Acute Visual Loss

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Done By:
Njoud Alrasheed
Revised by:
Amerah bin zuair

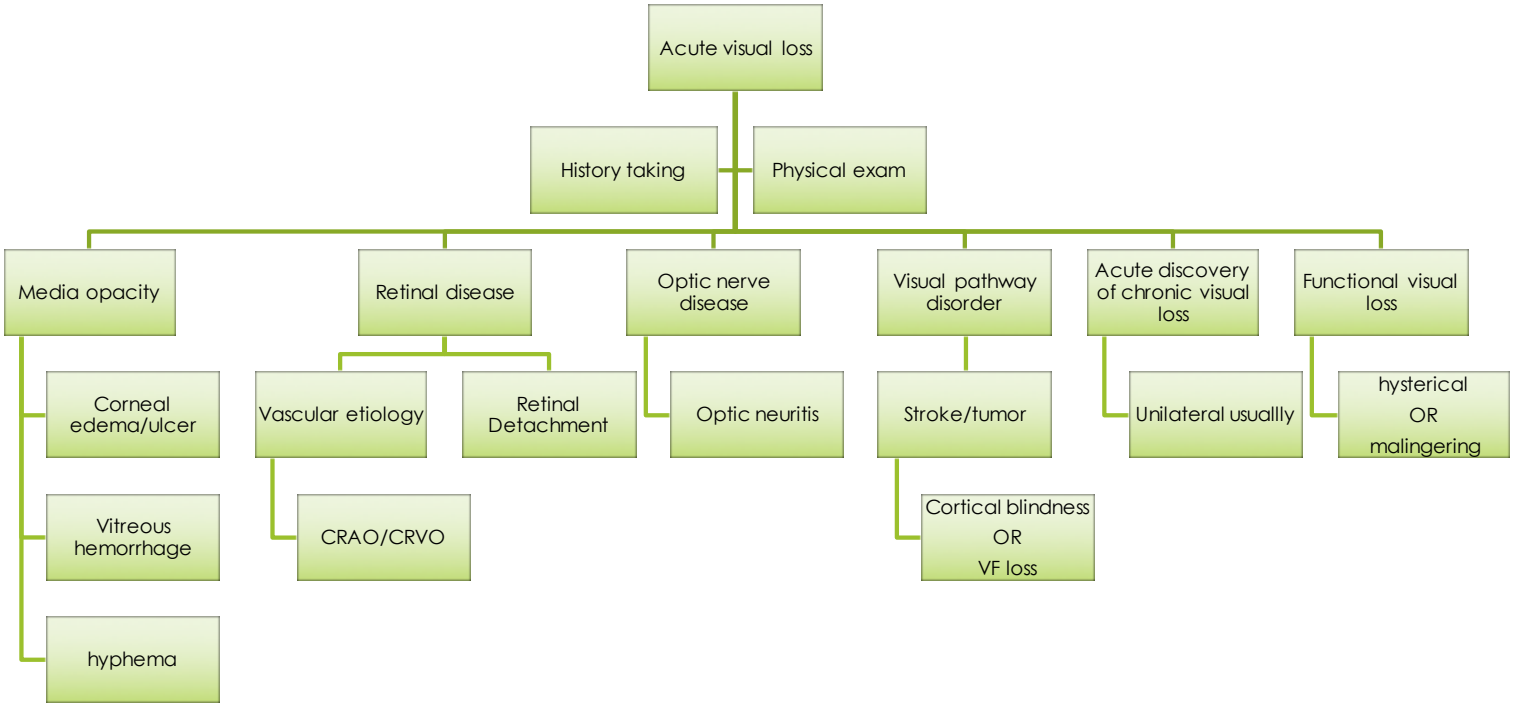
433 Team
Important
Doctor's Notes
Explanation

Editing File

Resources: Team 433, Doctors Notes

Objectives:

- **Properly screen and evaluate patients presenting with acute visual loss.**
- **Understand the pathophysiology and identify common causes of acute visual loss.**
- **Recognize situations requiring urgent ophthalmic care to prevent permanent visual loss.**



Definition:

Sudden onset of significant visual impairment (blindness).
Loss of vision is usually considered acute if it develops within a few minutes to a couple of days.

- It may affect one or both eyes. most of time one eye
- All or part of the visual field.
- Arise from pathology of any part of the visual pathway

A disaster and you should be able to evaluate such a patient and be able to recognize situations requiring an urgent action.

history

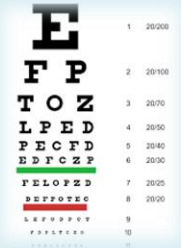
1. Is the visual loss transient or persistent?
2. Is the visual loss monocular or binocular?
3. Did the visual loss occur suddenly or it developed over hours, days or weeks? Hours: vascular, retinal detachment vitreous hemorrhage
4. What is the patient's age and general medical condition? young with no systemic disease: optic neuritis
5. Did the patient have normal vision in the past and when was vision last tested? (because it could be a chronic loss of vision but the patient just discovered it)
5. Some people will only realize loss of vision from one eye; when they cover the good eye.
6. was pain associated with visual loss?

- transient or persistent: Migraine vs Retinal detachment
- monocular or binocular: Optic neuritis vs Cortical blindness
- hours, days or weeks: CRAO vs Retinal detachment
- patient's age: Acute Glaucoma vs Corneal abrasion
- Contact lens use: corneal ulcer

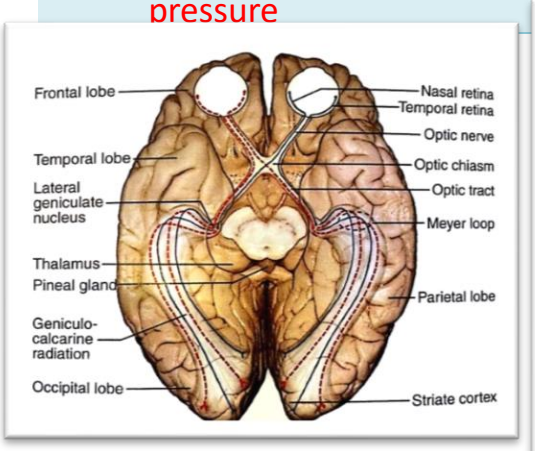
  Progressive: exclude vascular
  Binocular: think about central and confirm it by pupillary reflex it is 100% normal
  Transient (seconds to minute): do not think about detachment and central retinal or vein artery occlusion

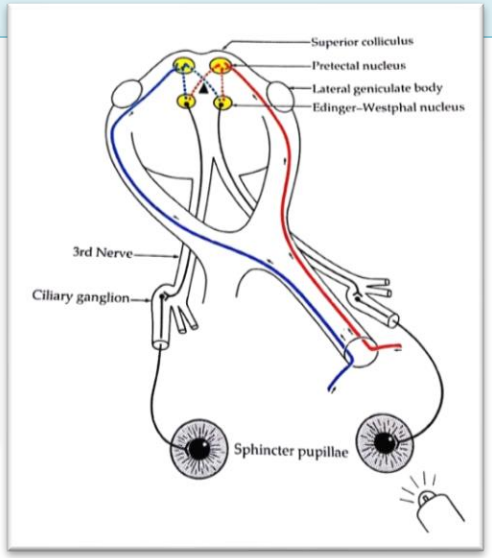
Physical exam and special tests

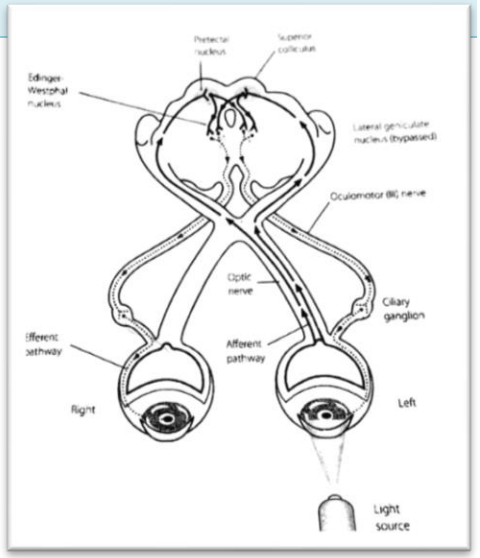
- Visual acuity testing
- Confrontation visual fields test
- Pupillary reactions
- Ophthalmoscopy exam
  - External examination of the eye with a pen light absent red reflex means media opacity
  - Biomicroscopic examination (Slit lamp examination)
- Tonometry to measure the intraocular



pressure







Cortical blindness (oculomotor fibers not effected) pupil reaction totally normal.

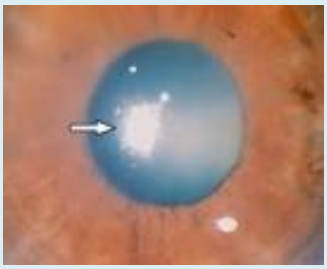
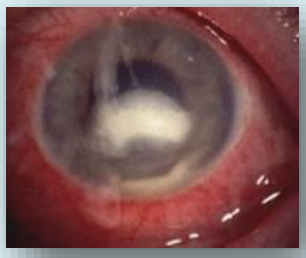
Causes of Acute Visual Loss:

PAINFUL	PAINLESS
○ **Acute(congestive)Glaucoma** on top of it acute primary closer angle glaucoma " Very painful + headache + N\V (Most common) ○ **Uveitis** Pt always in pain Signs: synechiae & keratic precipitates ○ **Keratitis** infection or inflammation of cornea Microbial or Viral (dendritic) or traumatic keratitis epithelial defect ○ **Hyphema (Traumatic)** (Hyphema is a collection of blood in the anterior chamber)	○ **Vitreous Hemorrhage** (it can be painful if it was traumatic) ○ **Retinal Detachment** (the patient may have it & not discover it unless he covers one eye) ○ **Retinal vascular occlusions** (arteries/veins) ○ **Optic neuritis** + (Ischemic optic neuritis is usually associated with temporal arteritis) ○ **Ischemic optic neuropathy** ○ **CVA** ○ **Functional**

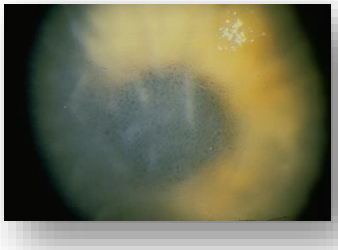
1. Media opacities:

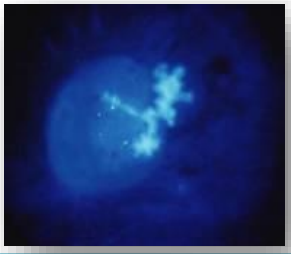
I.Corneal edema:

- When the cornea appears like **ground glass** rather than its normal clear appearance. (steamy cornea)
- The most common cause of corneal edema is increased intraocular pressure typically in angle closure glaucoma. (real emergency)
- Increased intraocular pressure >>dysfunction of corneal endothelium >> fluid leaks into the stroma >> edema >> hazy cornea
- Any acute infection of the cornea resulting in a corneal ulcer may mimic corneal edema

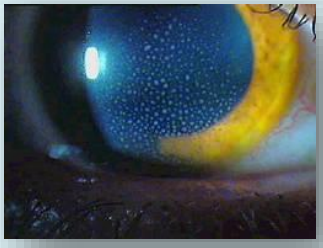



Painful and acute visual loss microbial keratitis Pus collection in the Anterior chamber





Viral herpitic keratitis

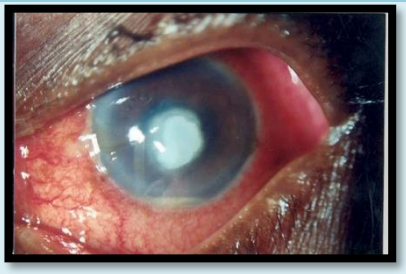


Uveitis less pain, flare of anterior chamber, precipitate and inflammatory back of cornea

II.Corneal ulcer:

- When there is a corneal opacity due to destruction of tissue by infiltration of microorganisms and WBCs.
- Could be viral, bacterial, fungal, protozoal or neurotrophic in etiology

Fluid level (hypopyon). Content: WBC + pus accumulating in the anterior champer



Ulcer+loss of clarity of cornea Infiltration deep in the cornea (not penetrating the cornea)

Extra: Infiltrates are yellow– or grey–white opacities located initially within the anterior stroma, usually associated with limbal or conjunctival hyperaemia. They are stromal foci of acute inflammation composed of inflammatory cells, cellular and extracellular debris including necrosis. The key distinction is between sterile and infective lesions. 'PEDAL' mnemonic: Pain, Epithelial defects, Discharge, Anterior chamber reaction, Location. Suppurative keratitis is caused by active infection with bacteria, fungi, protozoa and occasionally viruses. Non-infectious 'sterile keratitis' is due to an immune hypersensitivity response to antigen as in marginal keratitis and with contact lens wear.

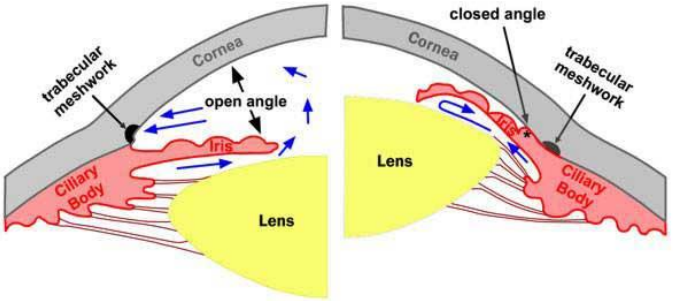
Acute Angle Closer Glaucoma: very painful

Relative pupillary closure after 40y, lens get bigger so decrease angle between lens and iris.

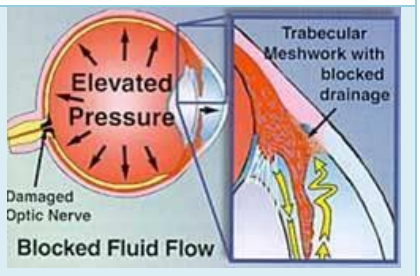
Ischemia of the Iris sphincter muscle will cause damage and atrophy.

Stemy cornea mid dilated fixed pupil (doesnot react)

high IOP



Aims of ACG management:



- Decrease IOP
- Prevent future attacks in OU
- Need emergency treatment

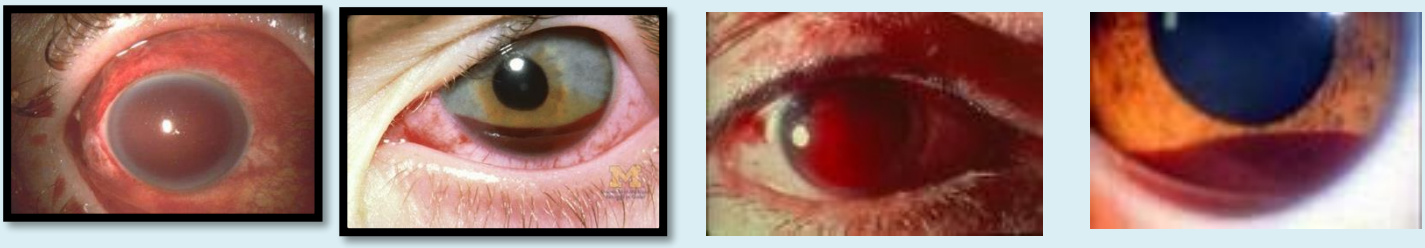
In the past, they take Pt to the OR and do peripheral iridotomy

Nowadays decrease pressure by medications topical or systemic and then do laser in the outpatient clinic and you deflate the balloon iris goes back to it place and angle will open and it will solve permanently

but don't forget about other eye

III.Hyphema:

- **Hyphema is blood in the anterior chamber**
- The hyphema is a direct consequence of blunt trauma to a normal eye.
- However, it can occur with tumors, diabetes, intraocular surgery and chronic inflammation which all cause neovascularization of the anterior segment.
- It will cause pain when there is elevation of IOP but most of painful hyphemea is due trauma
- A sign not a disease, Irreversable, should be treated fast.

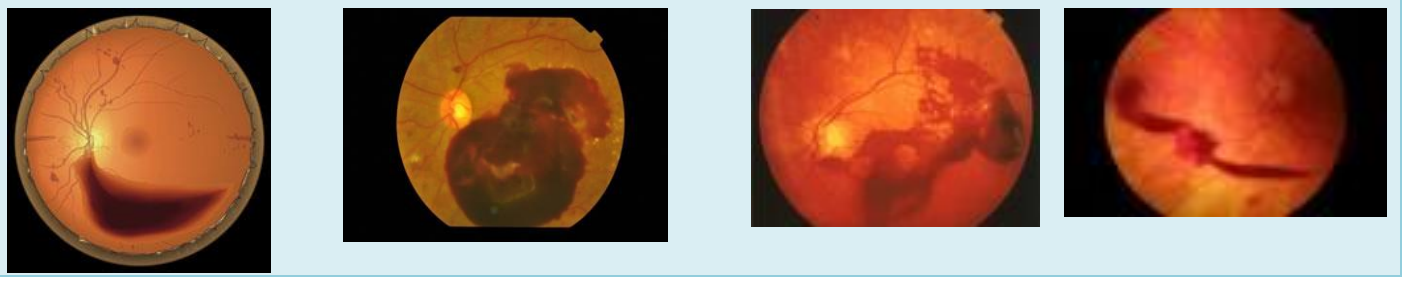


IV.Vitreous hemorrhage(painless)

Not a dignosis rather than a sign of many diseases

- **Any bleeding into vitreous cavity will reduce visual acuity**.
- Can result from: Trauma, Diabetic retinopathy, Retinal vien occlusion and acute posterior vitreous detachment and itraocular surgrey.
- Rarely, can accompany subarachnoid hemorrhage.
- If you cannot appreciate a red reflex with an ophthalmoscope and the lens appears clear,you should suspect of vitreous hemorrahge.
- The dignosis is confirmed with slit lamp examination through a dilated pupil.
- B scan ultrasound is important to know the etiology.

  Treat underlying pathology



2. Retinal diseases:

I.Retinal Detachment:

It is retinal splitting, and it happens between 2 layers, the Neurosensory retina and retinal pigmented epithelium. In normal retina, there is no actual connection or junction between them. It is a potential space, it is firm and adherent. When retina gets break, fluid come between the 2 layers and separates them.

Symptoms:

prodromal

A. flashes برق

B. floaters 1. VF loss- curtain-like

2. sudden, painless loss of vision

-The diagnosis is confirmed by ophthalmoscopy through a dilated pupil, and retina appears elevated with folds and the choroid background behind the retina is indistinct.

-An afferent pupillary defect

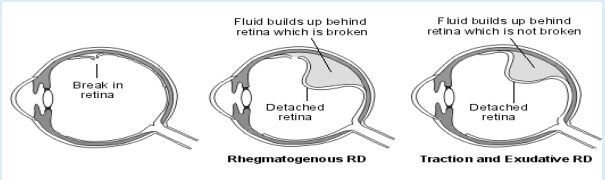
Types:

Could be macula on (very good prognosis) or macula off (if intervention within 10 days > good prognosis. And if delayed intervention >poor prognosis)

1.Rhegmatogenous RD most common due to hole and tear in the retina

2.Traction RD in diabetic

3.Exudative RD something under retina in inflammatory conditions.



Risk factors:

- Acute posterior retinal detachment
- Posterior Vitreous Detachment (PVD)imp

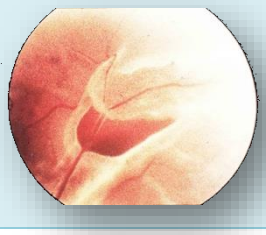
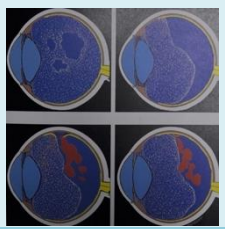
Everyone will have it ether trauma, surgery or senility with aging and no problems with it but some time will have floaters, some of these causes will broke retina and lead to retinal detachment.

- Peripheral retinal degenerations. e.g. lattice degeneration, retinal tufts... etc.
- **High myopia.**
- Aphakia. (no lense)
- Trauma, History of retinal detachment.

Management:

- RD is an urgent condition. Not emergency.
- Needs urgent surgery.
- Scleral buckle, cryotherapy, SRF drainage.
- Vitrectomy, AFX, endolasser, long acting tamponade (Gas, silicone oil)



II.Retinal vascular occlusions:

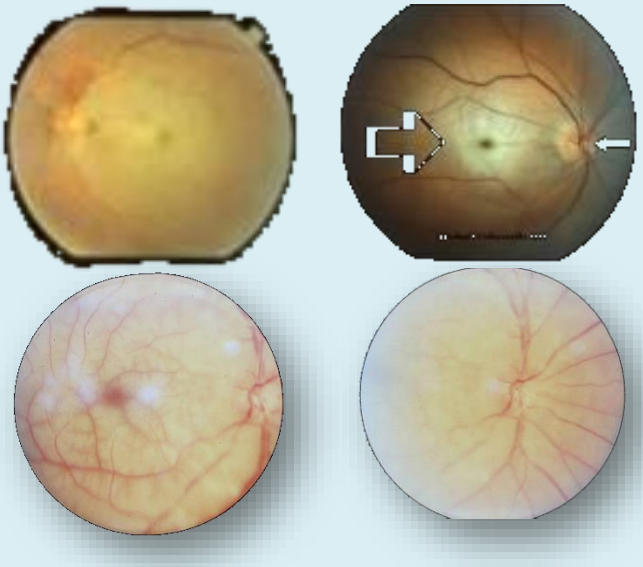
Central Retinal vein occlusion:

- ophthalmoscopes picture of disc swelling, venous engorgement, cotton wool spots and diffuse retinal hemorrhages like blood and thunder.
- Loss of vision may be moderate to severe. Non-ischemic resolve continually(benign)50% may turn to ischemic. (look for underlying pathology) Ischemic permanent visual loss.
- There is no generally accepted management. Central retinal vein occlusion is not true ophthalmic emergency.
- Treatment should be directed at reducing associated macular edema by injecting anti-vascular endothelial growth factor agents

Pic: Hemiretinal vein occlusion
Left: Disc edematous and cotton wool spot
Right: branch vein occlusion

Central Retinal artery occlusion: very serous

- A sudden, painless and often complete visual loss may indicate central retinal artery occlusion.
- Several hours after a central retinal artery occlusion, the inner layer of the retina becomes opalescent (white).
- A cherry red spot is seen due to the pallor of the perifoveal retina in contrast to the normal color of the fovea.
- A **chronic cherry red spot** is also a feature of the storage diseases such as Tay-Sachs disease and Niemann-Pick disease.
- There is no generally accepted acute management.



Branch Retinal Artery Occlusion: look for underlying pathology

- When only a branch of the central retinal artery is occluded, vision is only partially lost.
- This is more likely to be the result of an emboli and the source of the emboli should be sought.
- If the visual acuity is affected, attempts should be made to dislodge the emboli by ocular massage (decompress eye).

3.optic nerve disease

I. Optic neuritis (most common cause)

- Optic Neuritis is inflammation of the optic nerve and It is usually idiopathic but may associated with multiple sclerosis in a significant number of cases, and young people.
- Visual acuity and color vision are markedly reduced with a positive afferent pupillary defect.
- The optic disc initially appears hyperemic and swollen, but usually appears normal.

Most common type is retrobullber neuritis everything is normal but vision is severally effected with central visual fields defect. (most common presentation)

- Associated with pain on extraocular muscle movement in 90% of patients.
- The visual acuity usually recover.
- however, repeated episodes of optic neuritis may lead to permanent loss of vision.
- Most of time It is reversible Tx: of one eye may use steroids to enhance recovery. (self-limited disease)

inflammation of the optic nerve head is called papillitis

How to differentiate between papilitis and papillary edema? Both have fuzzy margins and engorgements, but in papilitis there will be a decrease of vision while the vision in papillary edema is not affected.

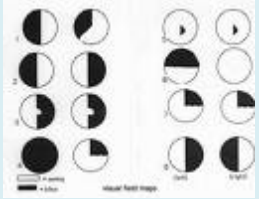
Very important Ischemic optic neuropathy –irreversible visual loss, Painless
Two types: arteritic: more with older cause it giant cell arthritis
treatment is possible if you catch patients early give steroids
Non arteritic occur with younger age and most
common cause is atherosclerosis no treatment for it

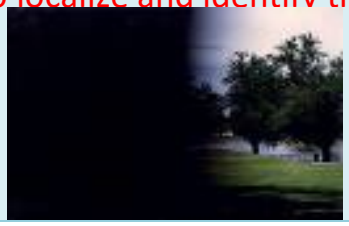
4.Visual pathway disorders

I. Homonymous hemianopia

will be discussed in details in neuro-opthalmology lecture.

- **is loss of vision on one side of both visual fields**
- may result from occlusion of one of the posterior cerebral arteries with infarction of the occipital lobe.
- Other vascular abnormalities occurring in the middle cerebral artery distribution may produce a hemianopia, but usually other neurological signs are prominent.
- Any patient with a hemianopia needs at CT or MRI to localize and identify the cause.





II. Cortical Blindness: rare

- **A rare bilateral extensive damage to the cortical visual pathways results in complete loss of Vision.**
- This condition is referred to as cortical, central or cerebral blindness.
- As the pathways serving the pupillary lights reflex are spared, the patient who is cortically blind has normal pupillary reactions.
- Therefore, a patient with normal fundus examination along with normal pupillary reactions, most likely has cortical blindness.

5.Functional Visual loss

- Functional visual loss describes vision loss due to hysterical or malingering reasons. ie: not explained by organic basis.
- A patient may report complete blindness in one eye and normal vision in the other eye, and have no relative afferent pupillary defect.
- Various techniques exist to confirm functional visual loss.