Central Retinal Arterial Occlusions

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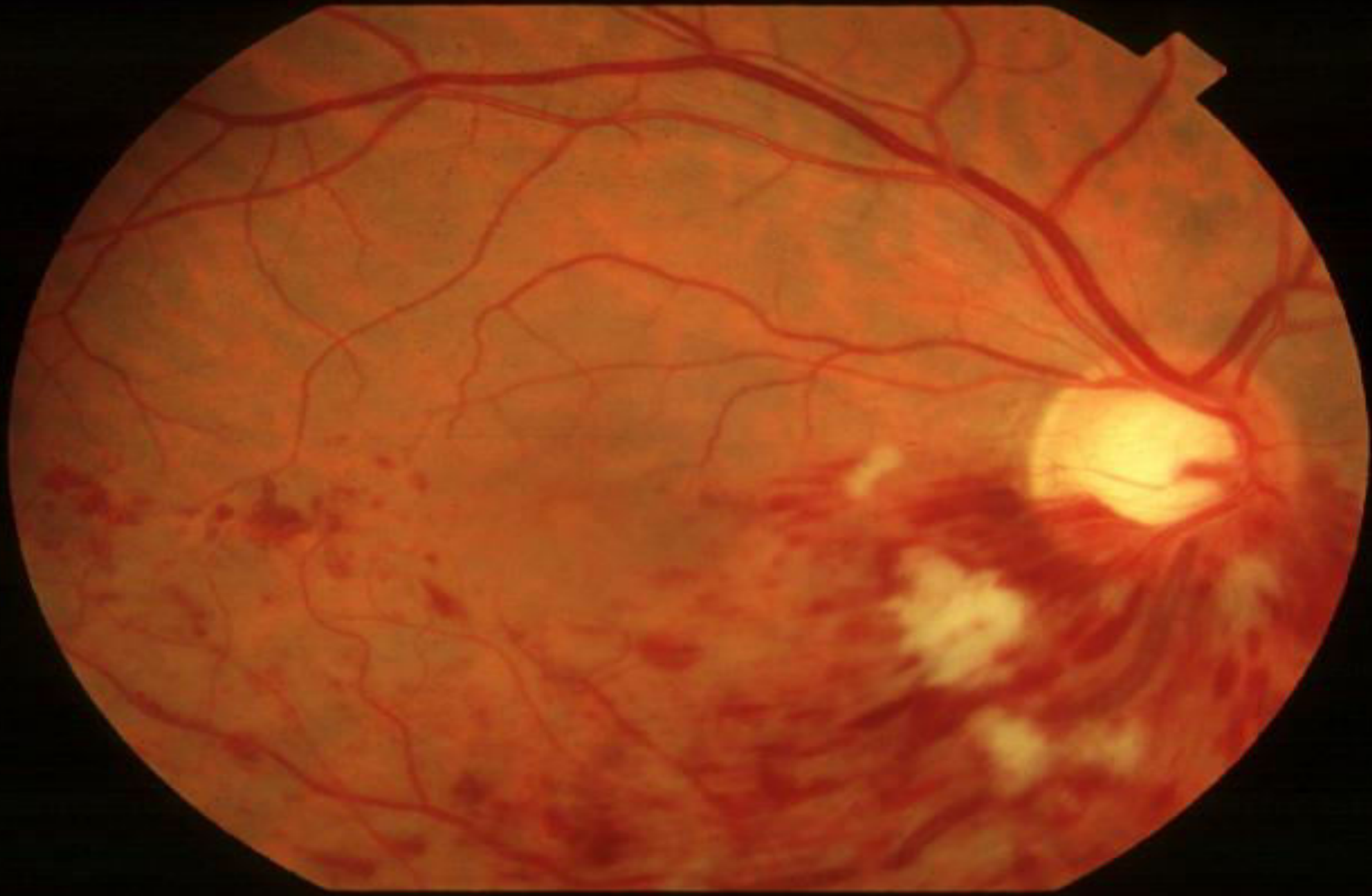
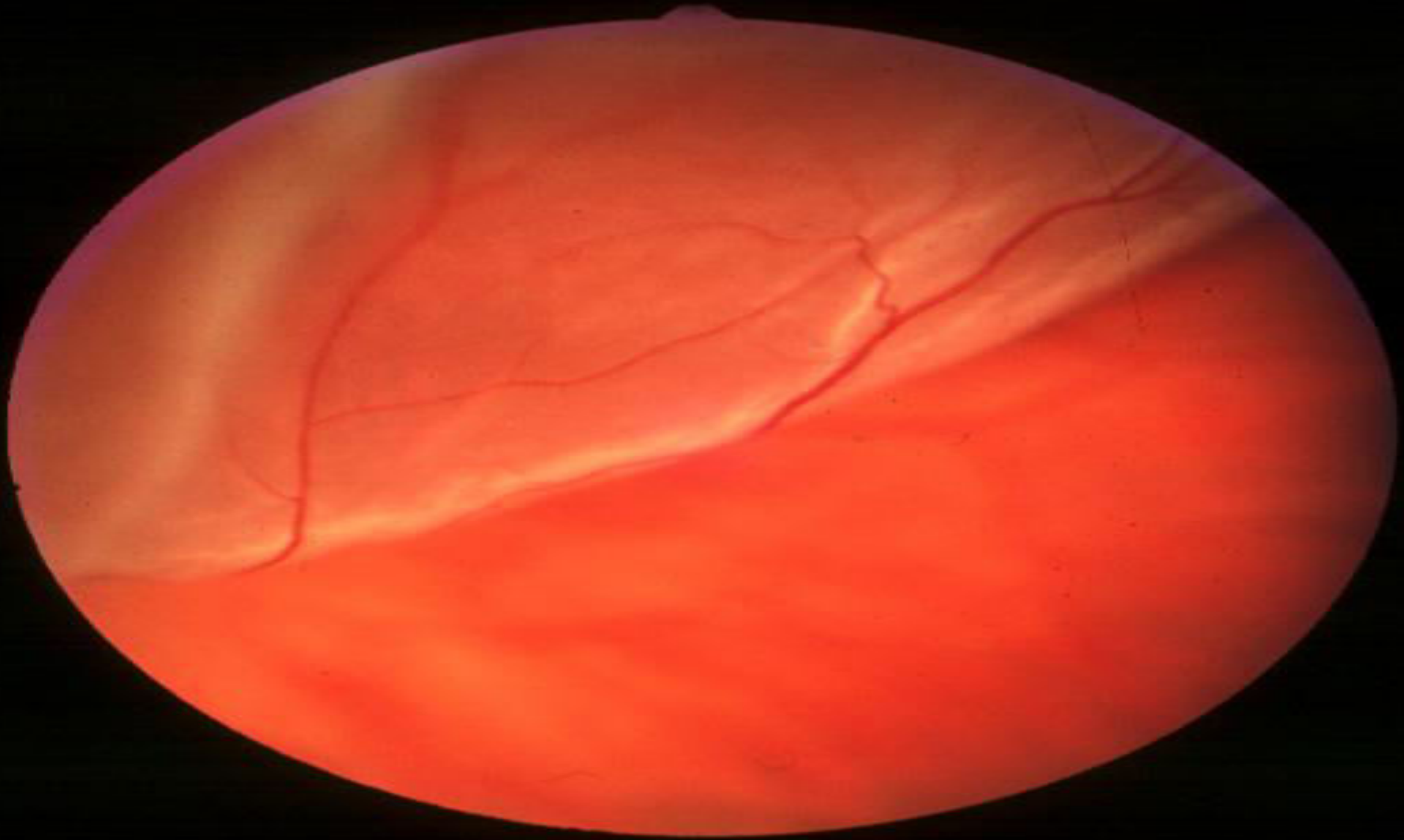
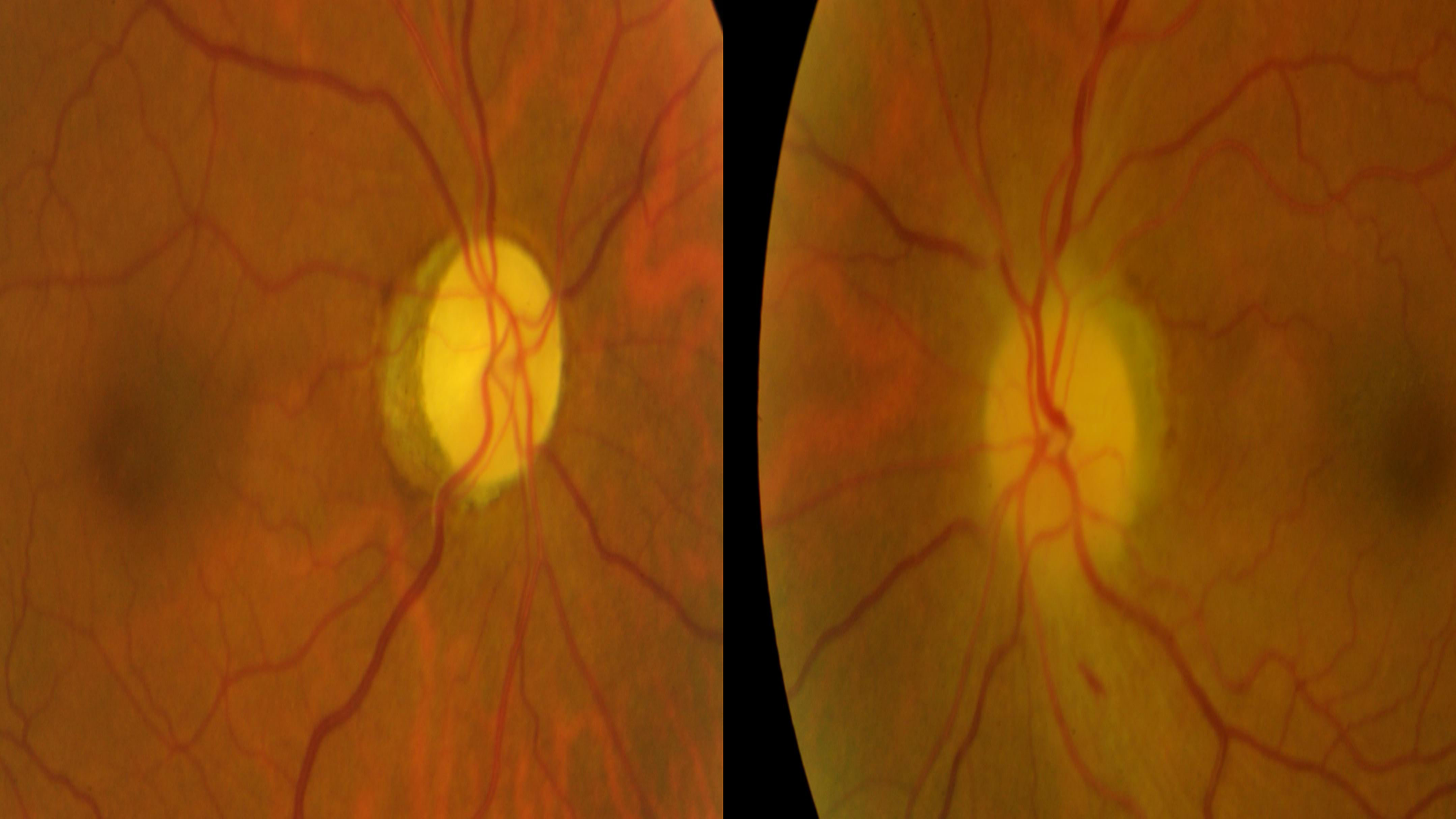
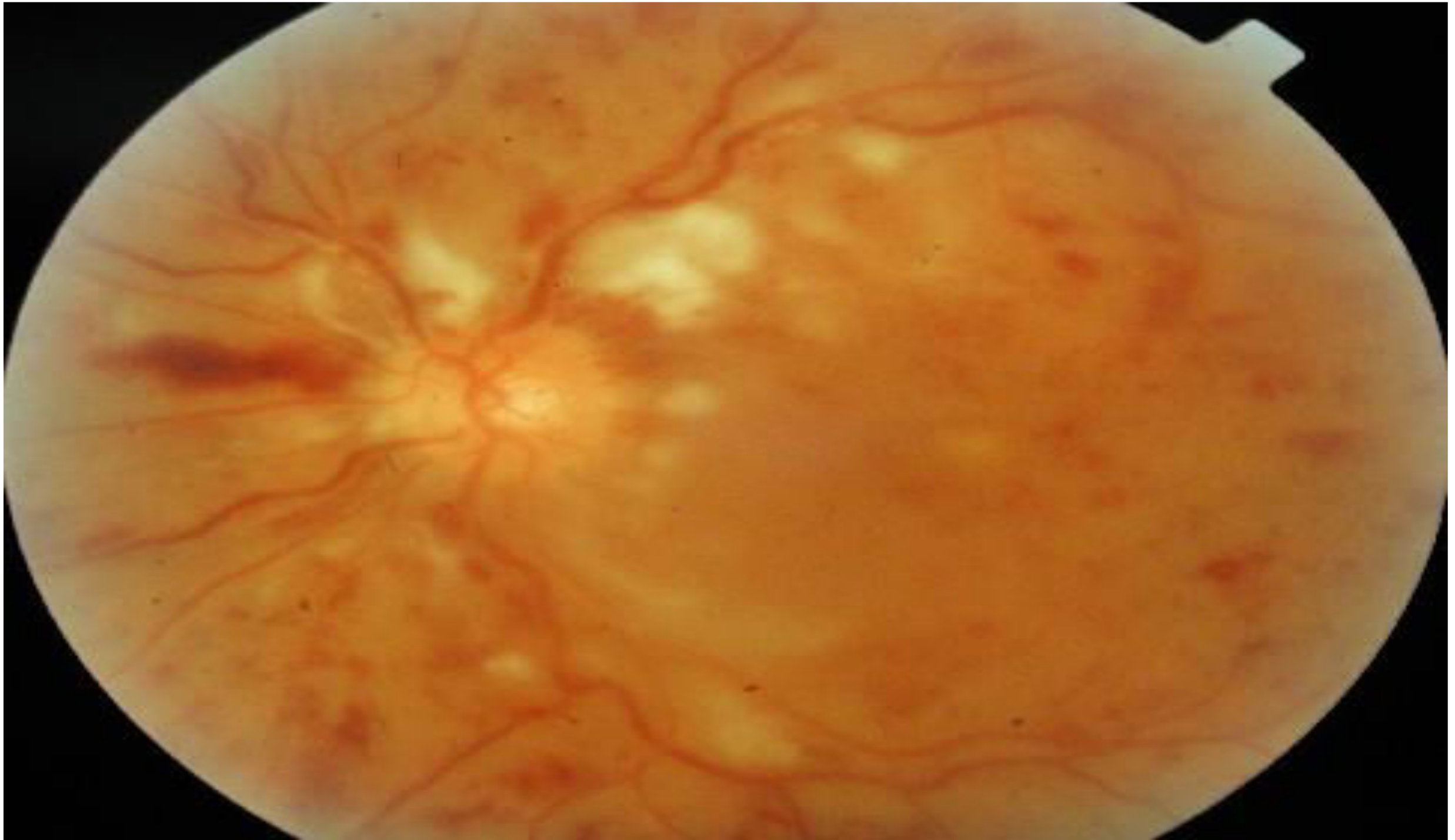
No financial disclosures

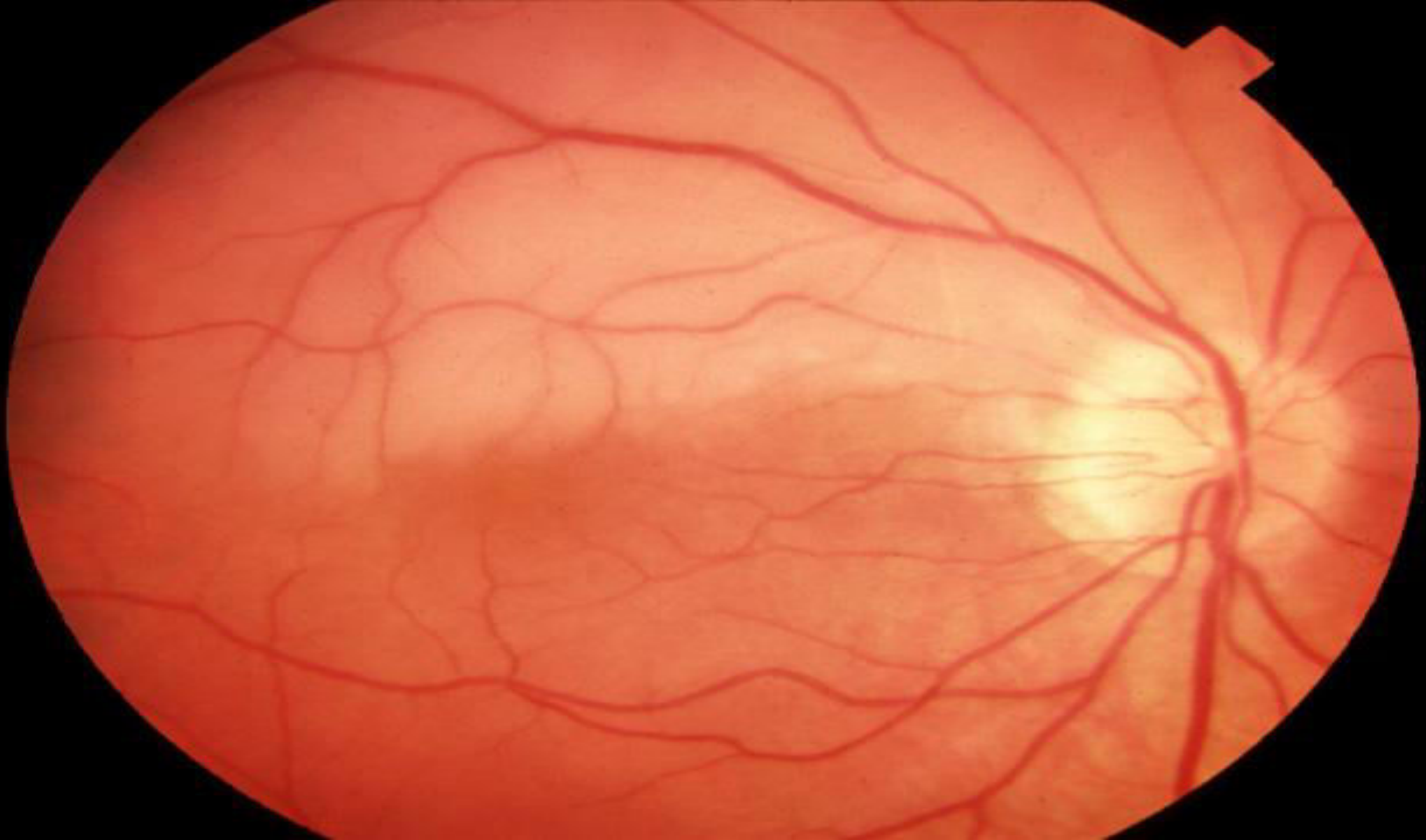
Most important people in Life



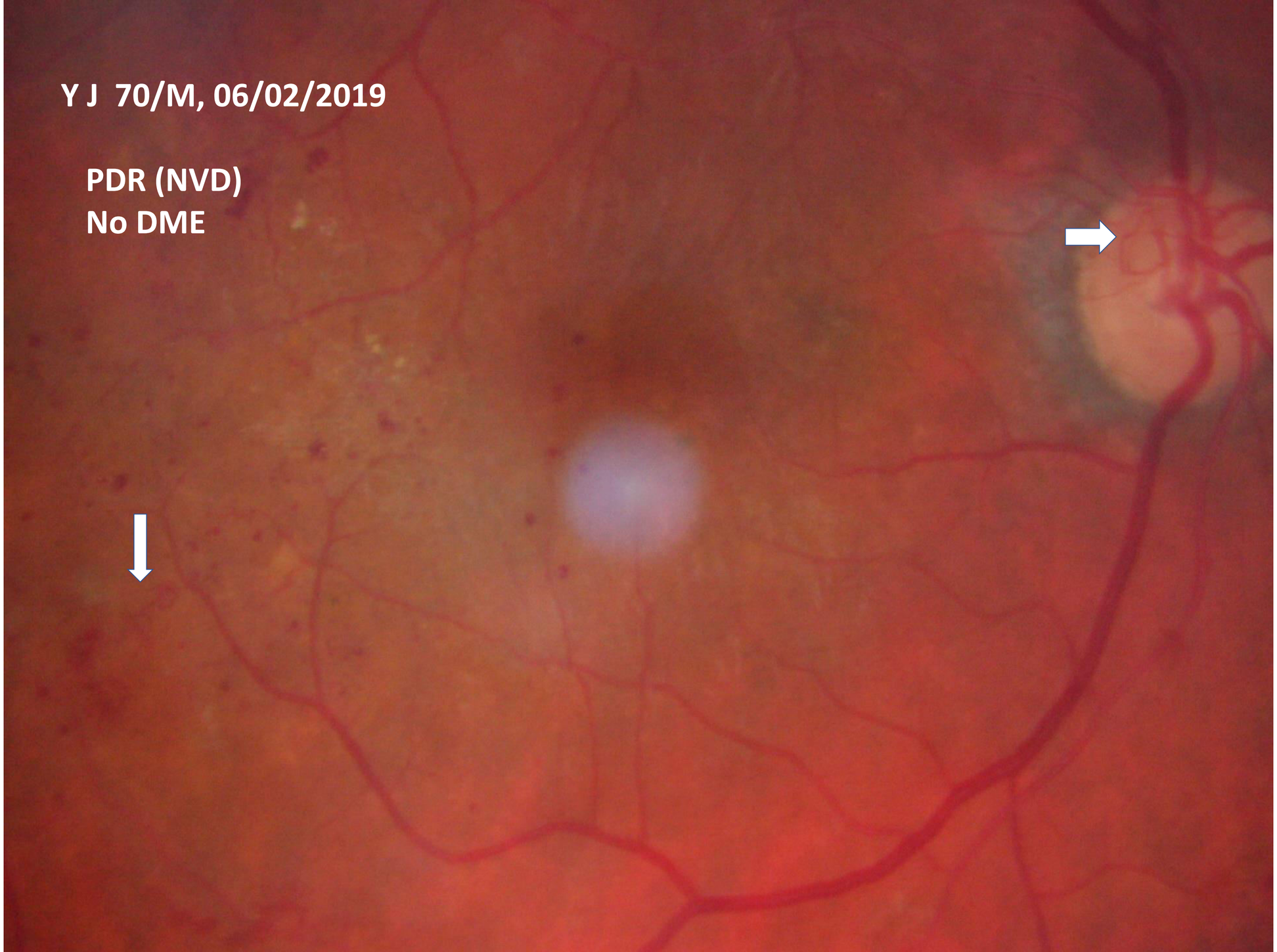


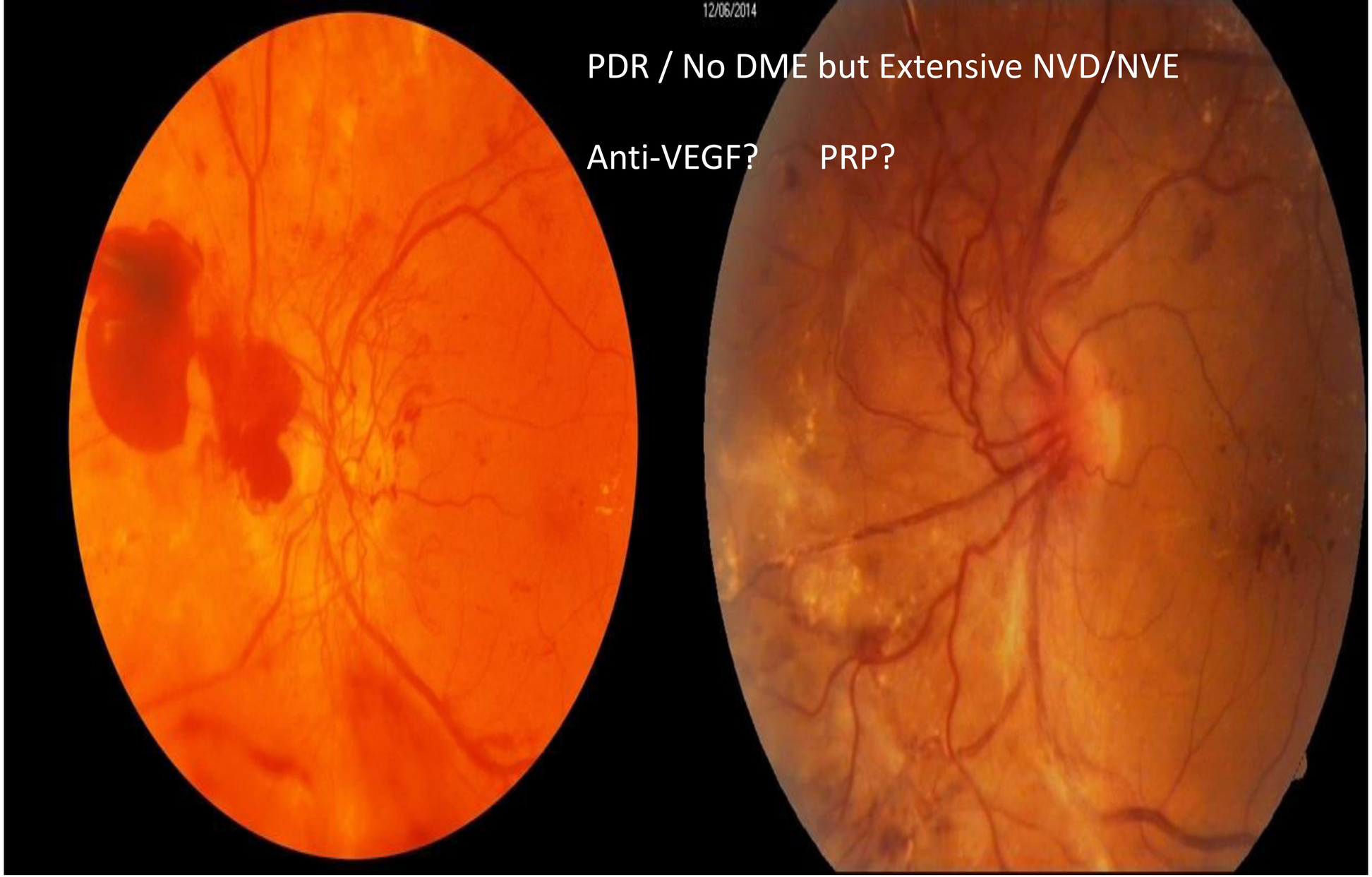






PDR and DME

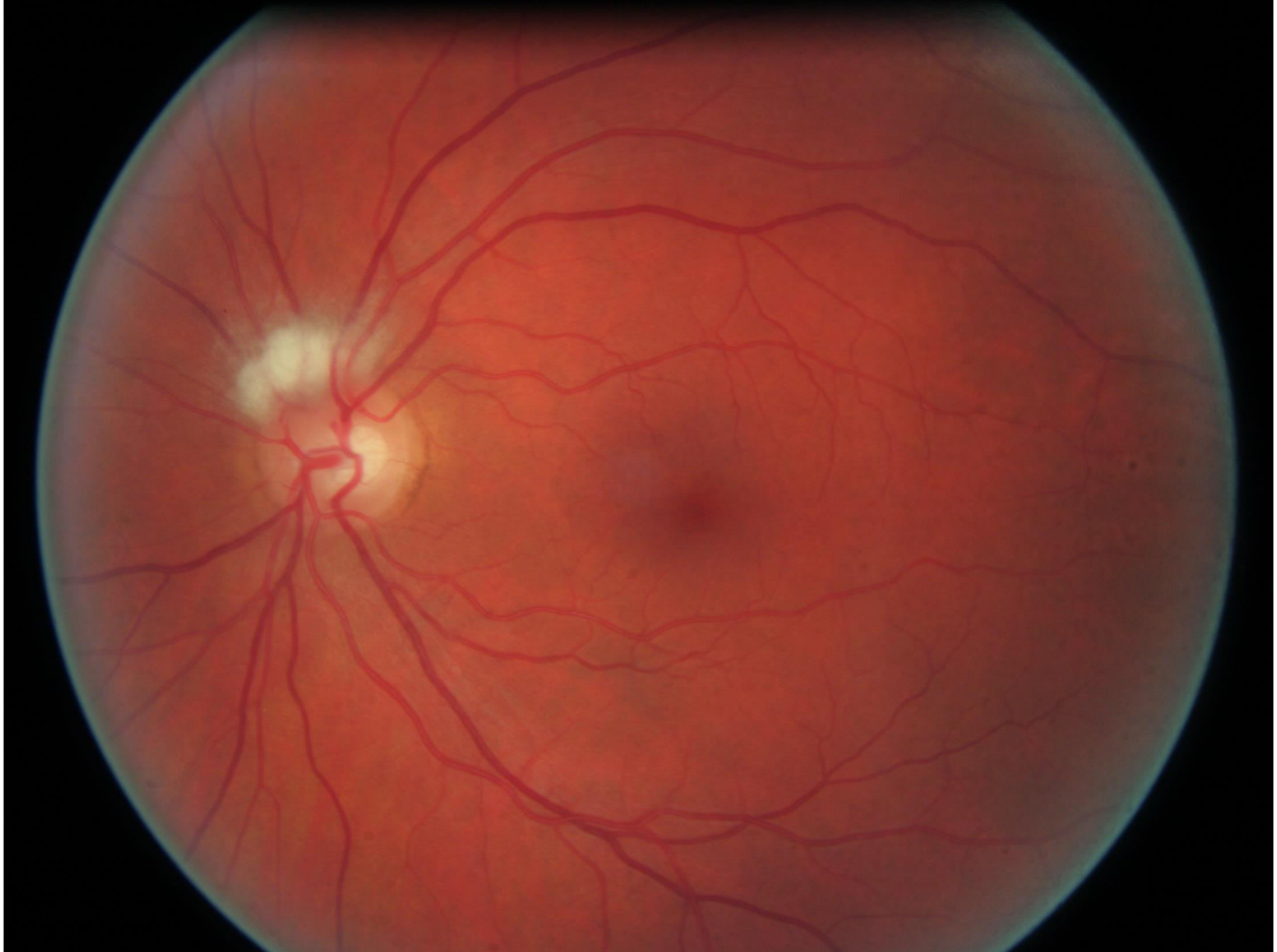

Y J 70/M, 06/02/2019
PDR (NVD)
No DME

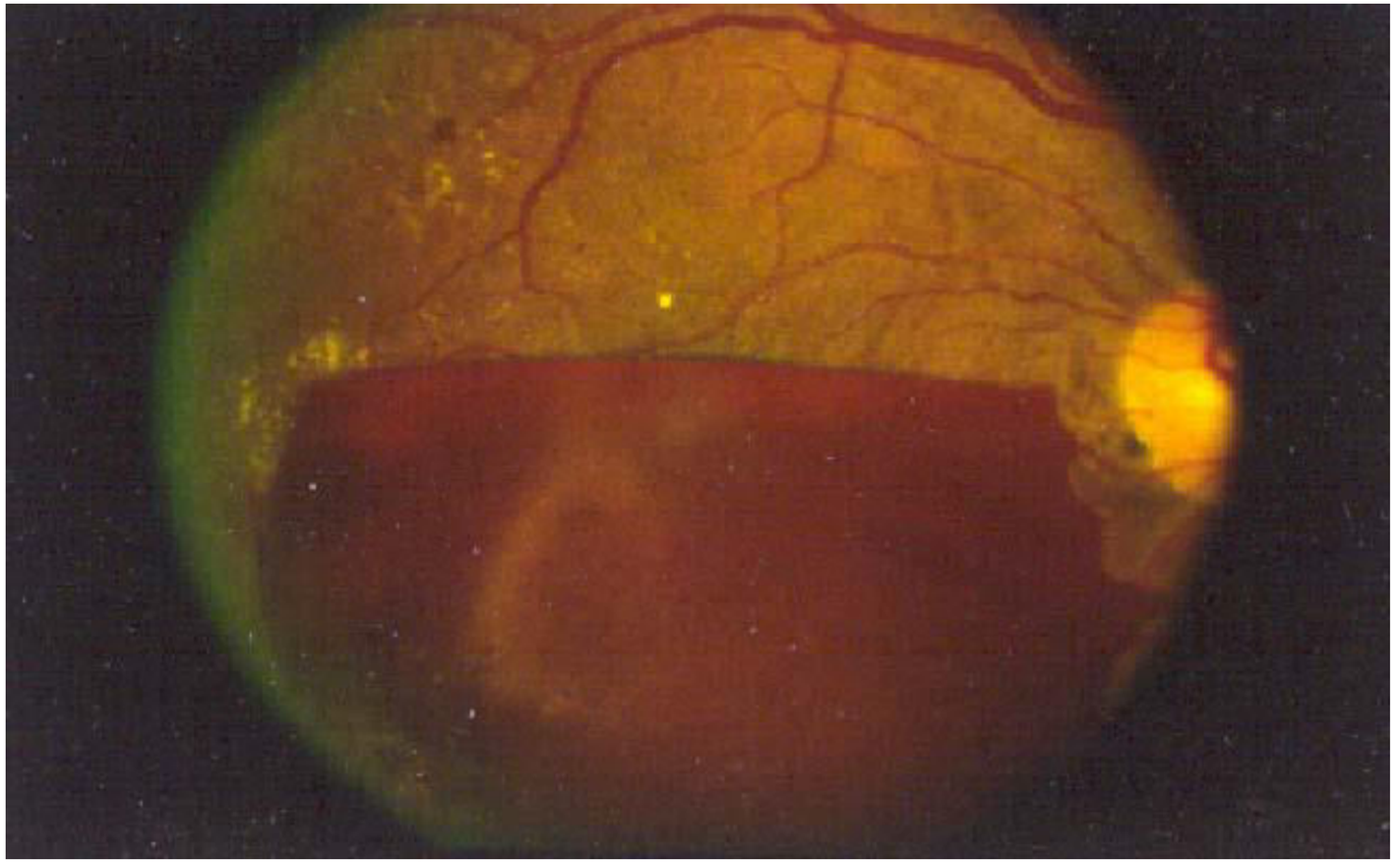


❖**PRP versus PRP plus Anti-VEGF (Avastin)**

❖ **Earlier & high rate of regression of neovessels in combination group**

❖Mushtaq M, **Sanaullah jan. Comparison between Pan-retinal photocougulation** and **Pan-retinal photocoagulation plus intravitreal bevacizumab in Proliferative diabetic retinopathy. Journal of Ayub Medical College** 2012; 24:3-4.

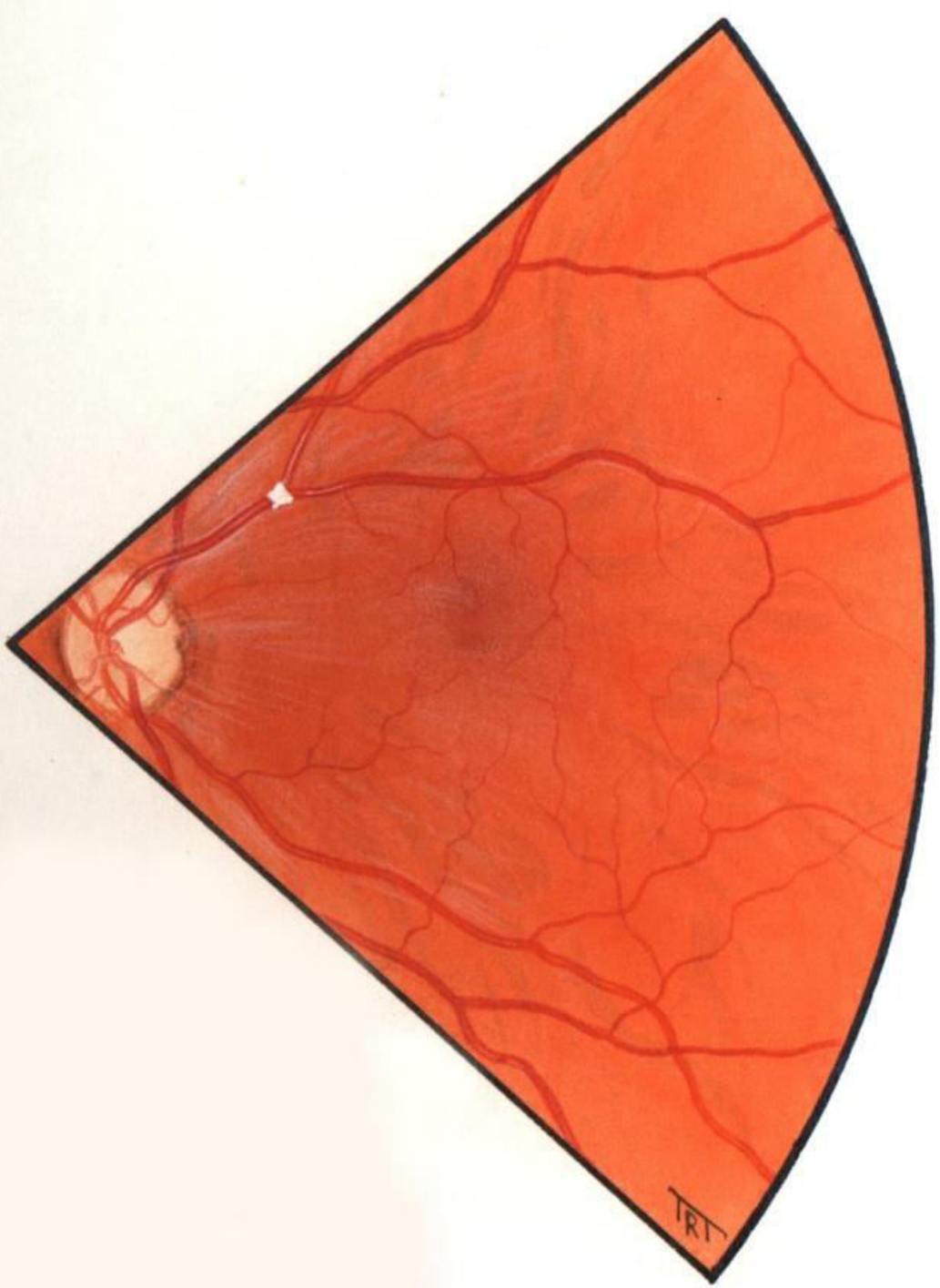




Sudden Painless Loss of Vision

- **Retinal vascular Occlusions**
- **Retinal Detachment**
- **Vitreous /Pre-retinal bleed due proliferative retinopathy (DR,RVO, Eale's disease), PVD, Valsava retinopathy, Raised BP etc**
- **AION**

Most important people in Life


TRT

Retinal Artery Occlusions

- **Central RAO:**
- 50%: idiopathic
- 33% carotid artery disease
- 10% Giant cell arteritis

- Blockage is within optic nerve substance (obstruction site not visible on ophthalmoscope)

- **Branch RAO** – Obstruction distal to Lamina Cribrosa
- Visible blockage.

Retinal Artery Occlusions

Atherosclerosis - Most common cause of CRAO --- 80% cases

Mostly by thrombus formation (Localized intimal damage due to Artherosclerosis - incites thrombus)

Embolization: Common cause of CRAO - Ophth artery-first branch of internal carotids.

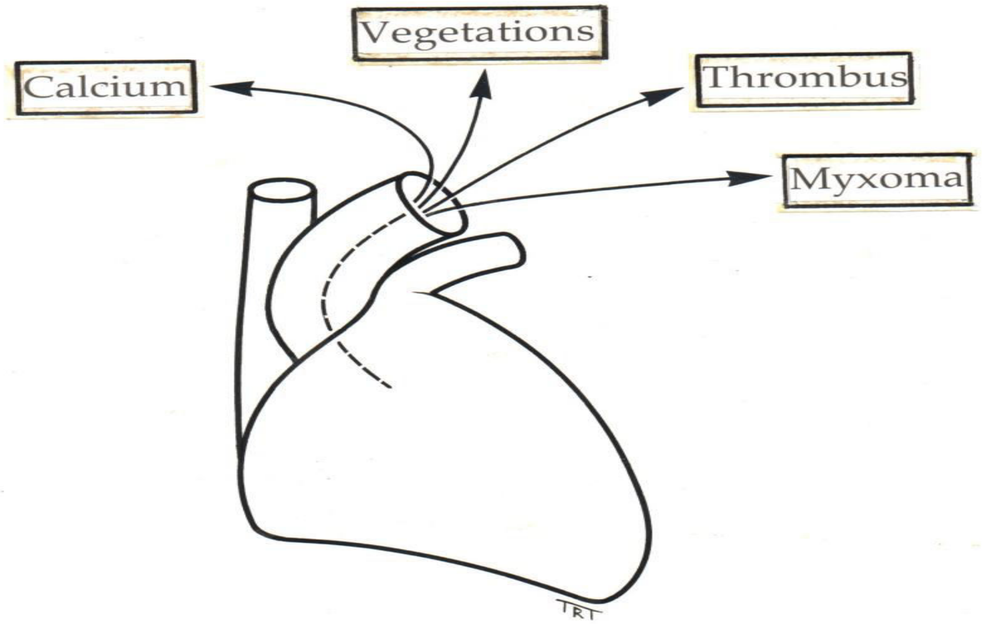
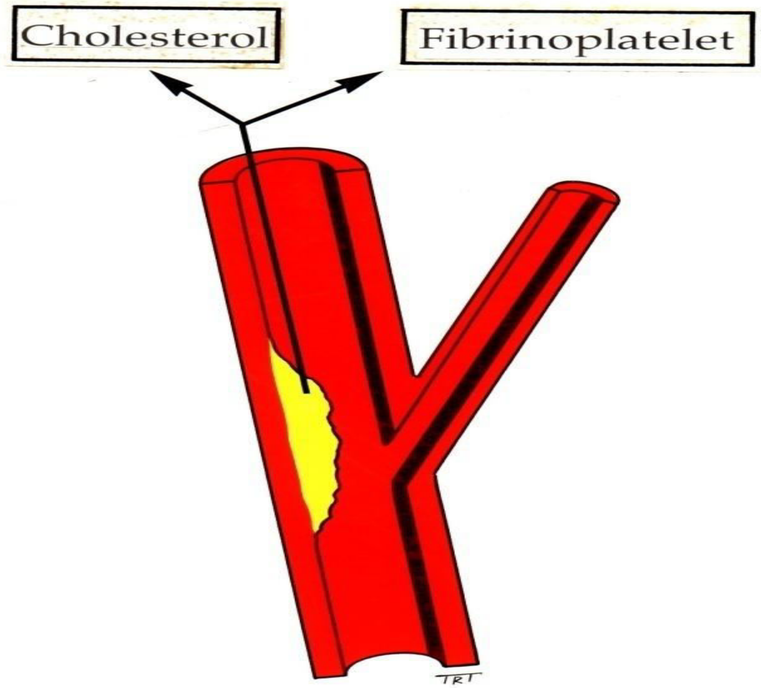
Carotids---emboli from atheromatous plaques at carotid bifurcation.

Heart:

Calcific	Aortic/mitral valves,
Vegetations	Bacterial endocarditis,
Thrombus	MI (Lt side of heart), M.stenosis with Atrial fibrillation
	Myxomatous - Atrial myxoma

Retinal Artery Occlusions

Types of emboli

Cardiac	Carotid
	

Retinal Artery Occlusions

- **Carotid artery disease:** Leading cause of morbidity and mortality.

  Carotid bifurcation- Vulnerable to atheromatous ulceration and stenosis

- **Cholesterol (Hollenhorst Plaques)**

  Rarely causes significant obstruction. Frequently symptomatic

  Refractile golden to yellow orange crystals-usually at bifurcation of arteries.

Retinal Artery Occlusions

- **Fibrinoplatlet Emboli:** Dull grey elongated particles-usually multiple-may fill entire luman.

Causes:

Retinal Transit Ischemic Attacks - Amaurosis fugax: usually but occasionally complete obstruction

Retinal TIA-Painless unilateral loss of vision-few min – Recovery

May be associated ipsilateral **cerebral TIAs** with contralateral signs.

Retinal Artery Occlusions

- **Calcific:** From atheromatous plaques in ascending aorta/carotid arteries, calcific heart valves- usually single white-usually close to disc more dangerous.

- **Periarteritis:** Systemic vasculitis, polyarteritis nodosa, S.L.E, Optic neuritis, Behcet's, syphilis, G.C.A and other collagen diseases, mucormycosis.

- **Blood disorders**: Protein S or Protein C deficiency, sticky platelet syndrome.
- Hypercoagulative states- ploycythemia, sickle cell disease.

Retinal Artery Occlusions

- **COMPRESSIVE:** External compression by tumor, hemorrhage, inflammation.
- **TRAUMA:** Direct damage to O.N and vessels.
- **Retinal Migraine:** Rare - Exclude other causes.
- **MISCELLANEOUS:** BP, Diabetes, Retro bulbar anesthesia etc.

Central Retinal Artery Occlusion:

Size / Location of obstructed vessel.

Severity / Duration of obstruction.

Usually atheroma – but can be calcific emboli.

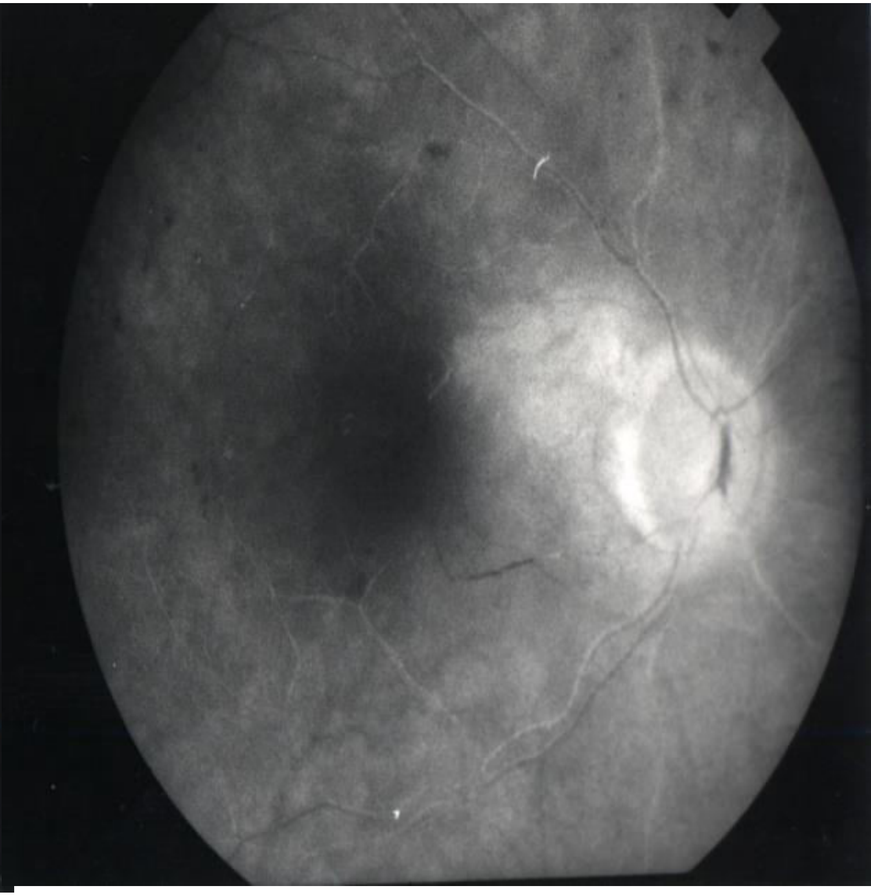
FEATURES: within seconds

- Acute / profound visual loss
- Relative APD – Marcus Gun pupil
- White retina + cherry red spot within minutes
- 20 % individuals Cilio-retinal arteries from ciliary circulation – spares macula
- Retinal vessels – Narrowing – sludging and segmentation of blood column(wks)

FA of central retinal artery occlusion

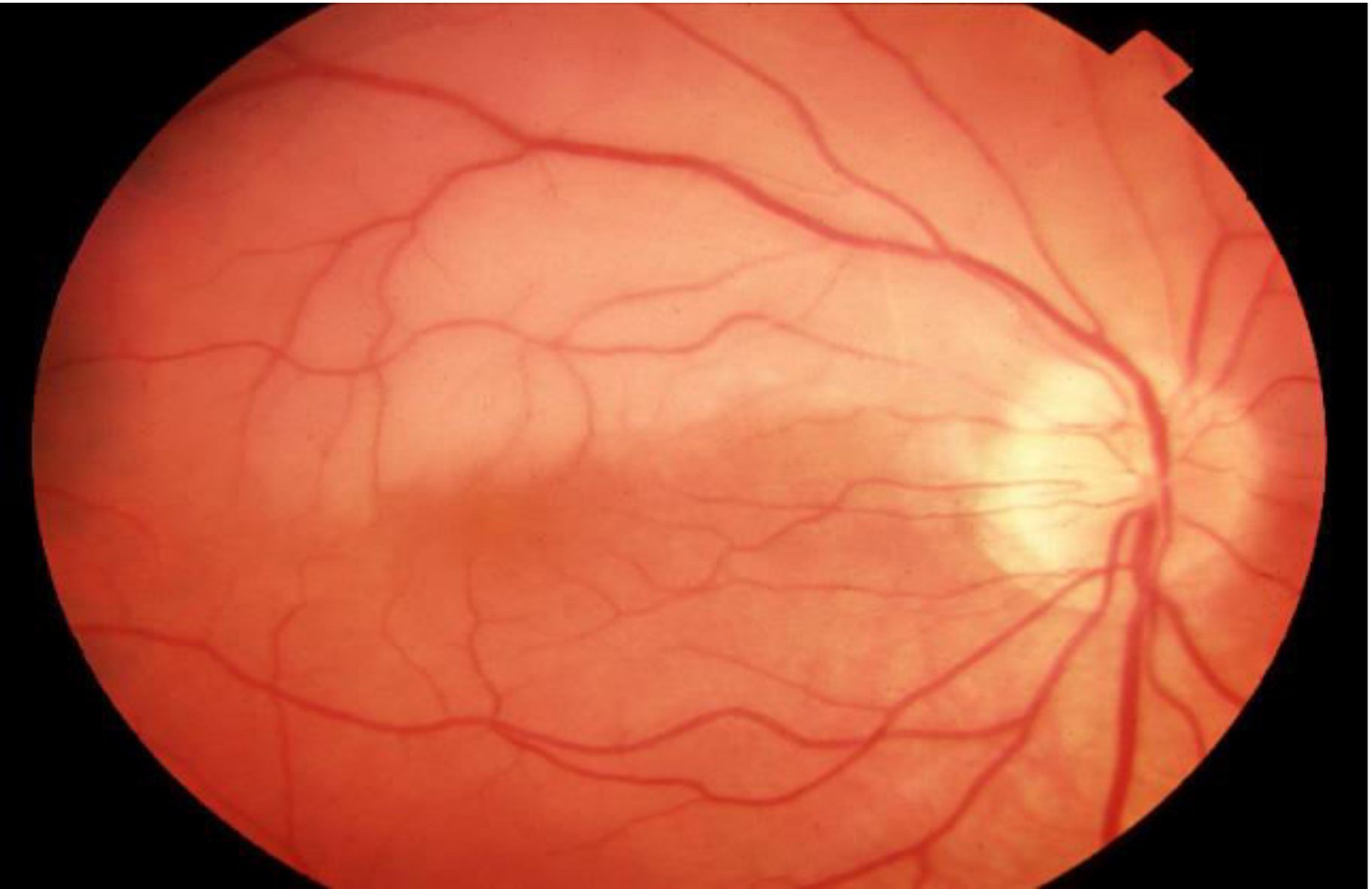
Early filling of cilioretinal artery

Non-filling of other vessels



Late staining of vessel walls

Branch retinal artery occlusion (BRAO)



- VA - variable
- APD - mild or absent
- Retina whitening
- Arteriolar narrowing

White cloudy swelling clears (Permanent sectorial visual field defect-atrophy of inner retinal layers).
Re-canalization of obstructed vessel – only subtle or absent ophth signs

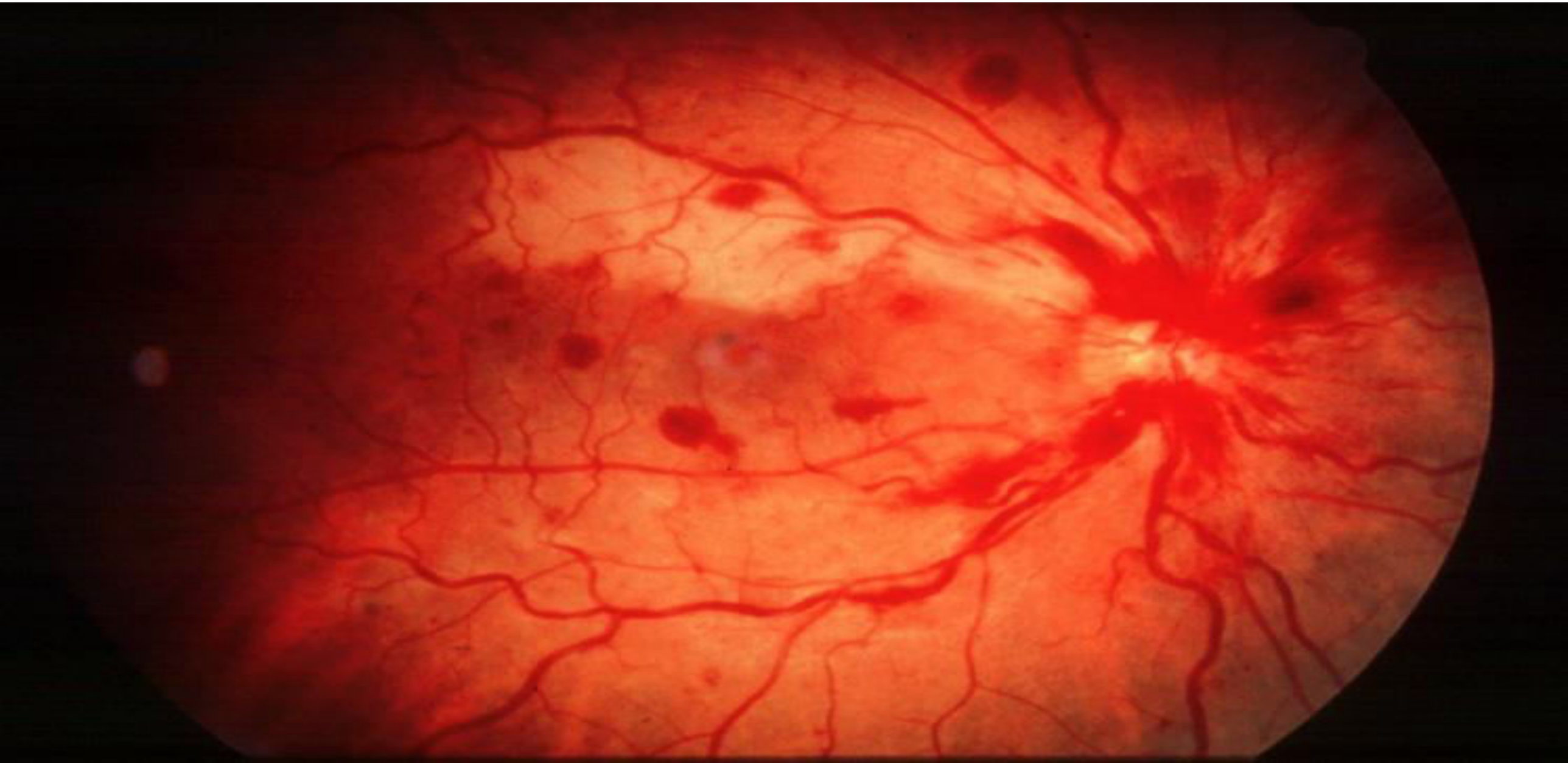
FA of branch retinal artery occlusion

Early masking

Extreme delay of
Arterial phase

Late staining of
arterial walls

CRVO/CRAO



EVALUATION: Clinical

- **F.F.A**
- **Color Doppler U/S evaluation** - orbital circulation degree of obstruction differentiate ophthalmic artery obstruction from CRAO
- BRAO/CRAO- Pts at risk to have obstruction in other eye 10%-bilaterality

  Evaluate for embolic sources:

  Cardiovascular exam

  Carotid artery exam

  (Echocardiogram, carotid non-invasive testing)

  Rule out G.C.A- Pts above 50 years

  Do E.S.R-Biopsy if needed.
- **Cherry red spot** (CRAO)- Ischemic visual loss, age, associated systemic disease, check surrounding vessels and retina, other causes-storage diseases

TREATMENT

- Retina-Highly metabolic organ -very sensitive to ischemia

- CRA is end artery -No true normal anastomosis - No regeneration – Ischemia - 90 min- cell death due to hypoxia

No proven Rx available

Try with in 48/72 hours

❖ **Dislodging emboli distally:**

- A/C Paracentesis, ocular massage, medications to lower IOP

❖Dissolving thrombi:

Clot dissolving medications

streptokinase, urokinase, heparin, tPA

Systemic-I/V infusion

Local -via ophth artery with catheter

Initial reports-encouraging-risks only reserved for cases within 48 hours and only CRAO not BRAO.

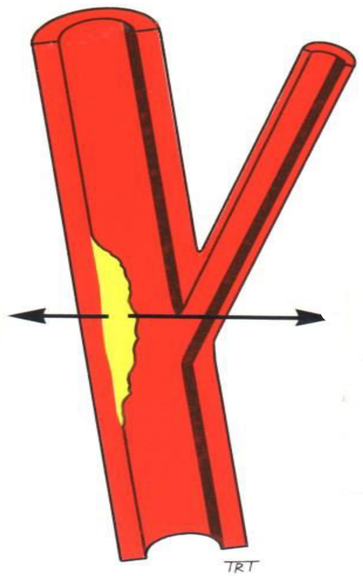
❖Increasing oxygenation to retina::

Carbogen - 95% O2 + 5% Co2

For 10 min every 2 hours for 1-2 days. Avoid in chronic obstructive lung disease.

❖Protecting surviving retinal cells from ischemic damage?

Treatment options for carotid disease



Antiplatelet therapy

- **Aspirin 75 mg daily**

Aspirin + dipyridamole (Persantin)

- **Clopidorel (Plavix) 75 mg daily**

Anticoagulants

if antiplatelet therapy ineffective

Carotid endarterectomy

- **Patients with other risk factors for stroke**
- **Symptomatic carotid stenosis > 70%**

Retinal Artery Occlusions

Neo-vascularization is uncommon compared to venous occlusions

Proliferative retinopathy:

NVE /NVD

- **Laser**
- **Anti VEGF**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Thanks