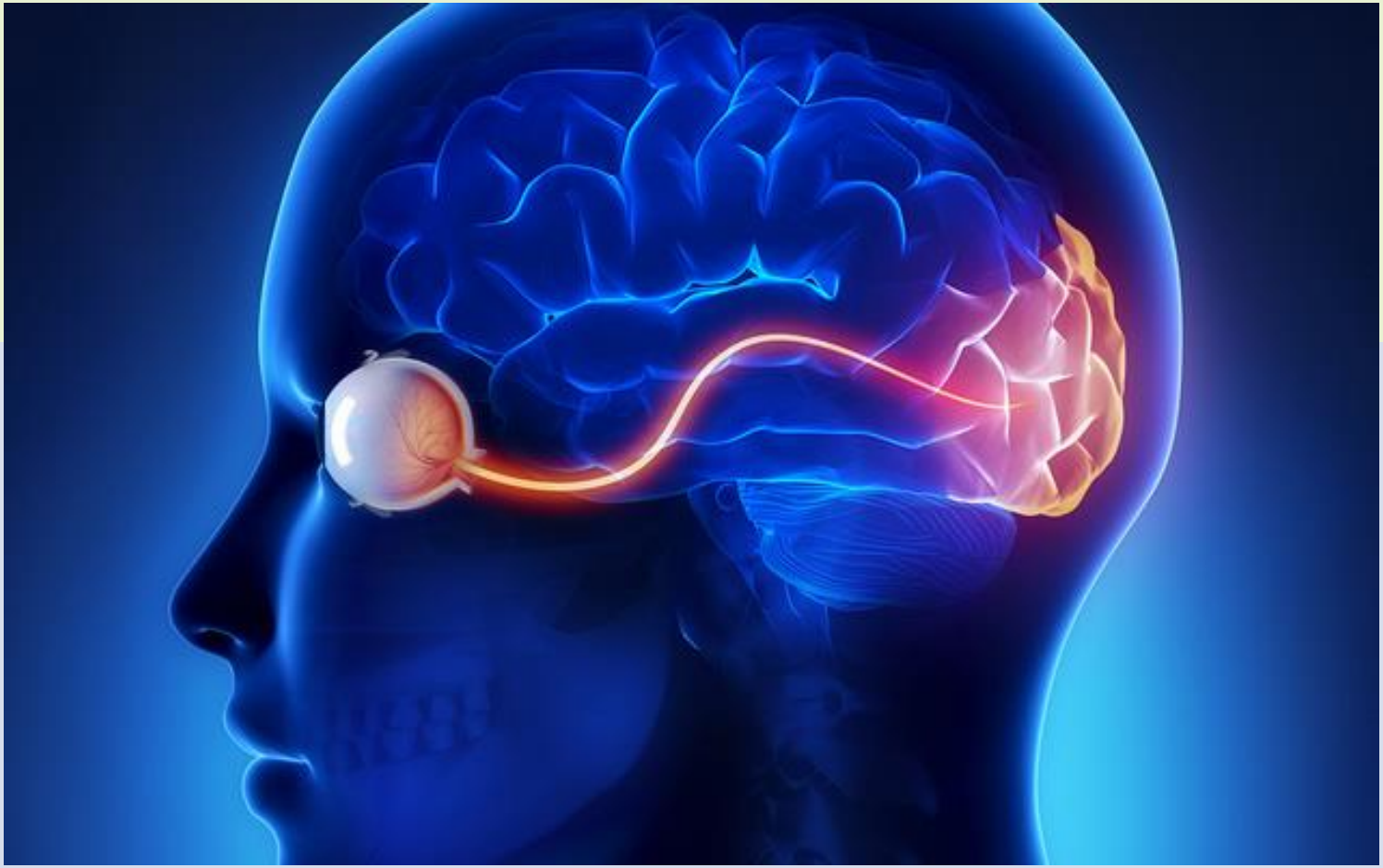
Optic Atrophy



Definition

- Optic atrophy refers to the late stage changes that take place in the optic nerve resulting from axonal degeneration in the pathway between the retina and the lateral geniculate body, manifesting with disturbance in visual function and in the appearance of the optic nerve head.

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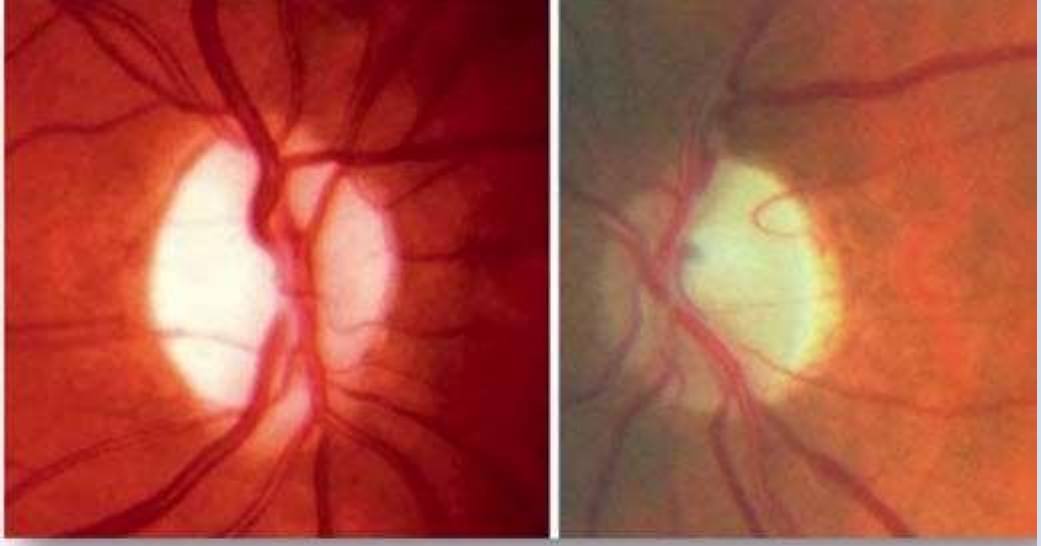
- Pallor of the optic disc is not due to atrophy of nerve fibers but to loss of vascularity owing to obliteration of the disc capillary.
- Ophthalmoscopic appearance of the atrophic optic disc depends upon the degree of loss of nerve tissue via gliosis.

Classification

- ✓ 1. Primary Optic Atrophy
- ✓ 2. Secondary Optic Atrophy
- ✓ 3. Consecutive Optic Atrophy
- ✓ 4. Glaucomatous Optic Atrophy

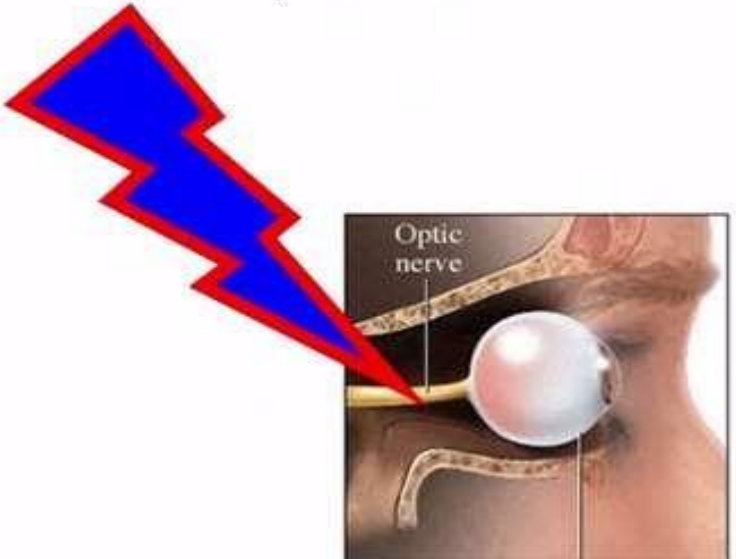
Primary Optic Atrophy`

- Occurs without antecedent swelling of the optic nerve head.
- Caused by lesions affecting the visual pathways at any point from the retrolaminar portion of the optic nerve to the lateral geniculate body.
- Lesion anterior to the optic chiasma result in unilateral optic atrophy, where as those involving the chiasma and optic tract will cause bilateral changes.

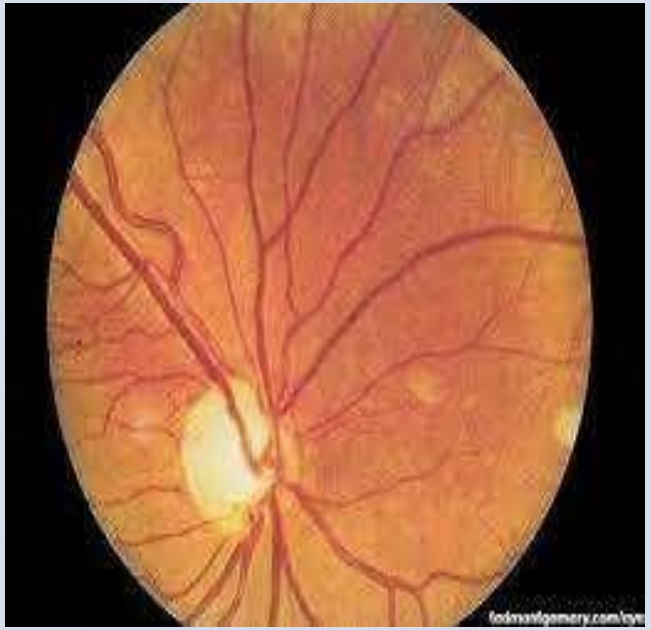


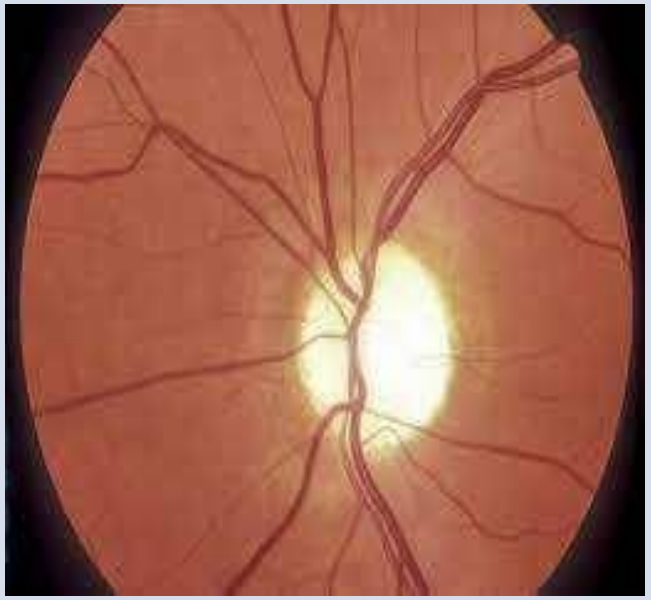
Primary optic atrophy …

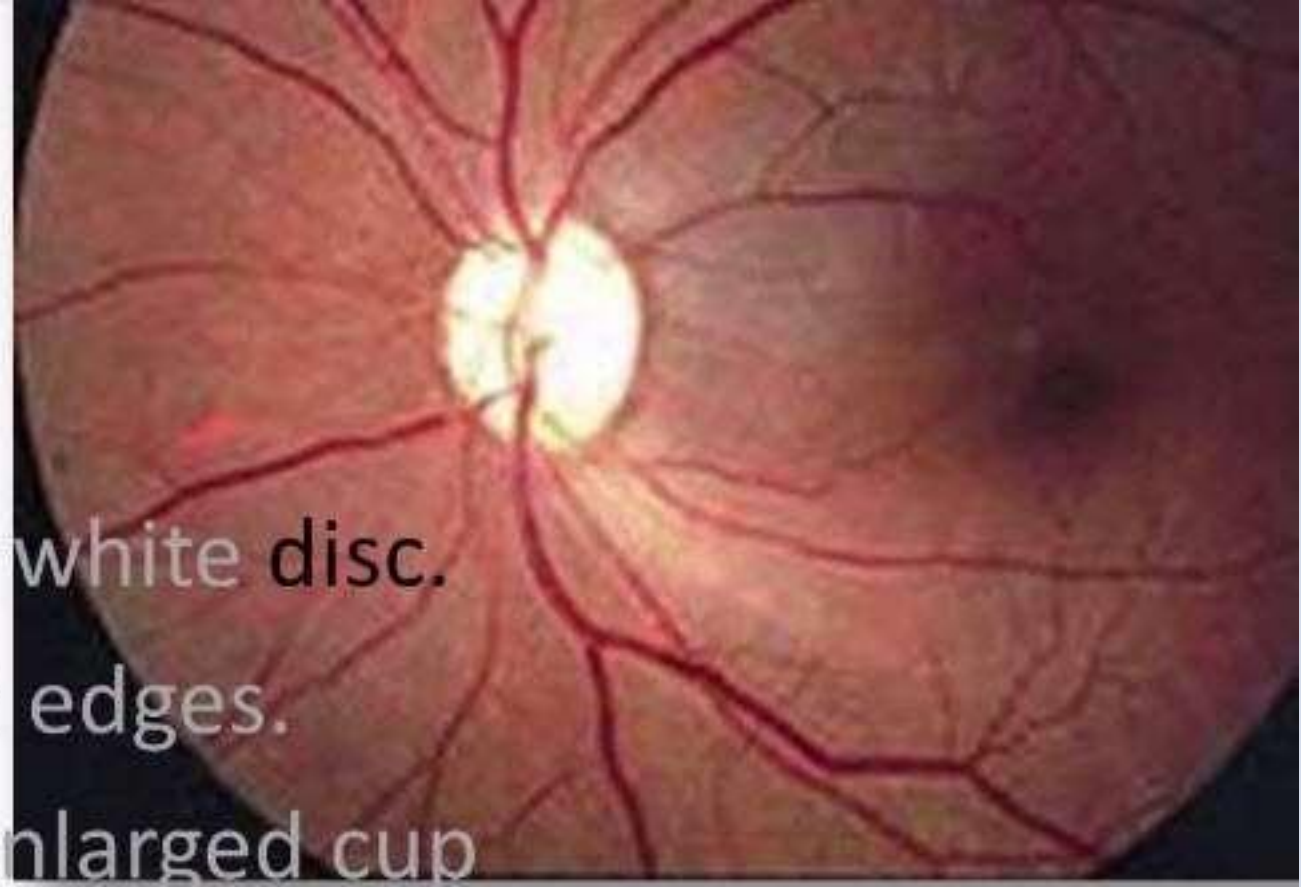
- Damage occurs behind the eye (up to the LGB – extra-ocular diseases).



- **Signs:**
  - Flat white disc with clearly delineated margin.
  - Reduction in the number of small Blood vessels on disc surface.
  - Attenuation of peripapillary blood vessels.
  - Atrophy may be diffuse or sectoral.

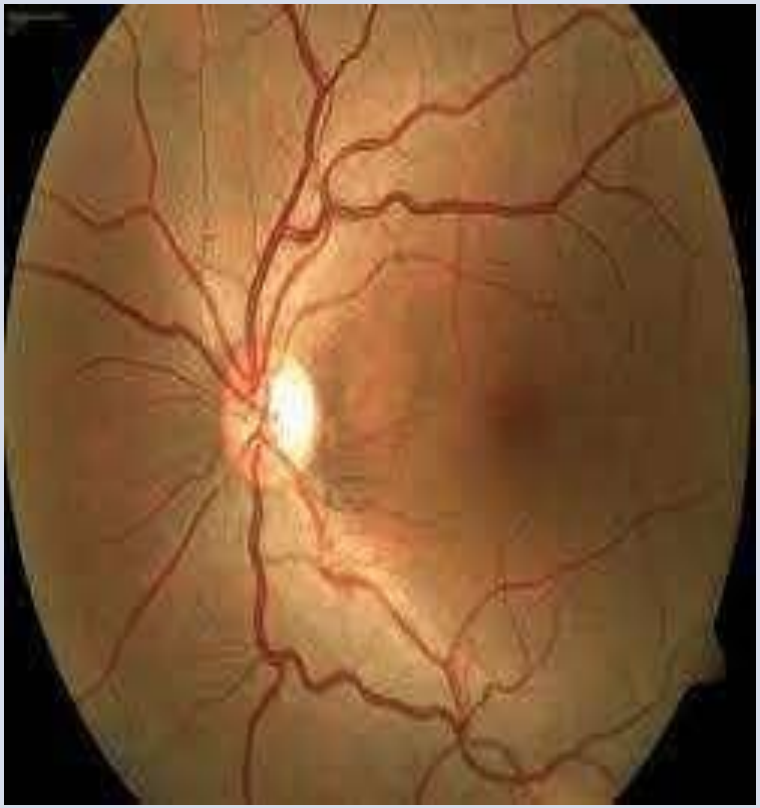


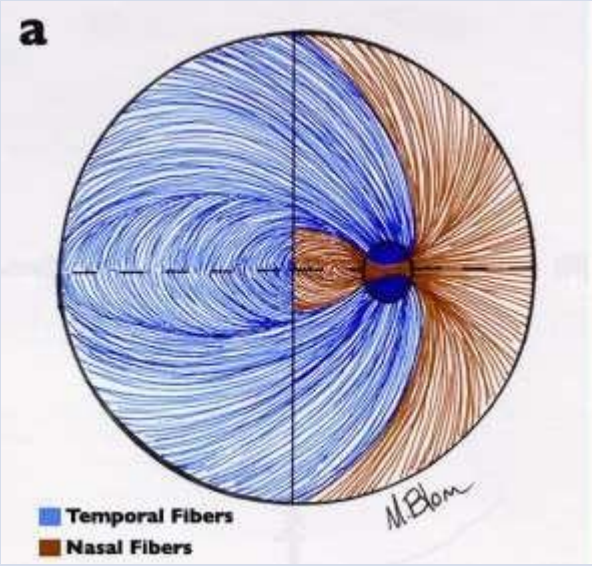


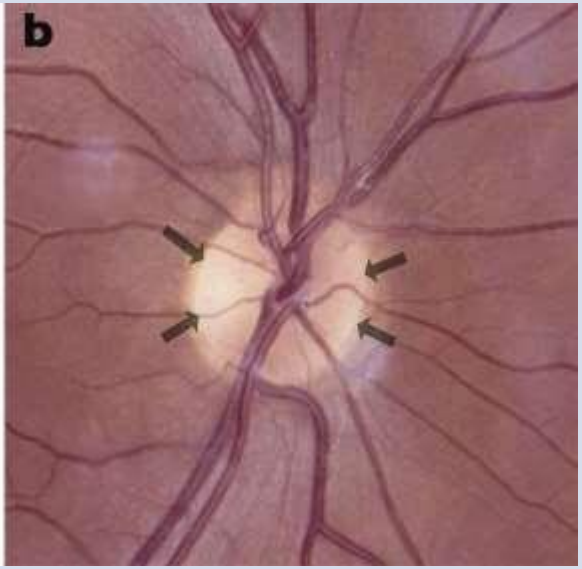


- Pale & milky white disc.
- Well defined edges.
- Atrophic & enlarged cup
- Normal retinal vessels & retinal background

- Temporal pallor of the optic nerve head may indicate atrophy of fibers of the papillomacular bundle and is seen in demyelinating optic neuritis.







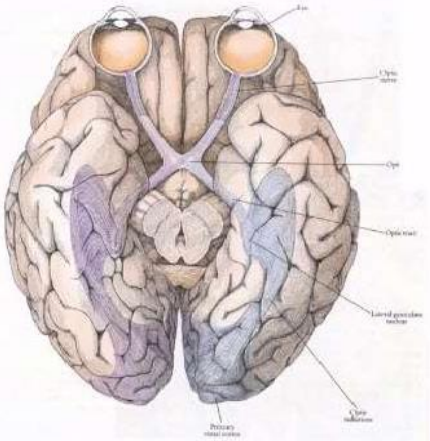
- Band or “bow tie” atrophy is caused by involement of the fibres entering the optic disc nasally and temporally. It occurs lesions of the chiasma and optic tract and gives nasal as well as temporal pallor.

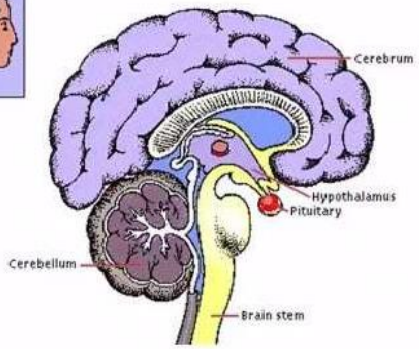
- **Causes of primary optic atrophy:**

1. Optic neuritis
2. Compression by tumours and aneurysms.
3. Hereditary optic neuropathies.
4. Toxic and nutritional optic neuropathy.
5. Trauma.

❖Disseminated sclerosis (DS. Or MS.)

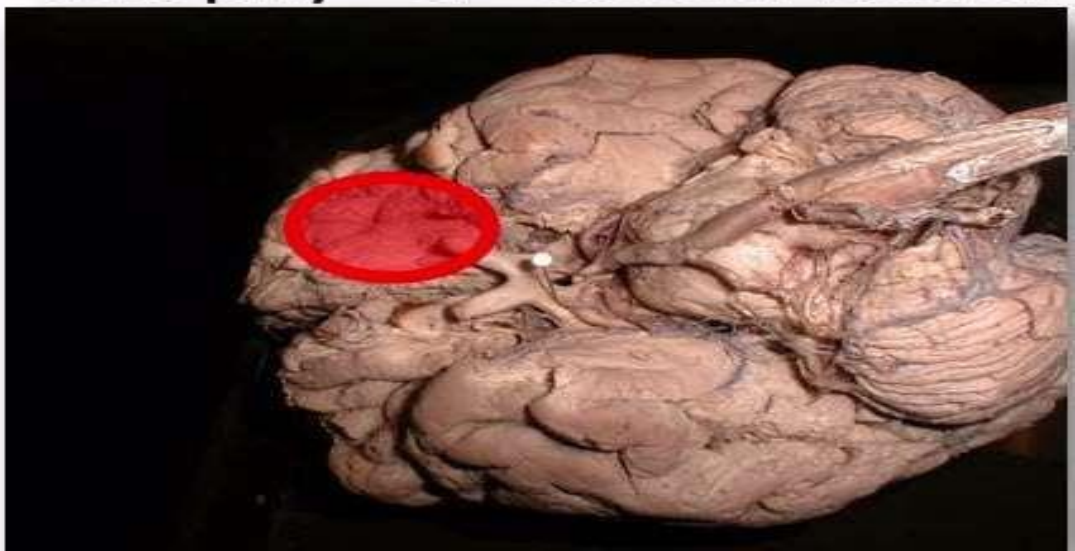
❖Pituitary tumors.

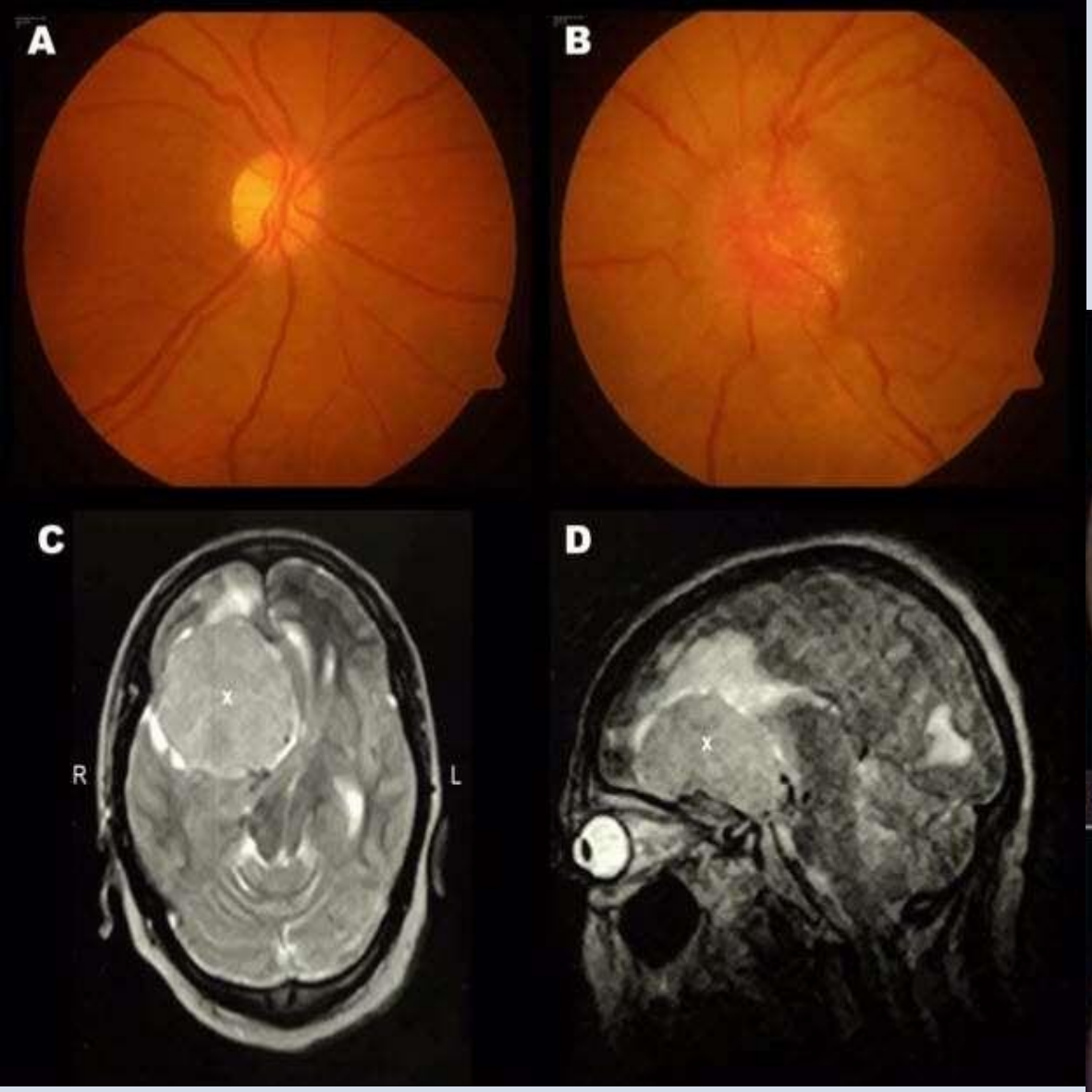




❖ Foster Kennedy Syndrome;

- ➢In cases of frontal lobe tumors,
- ➢Ipsilateral optic atrophy & contra-lateral papilledema

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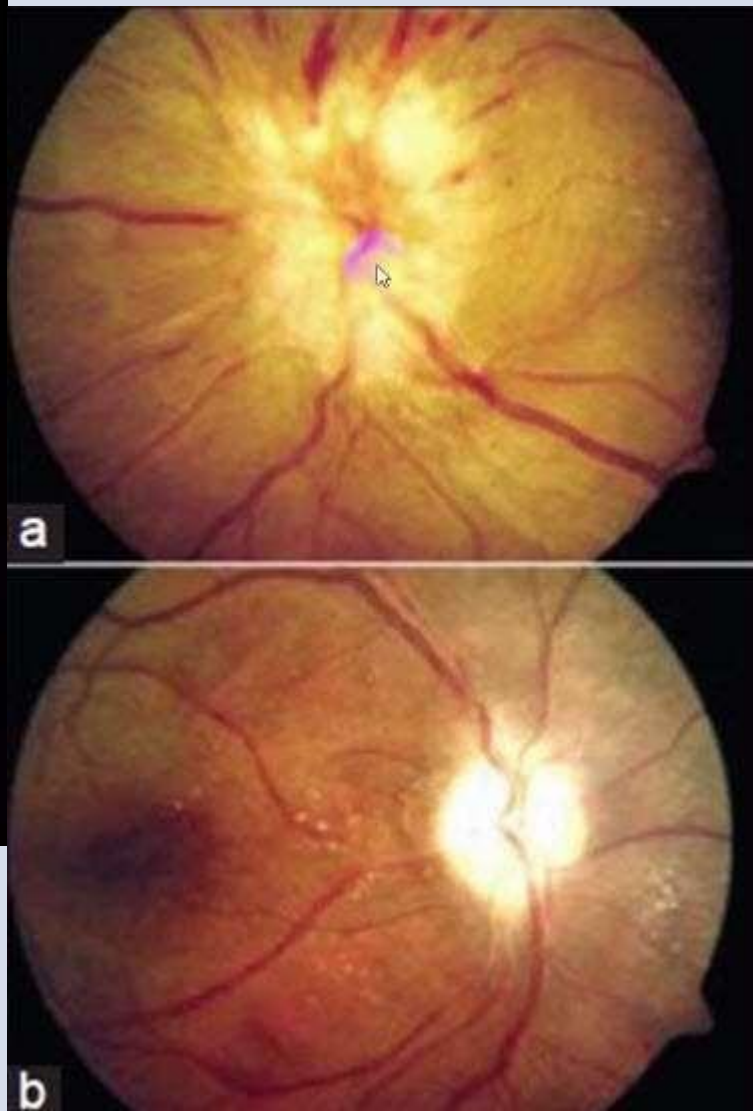
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Secondary Optic Atrophy

- Secondary optic atrophy is preceded by longstanding swelling of the optic nerve head.

- **Causes:**

1. Chronic papilloedema
2. Anterior ischemic optic neuropathy
3. Papillitis.

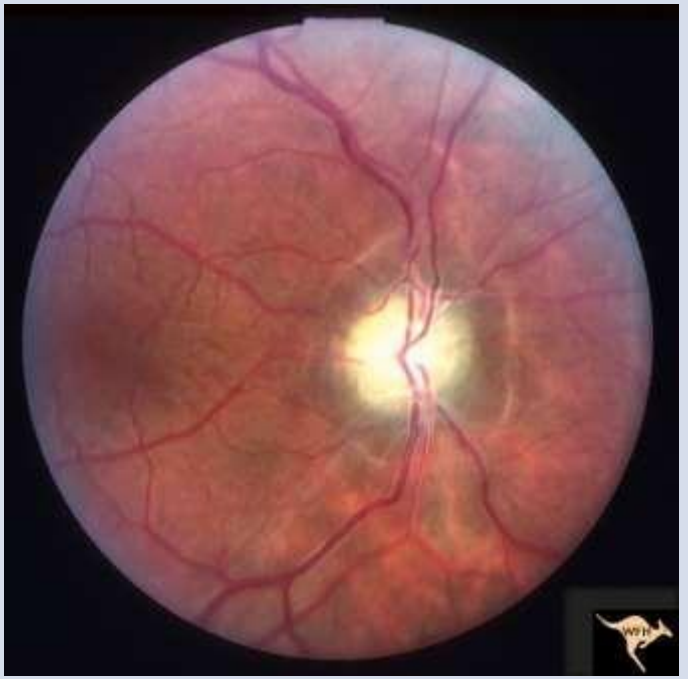
- **Signs:**

1.Slightly or moderately raised white or greyish disc.

2. Poorly delineated margins.

3.Reduction in the number of blood vessels on disc surface.

4.Peripapillary circumferential retinochoroidal folds (Paton line) may be present around the disc.



Consecutive Optic Atrophy

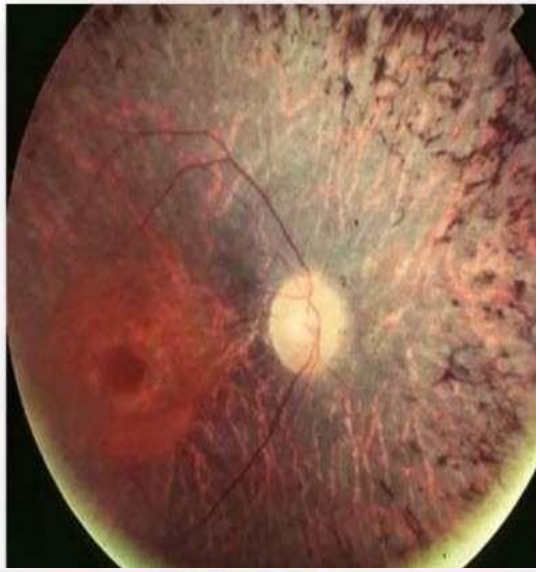
- It is caused by disease of the inner retina or its blood supply.
- Here destruction of ganglion cells occur due to degenerative or inflammatory lesions of choroid or retina.

- **Causes:**

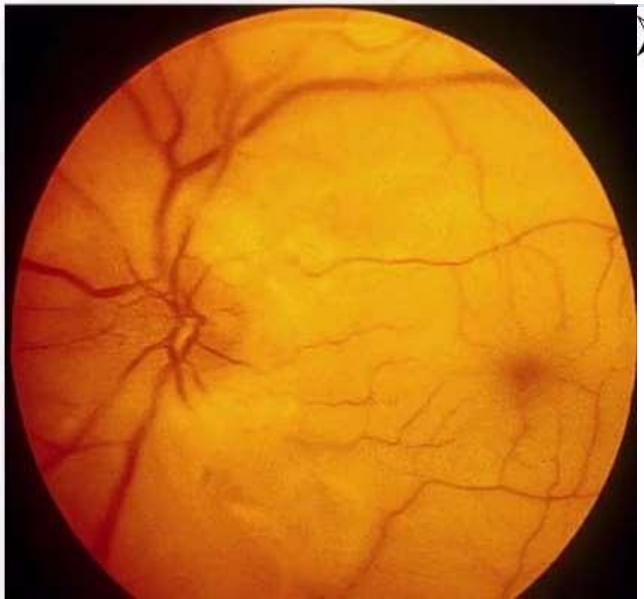
1. Retinitis pigmentosa.
2. Extensive retinal photocoagulation.
3. Central retinal artery occlusion.
4. Diffuse chorioretinitis.

Consecutive optic atrophy …

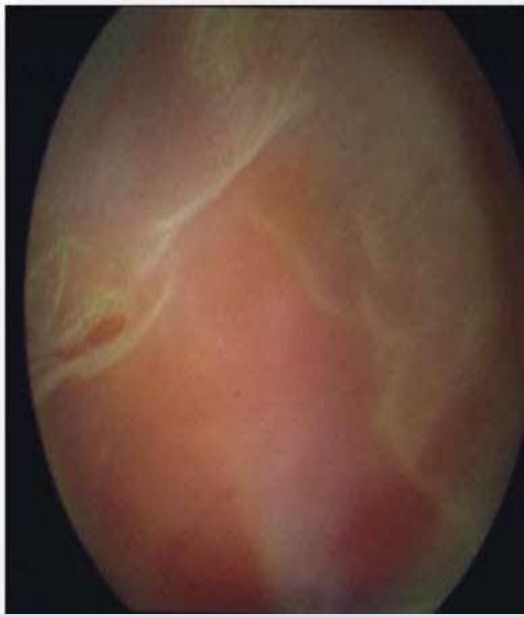
- Retinal disease.
  - R. pigmentosa,



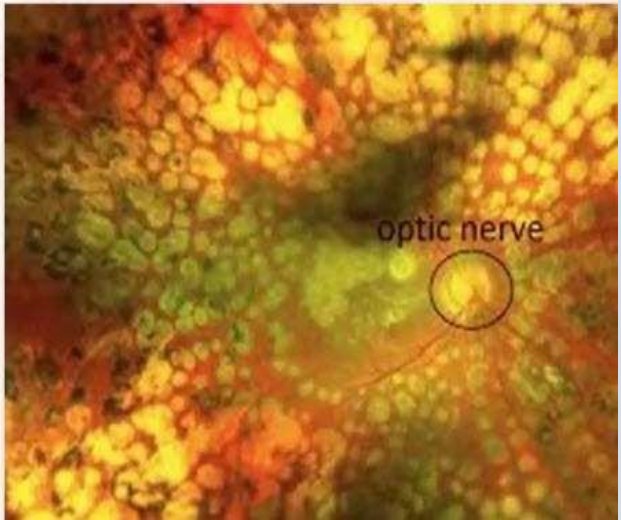
  - CRAO.



- Neglected retinal detachment,

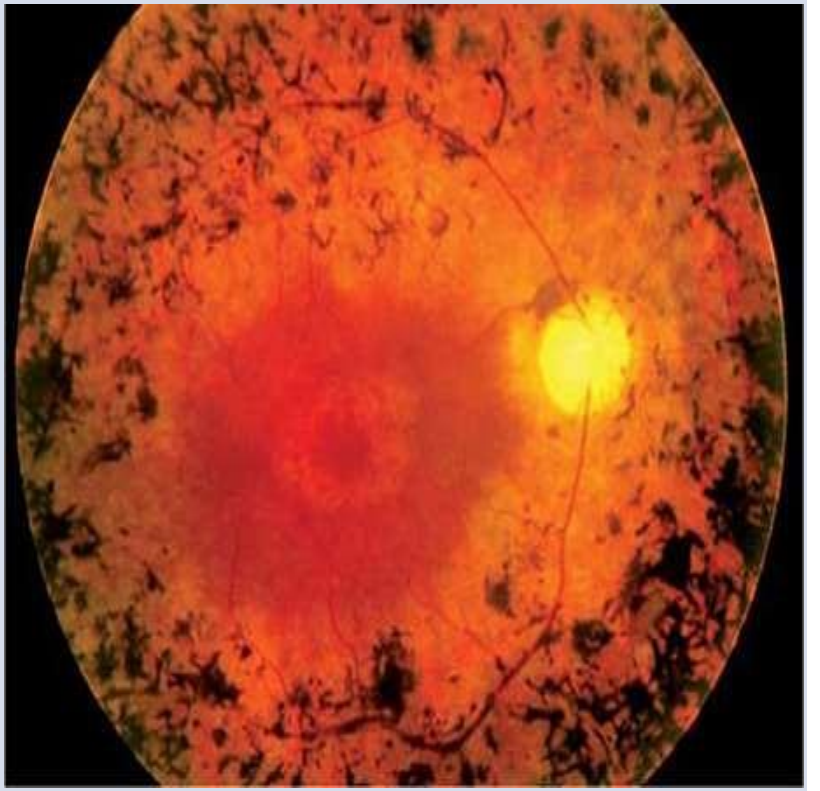


- Excessive PRP.

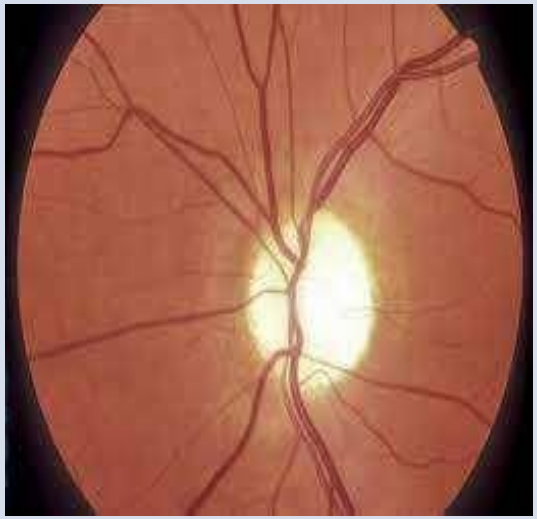


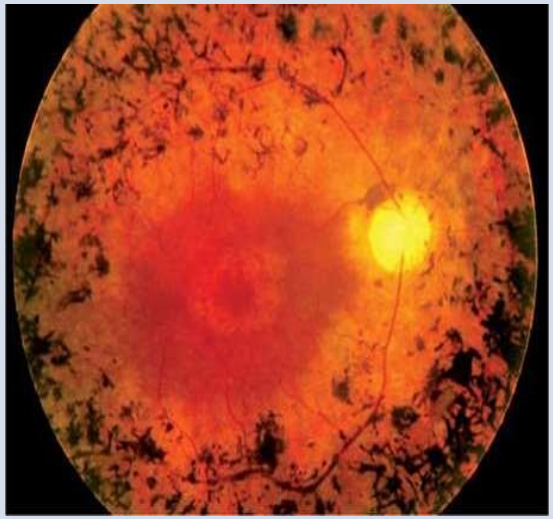
- **Signs:**

- ✓ Yellowish-waxy pallor of the disc with reasonably preserved architecture.
- ✓ Marked narrowing of the retinal blood vessels.
- ✓ Disc margin is less sharply defined.



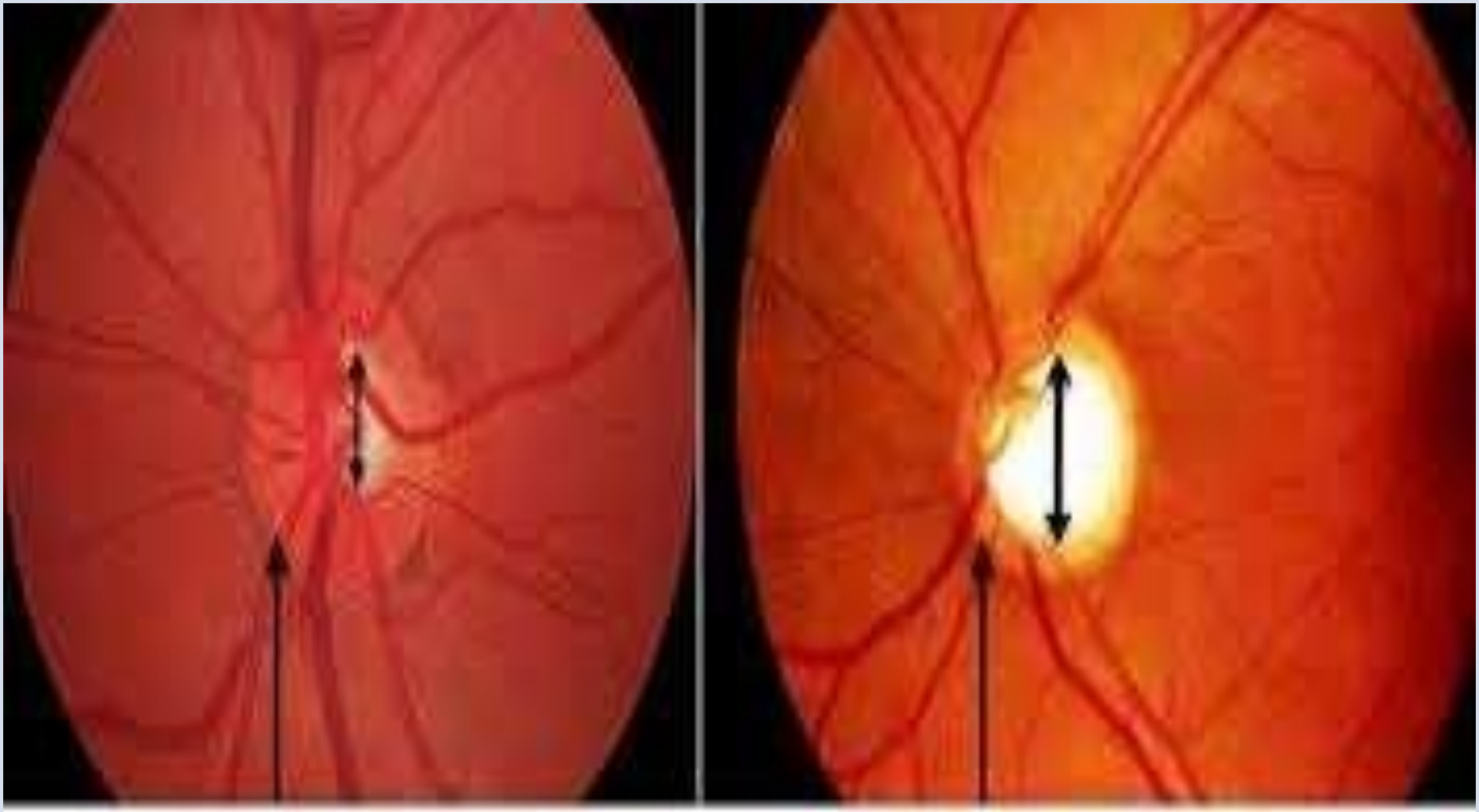
Features	Primary	Secondary	Consecutive
1.Appearance	Chalky white	Dirty grey white	Waxy pallor
2.Margin	Well defined	ill defined	Well defined
3.Lamina cribrosa	Well seen	Obscured	Well seen
4.Vessels	Normal	Peripapillary sheathing	Attenuation
5.Surrounding retina	Healthy	Hyaline bodies/drusen	Pathology seen





Glaucomatous Optic Atrophy

- **Signs:**
  - ✓ Deep and wide cupping of optic disc.
  - ✓ Thining of neuro-retinal rim.
  - ✓ Pale color of the disc.
  - ✓ Nasal shifting of blood vessels.
  - ✓ Laminar dot sign present in disc.
  - ✓ Peripapillary atrophy may present.

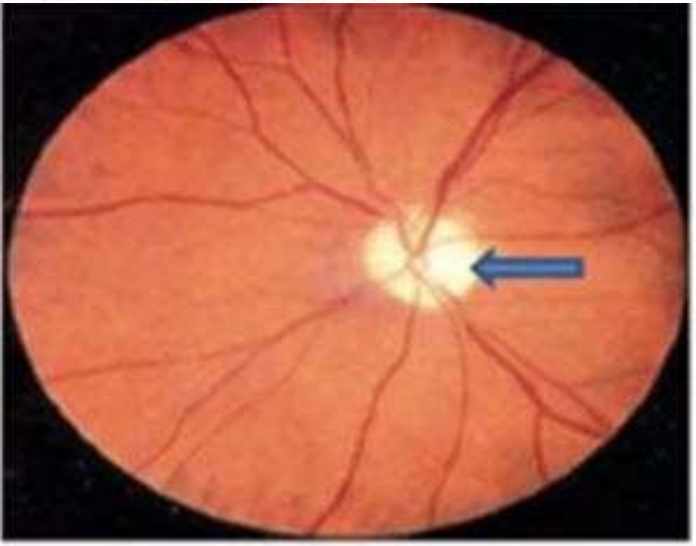


Normal optic nerve head

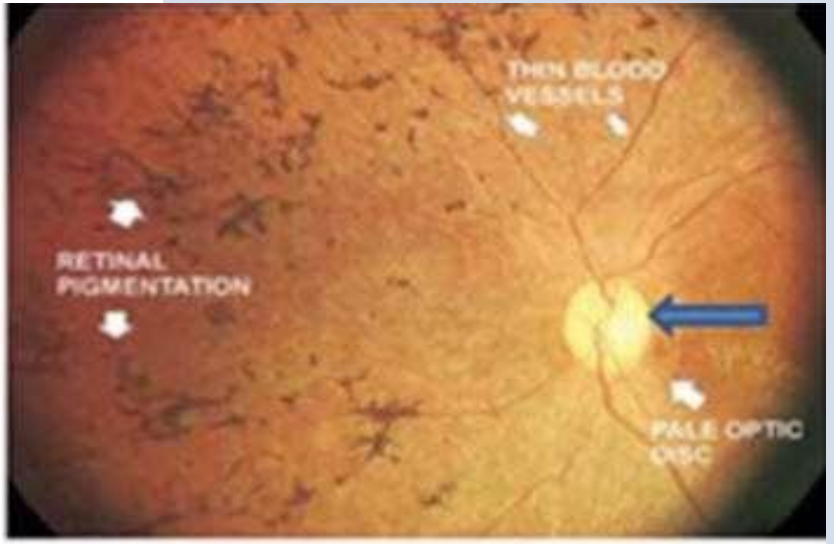
Glaucomatous cupping

Differential diagnosis …

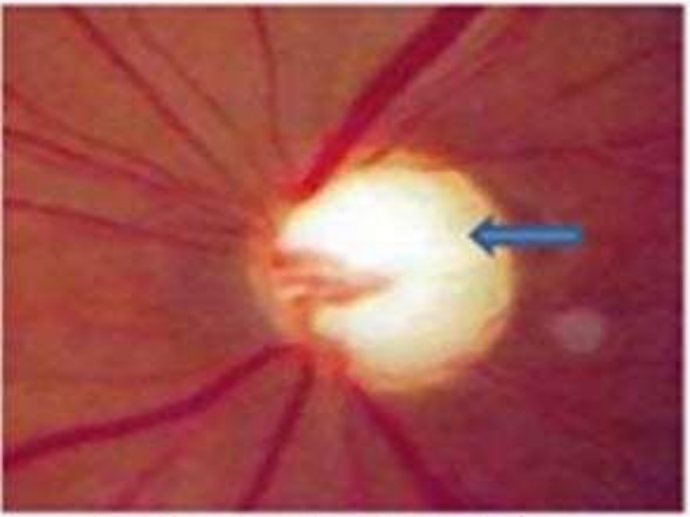
Optic atrophy …



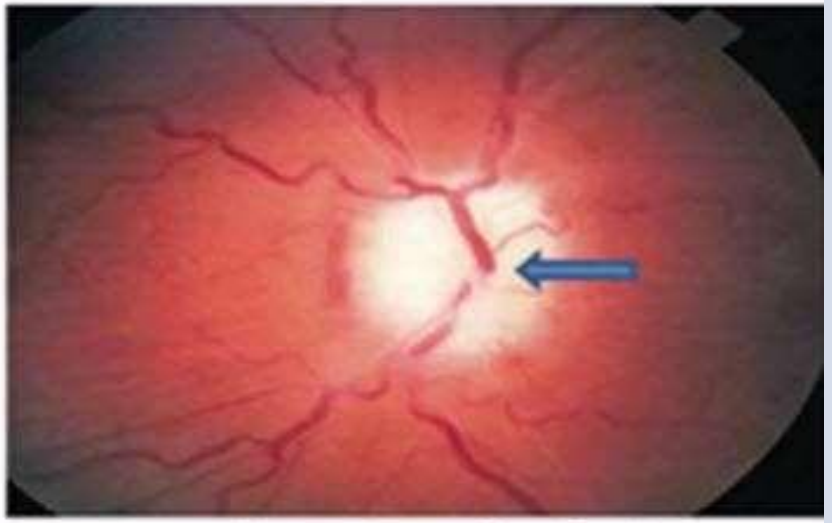
Primary optic atrophy



Consecutive optic atrophy in retinitis pigmentosa



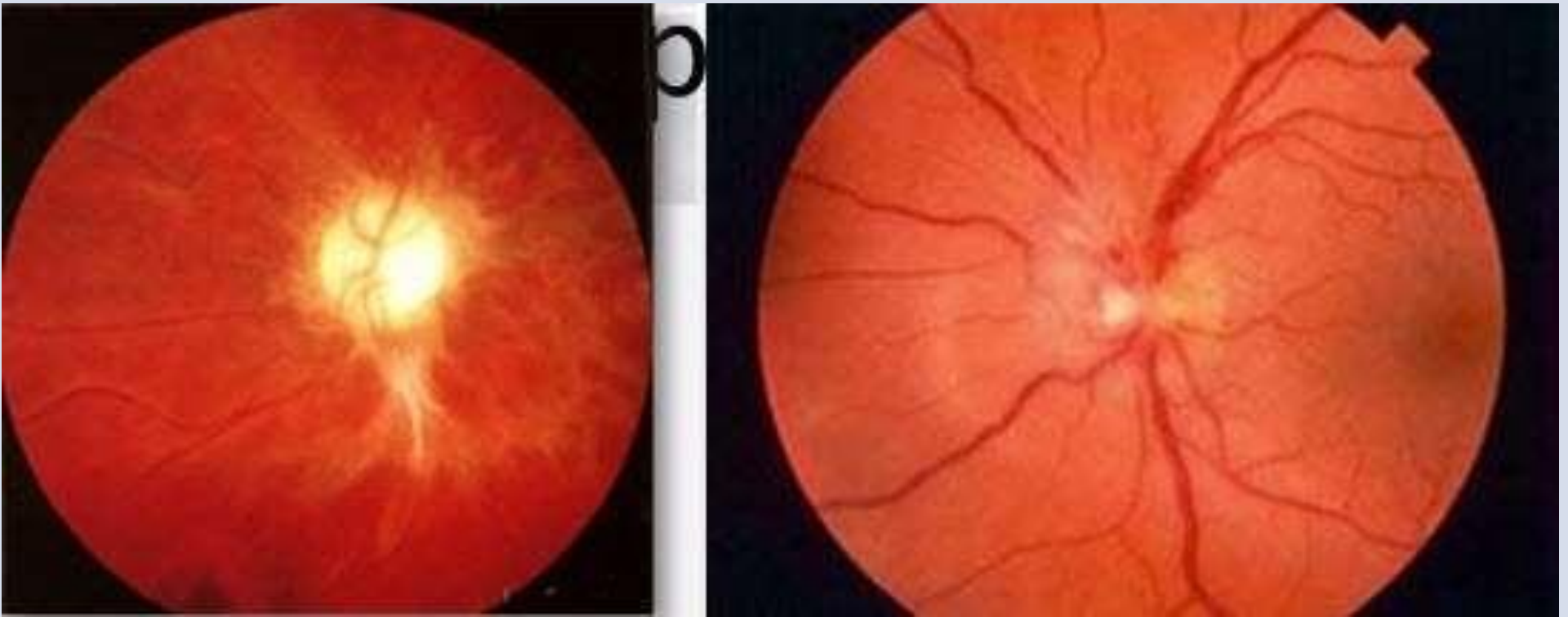
Post glaucomatous optic atrophy with cupping



Secondary optic atrophy

❖ Differential diagnosis of pale disc;

- ➢ Optic disc pallor with oedema of the disc: in anterior ischemic optic neuropathy (AION)
- ➢ Optic disc pallor without oedema of the disc: in optic atrophy.



❑ Differential Diagnosis of optic disc pallor:

- Non pathological cause:
  1. Axial myopia
  2. Infants
  3. Elderly people with sclerotic changes.

- Pathological causes:
  1. Hypoplasia of disc
  2. Congenital pit
  3. Coloboma

- **Investigation:**

1. CT scan and MRI of brain and optic nerve.
2. Fluorescein angiography of the optic nerve head.
3. OCT of optic nerve head with retinal nerve fibre layer analysis.
4. Visual field analysis.
5. Visual evoke response(VEK) is useful in children.

❑ Treatment:

- ❖ Treatment is according to cause.
- ❖ Treatment of underlying cause may help in preserving some vision in patients with partial optic atrophy.
- ❖ However once complete atrophy has set in, the vision cannot be recovered.