the pupillary defect are normal

Functional disorder

- Malingering?
 - Really see no sign of abnormality
 - Unexplain finding such as complete blind in one eye with normal stereopsis and pupillary response
 - Have secondary gain
 - Doesn't concern about the loss of vision as it should be?

Cases

- 45 year-old female come in with reduced vision for a day. She complained of severe headache with nausea and vomiting. VA was CF the conjunctiva was injected and the cornea seems to be hazy. What do you have in mind and what do you think you will check and do further?

Cases

- A 67-year-old man experienced sudden loss of vision in the left eye 3 hours ago. You record VA as OD 20/20 and OS no light perception. The right pupil responds to light directly but not consensually, the left responds to light consensually but not directly. Dilated fundus of the right eye is normal. The left eye shows a white, opacified retina, a cherry red spot in the macular and sluggish retinal circulation.
- What do you think the patient has and how to treat?