



Signs of Retinal Diseases

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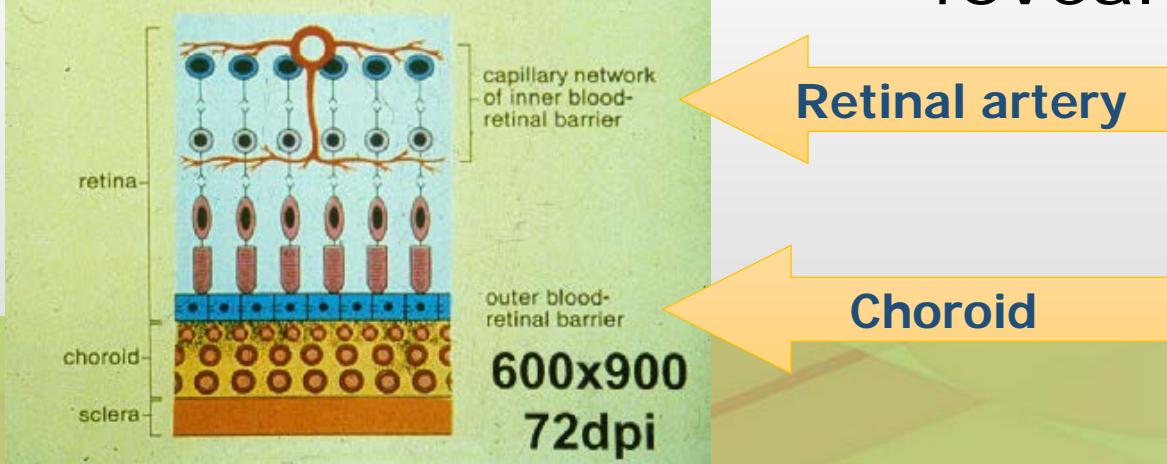
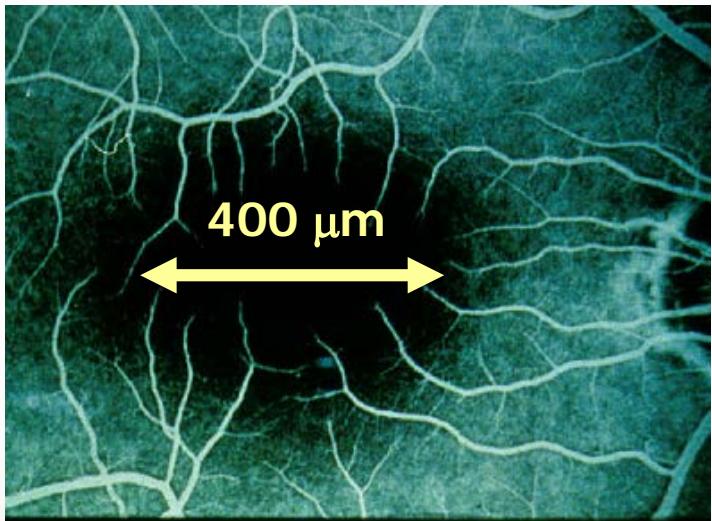
Case Scenario Links

Signs of Retinal Diseases

- Annual eye screen for patient with diabetes (Oph11)
- Gradual deterioration in visual acuity over time (Oph07)
- Sudden painless loss of vision (Oph04)
- Type 2 diabetes mellitus (Endo11)



Blood Supply of the Retina



- CRA - real artery
- atherosclerosis
- AV crossings
- capillary-free zone – foveal avascular zone

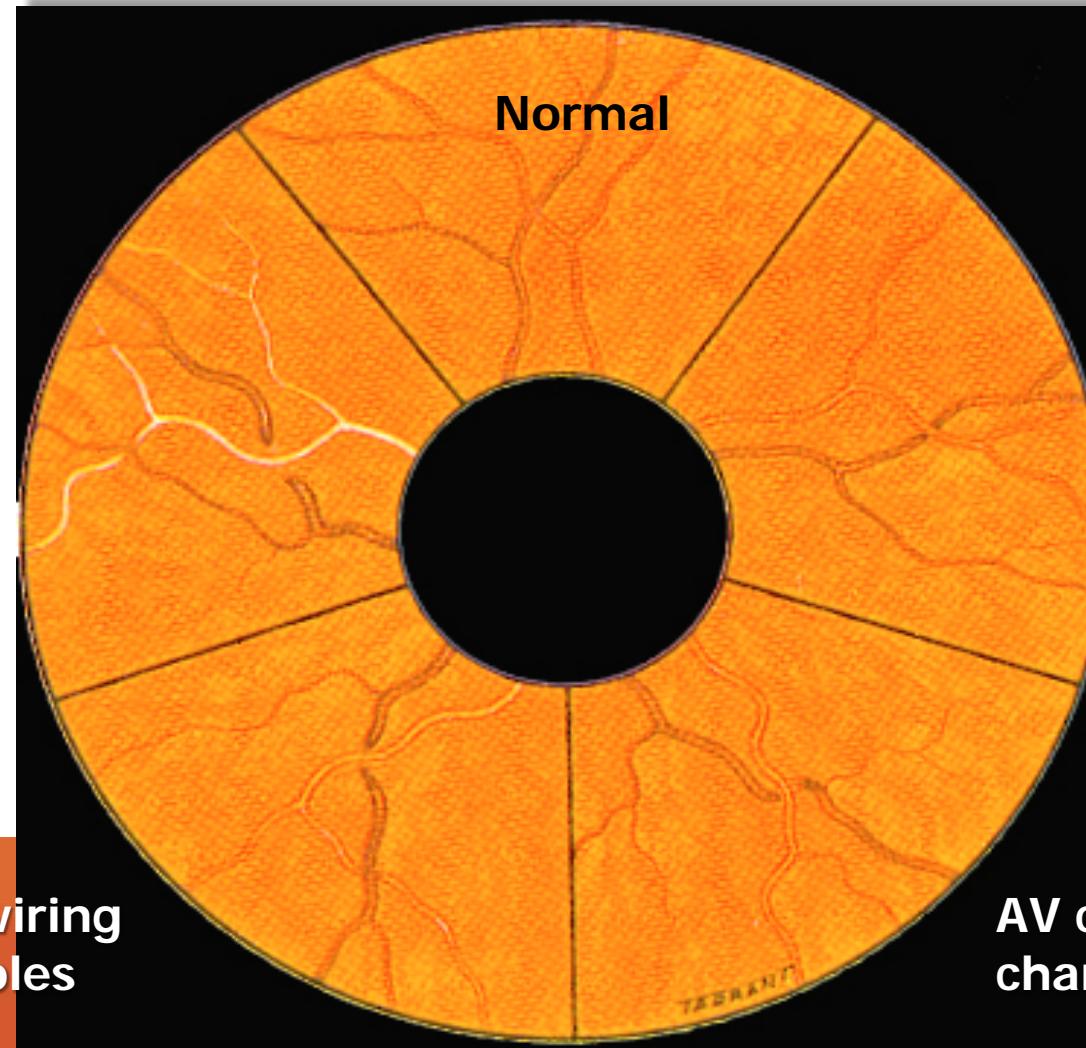
Signs of Retinal Vascular Disease

- Vascular changes – arteriolosclerosis, AV crossing changes, venous tortuosity
- Microaneurysms
- Haemorrhages
- Hard exudates
- Cotton wool spots
- Neovascularisation



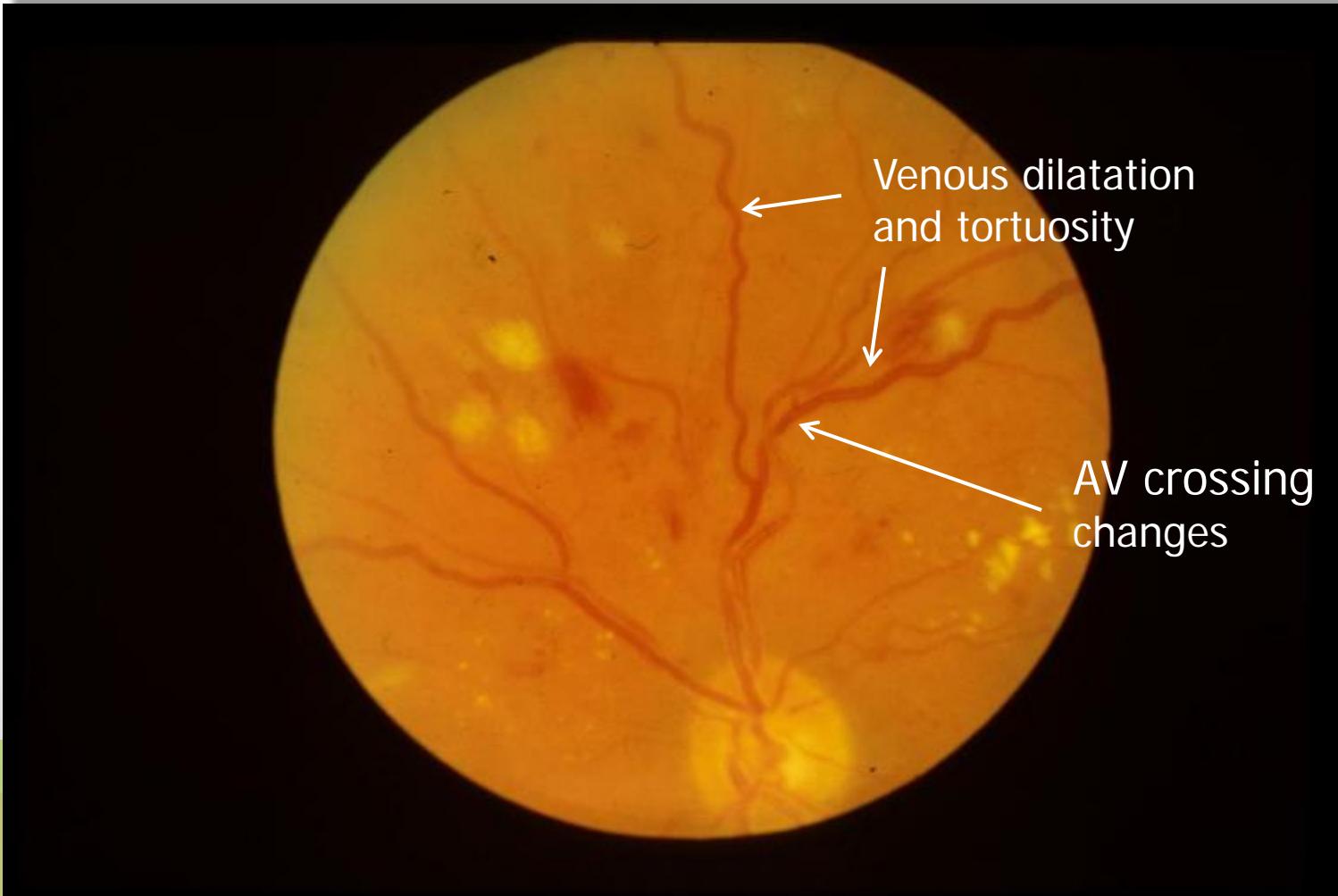
Vessel Wall Changes

Silver wiring
of arterioles



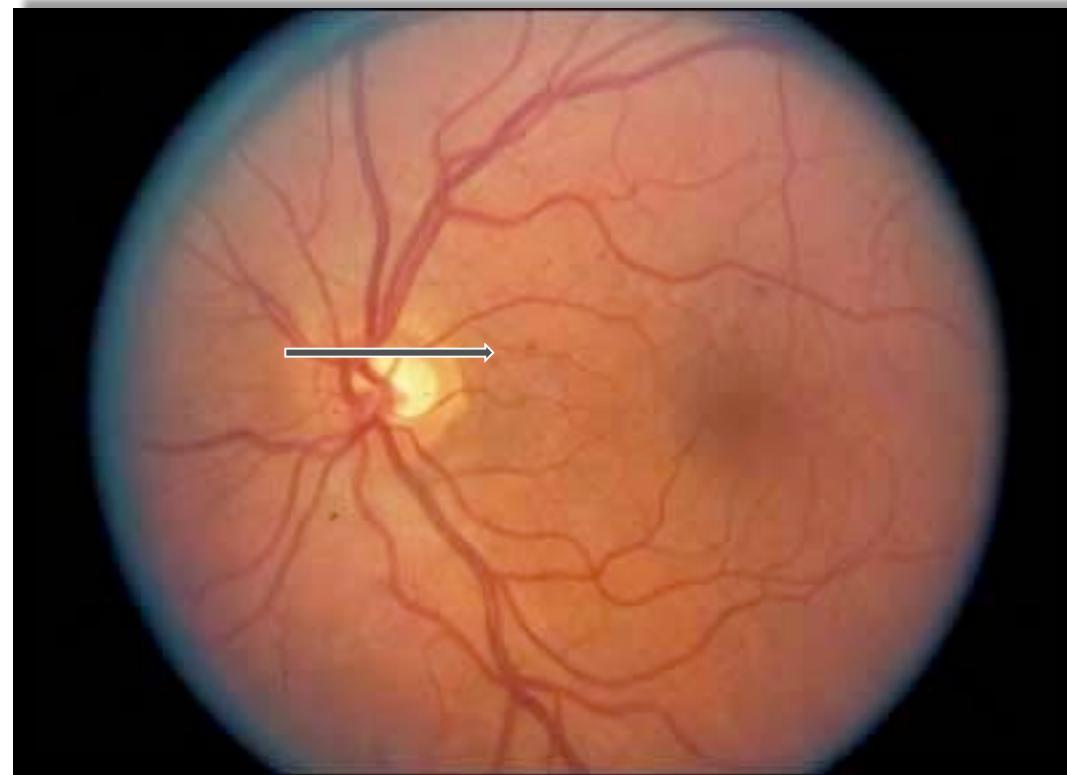
Arteriolar
attenuation

Vascular Changes



Microaneurysms

- Tiny round red dots
- In inner nuclear layer
- Saccular outpouchings from vessels due to lack of pericytes



Retinal Haemorrhages

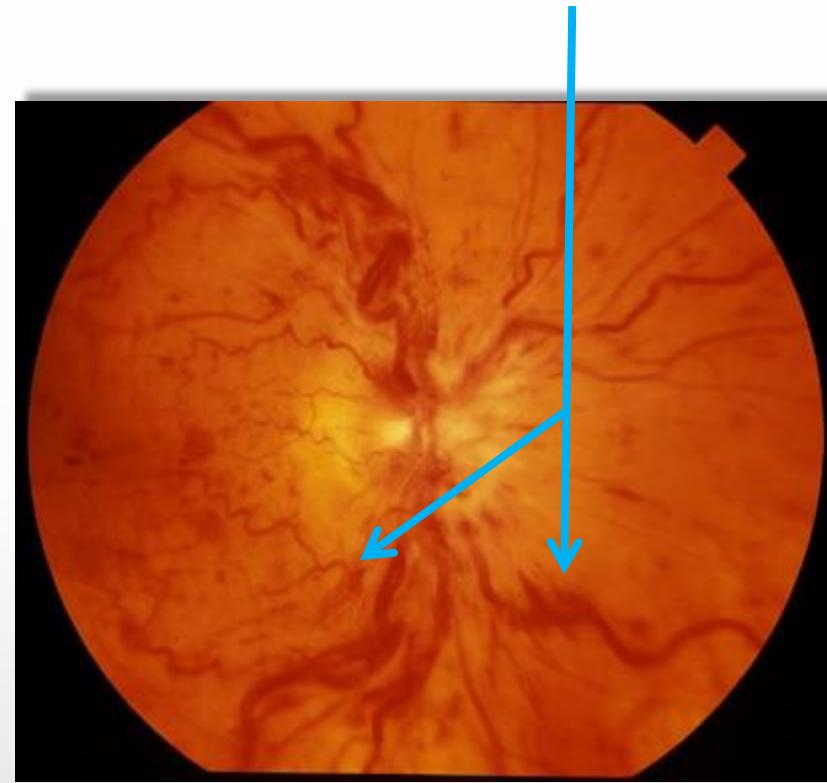
Appearance → Localisation → Aetiology

- Dot & blot haemorrhages – middle compact retinal layers – diabetic and hypertensive retinopathy
- Flame-shaped haemorrhages – superficial nerve fibre layer – vein occlusion
- Pre-retinal haemorrhages – between posterior hyaloid face and retina – trauma, Valsalva manouvre, neovascularisation

Dot and blot haemorrhages



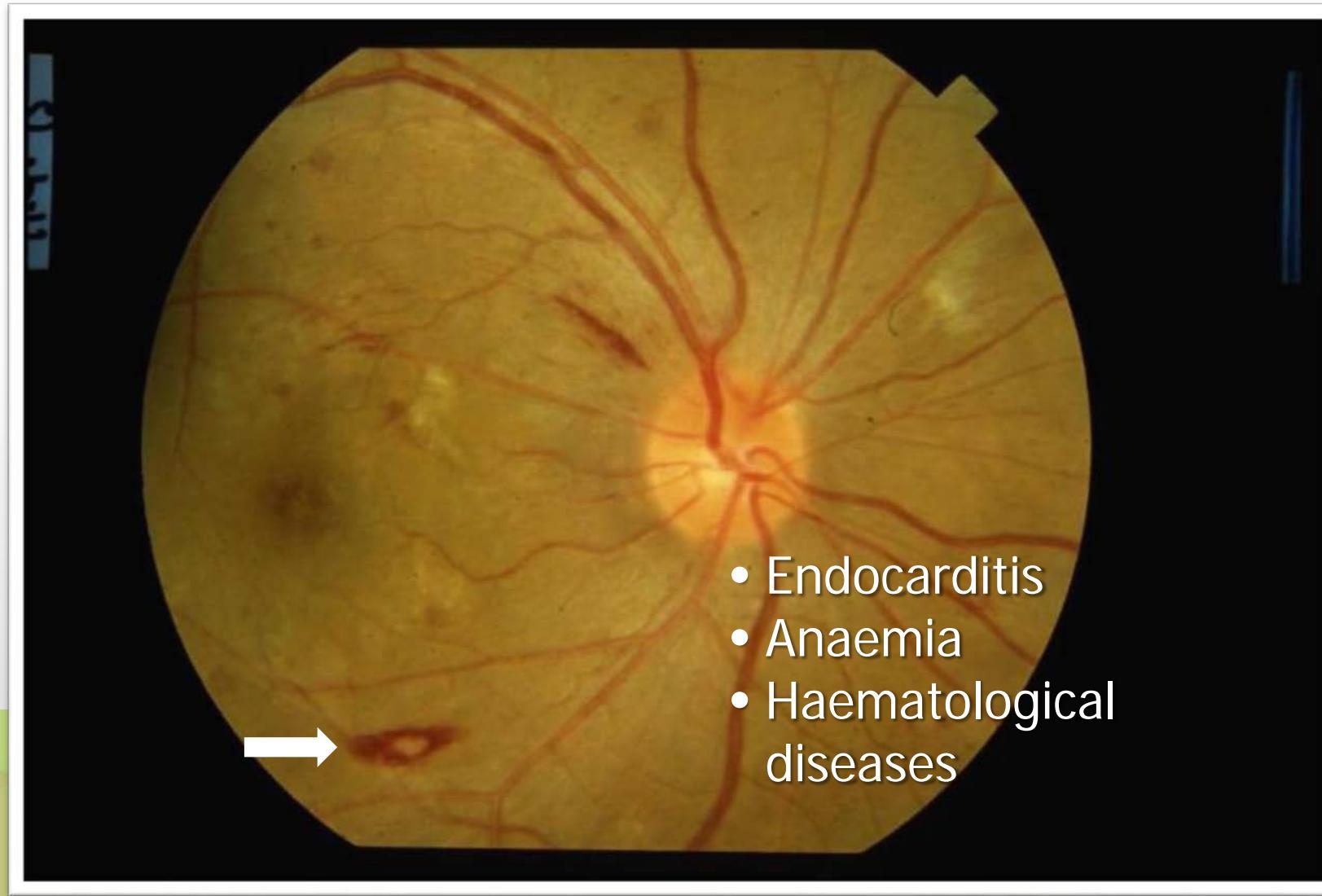
Flame shaped haemorrhages



Pre retinal haemorrhage



Retinal Haemorrhages- Roth Spots

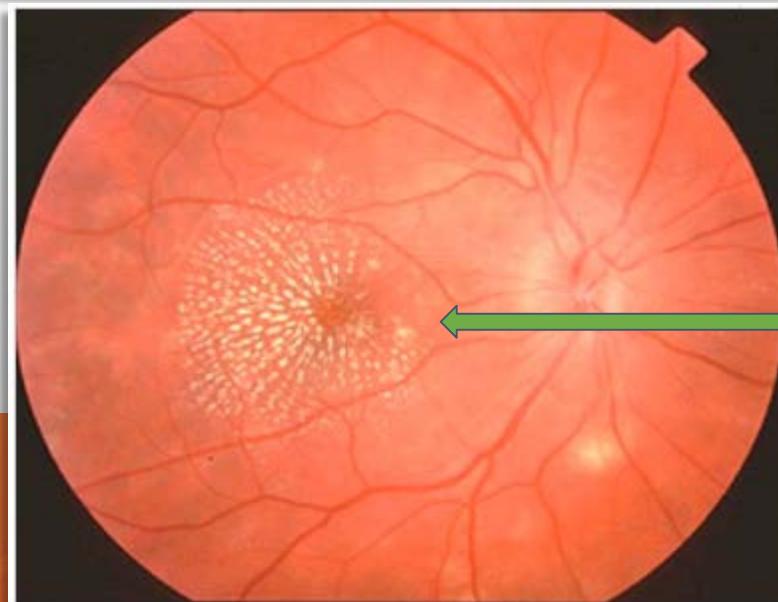


- Endocarditis
- Anaemia
- Haematological diseases

Hard Exudates



Lipid deposition



Outer plexiform layer

Abnormal vascular
permeability

Circinate (circular) pattern

Macular star

Hard Exudates



Cotton Wool Spots

- Ischaemic infarction
 - Nerve fiber layer
 - Axoplasmic transport defect
-
- Diabetes
 - Hypertension
 - SLE
 - Leukemias
 - Infective - HIV



Neovascularisation

hypoxia ⇒ vasoformative factors ⇒ neovascularisation

- in the retina NVE
- on the optic disc NVD
- on the iris NVI / rubeosis iridis
- in the angle NVA

Causes:

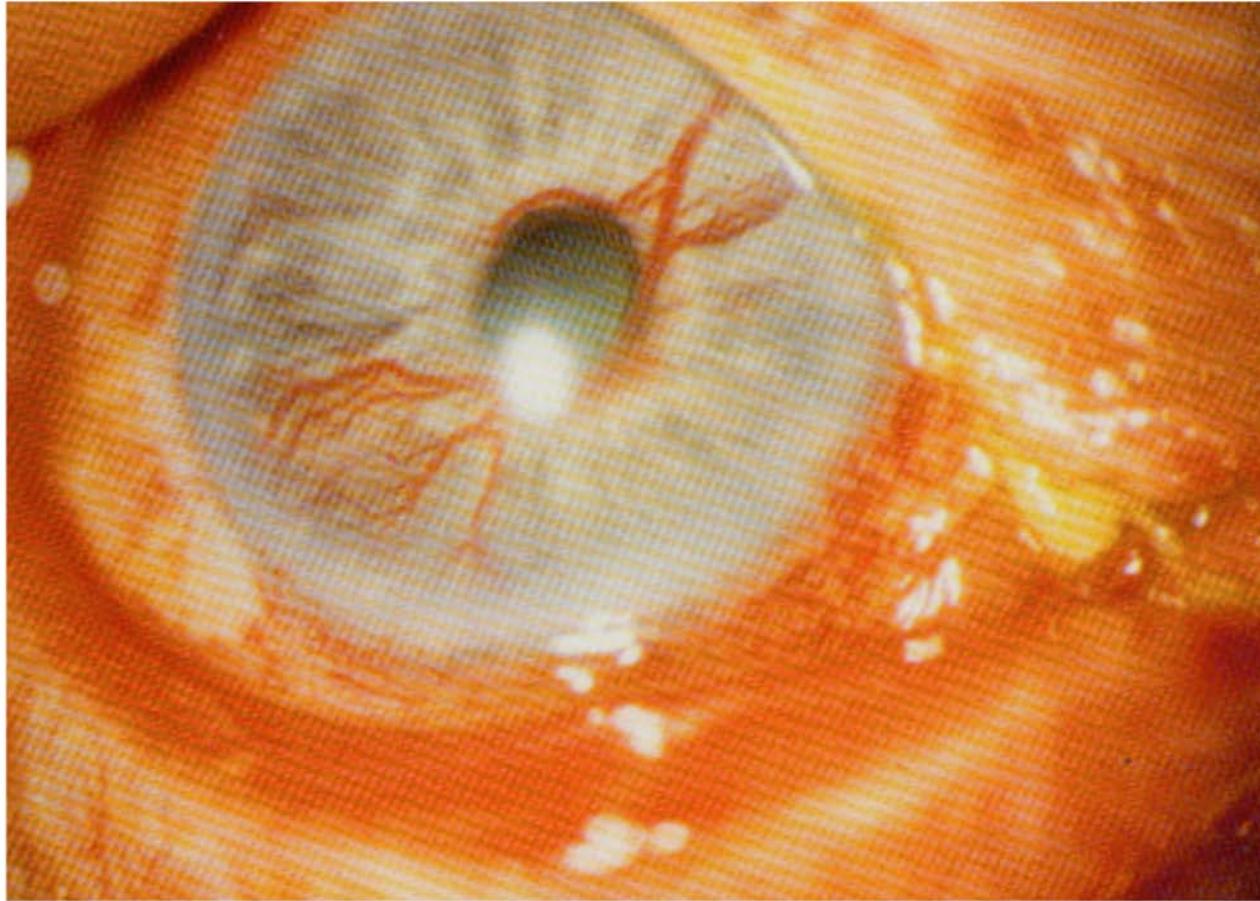
- Diabetes
- Retinal vein occlusion
- Retrobulbar fibroplasia
- Sickle-cell disease
- Inflammatory diseases



Retinal neovascularisation



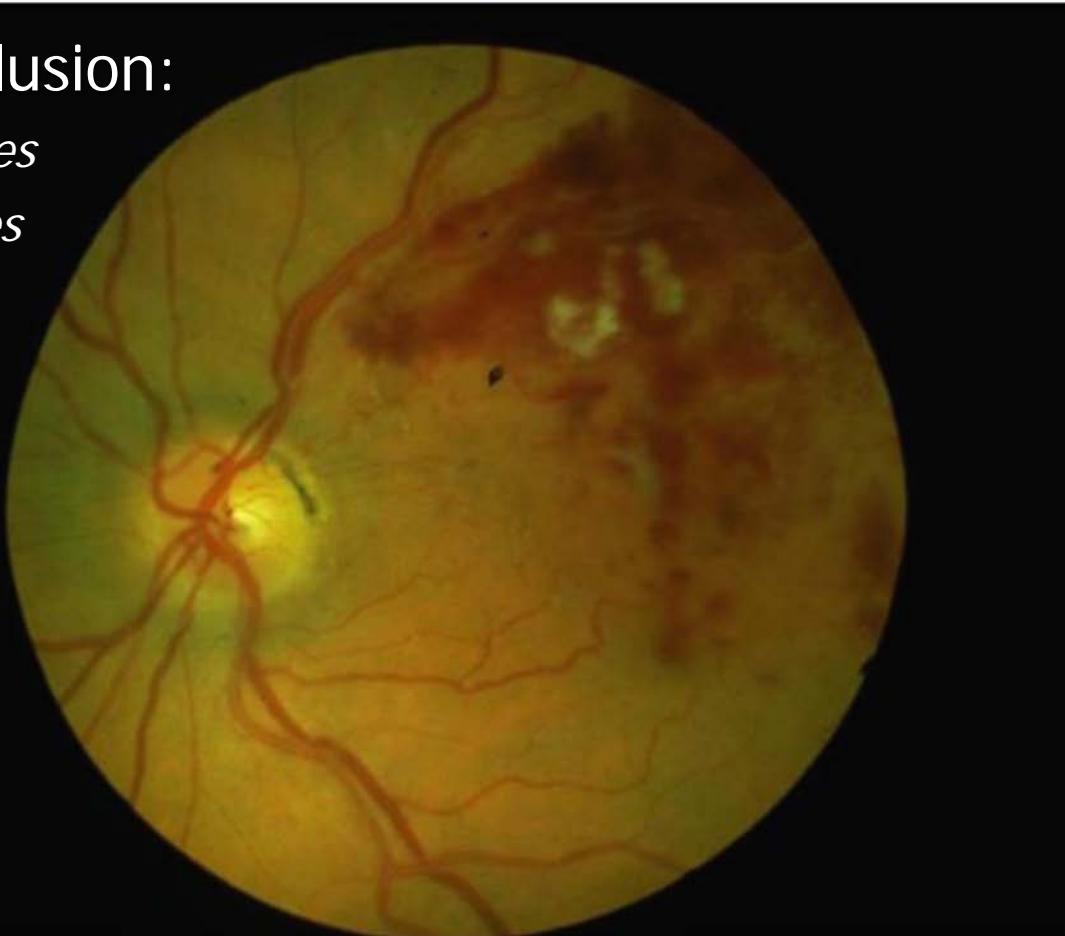
Iris neovascularisation



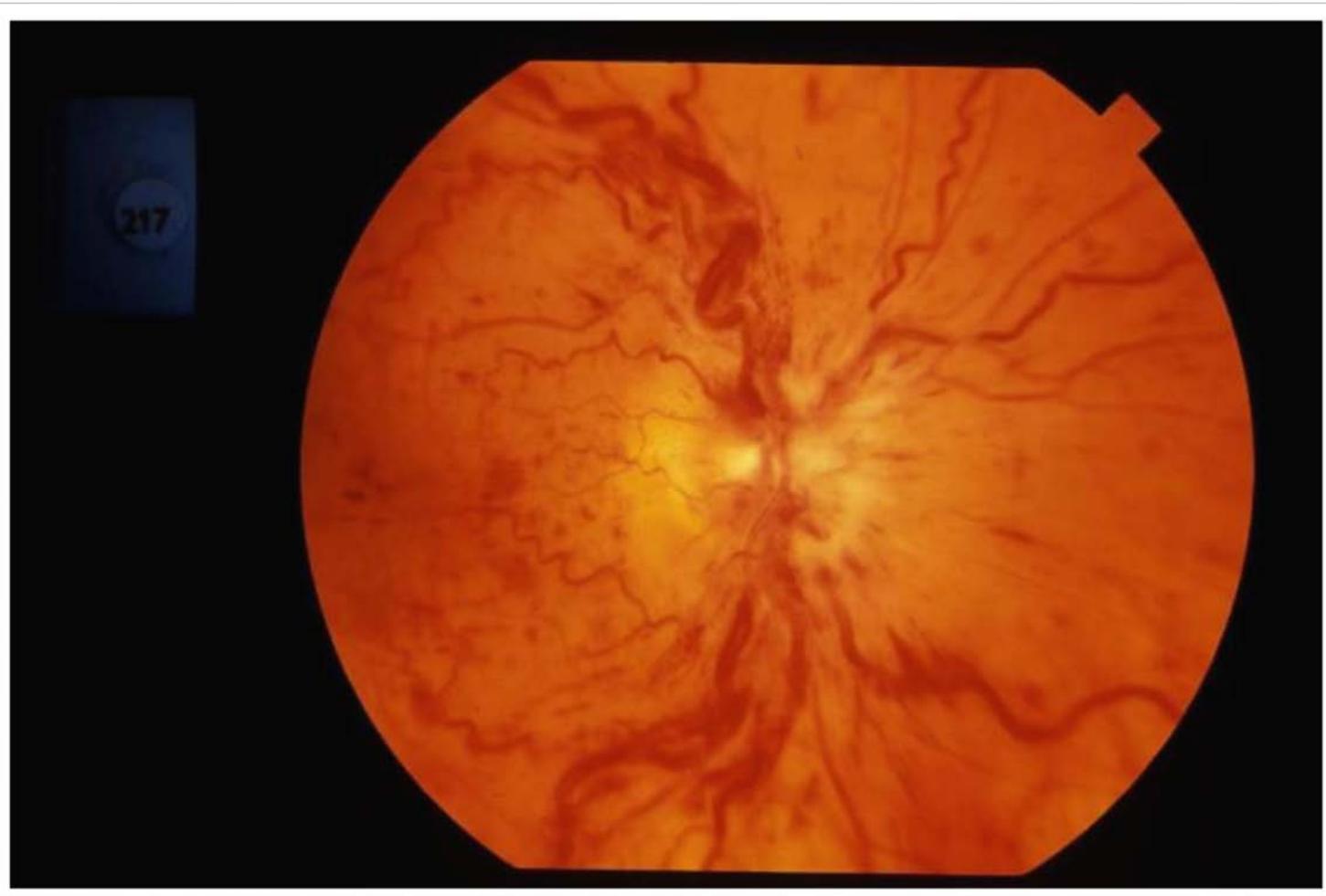
Occlusive Vascular Diseases: Signs

Venous occlusion:

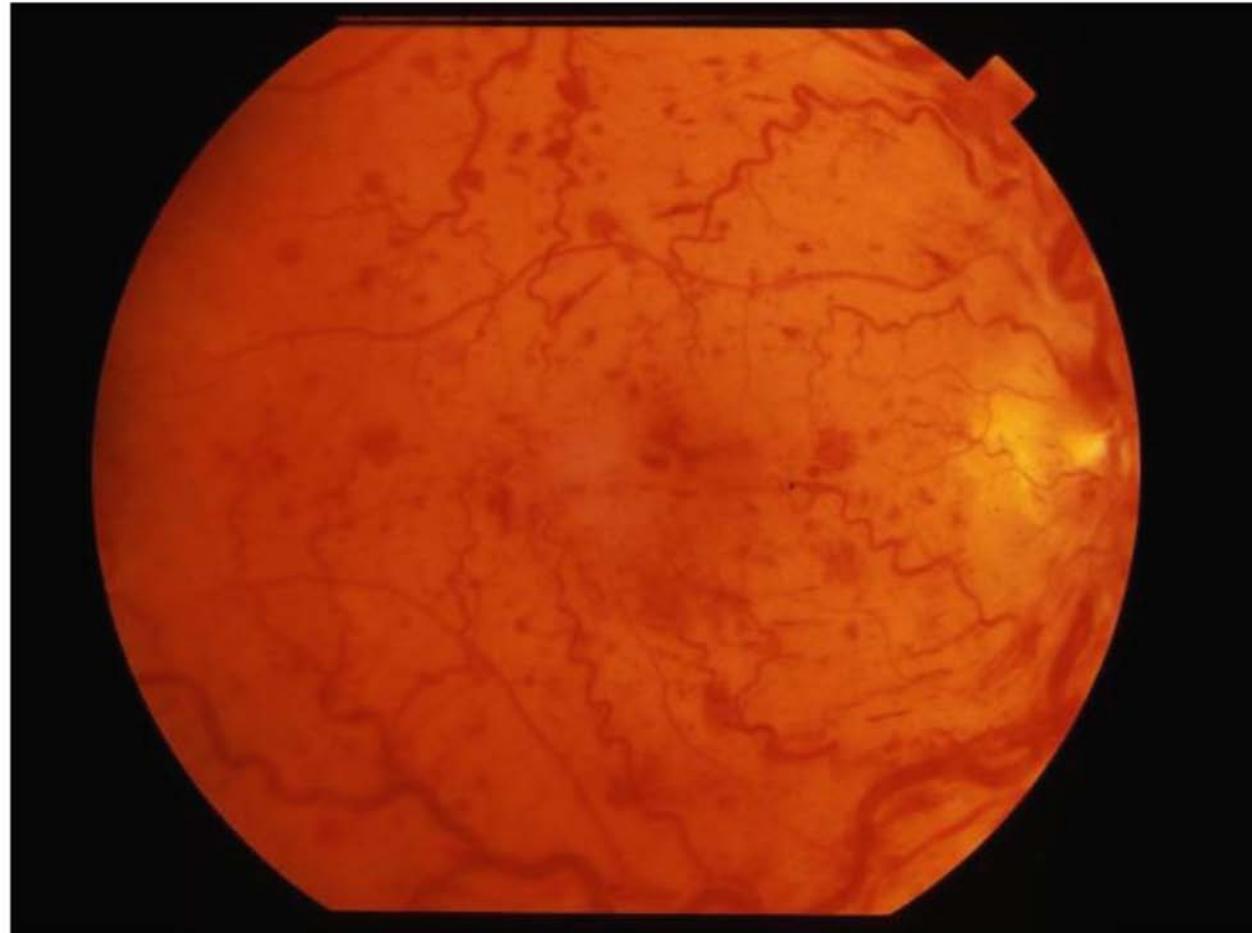
- *Dilated venules*
- *Haemorrhages*
- *Oedema*



Occlusive Vascular Diseases Signs



Occlusive Vascular Diseases Signs



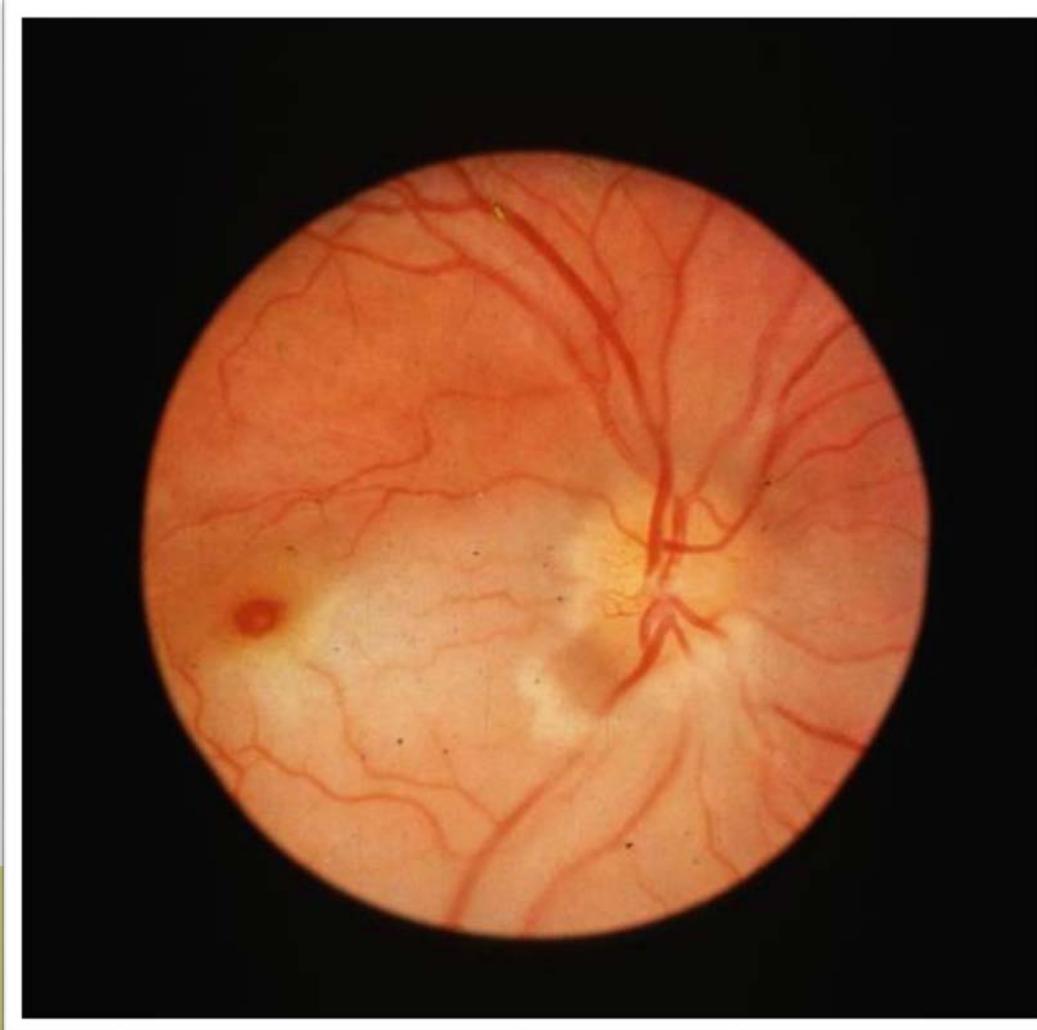
Occlusive Vascular Diseases Signs

Retinal arteries occlusion:

- *constricted arterioles*
- *column interruptions*
- *retinal oedema*
- *cherry red spot*
- *visible emboli*



Occlusive Vascular Diseases Signs



Occlusive Vascular Diseases Signs



Degeneration/dystrophy signs

- Drusen
- Atrophy
- Pigmentation
- Scarring

*Result of disease
or iatrogenic
e.g. laser scars*



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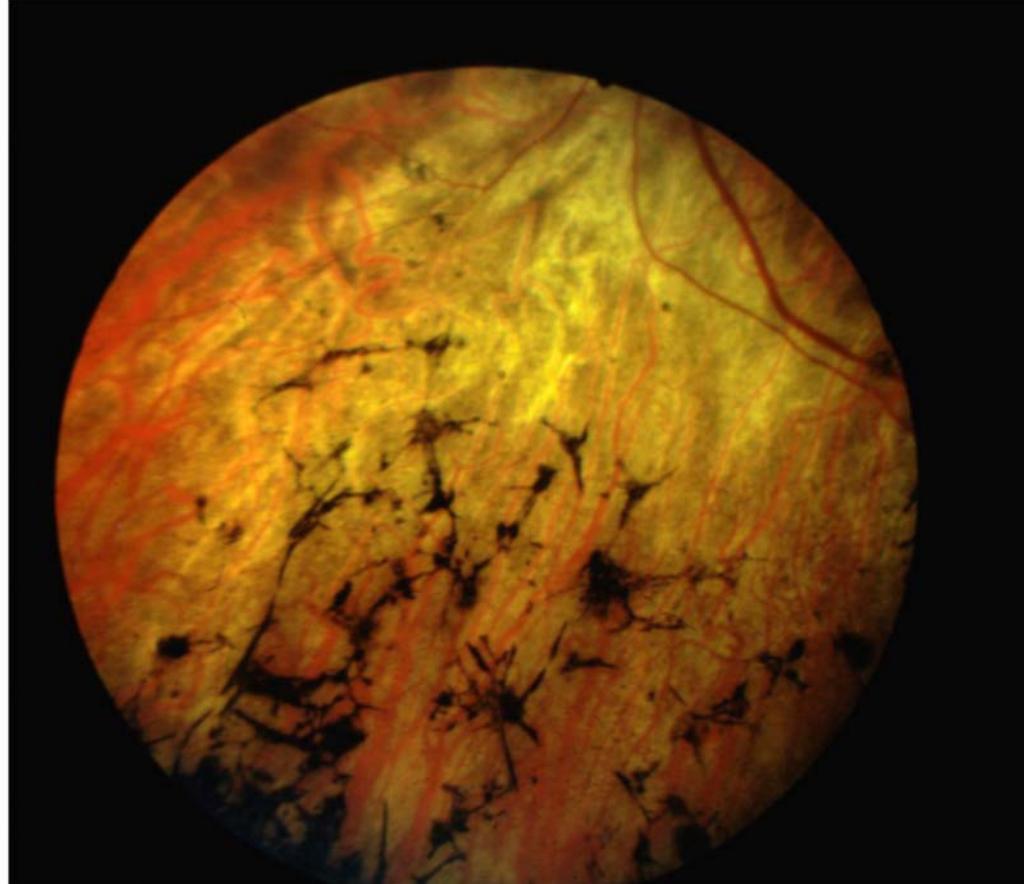
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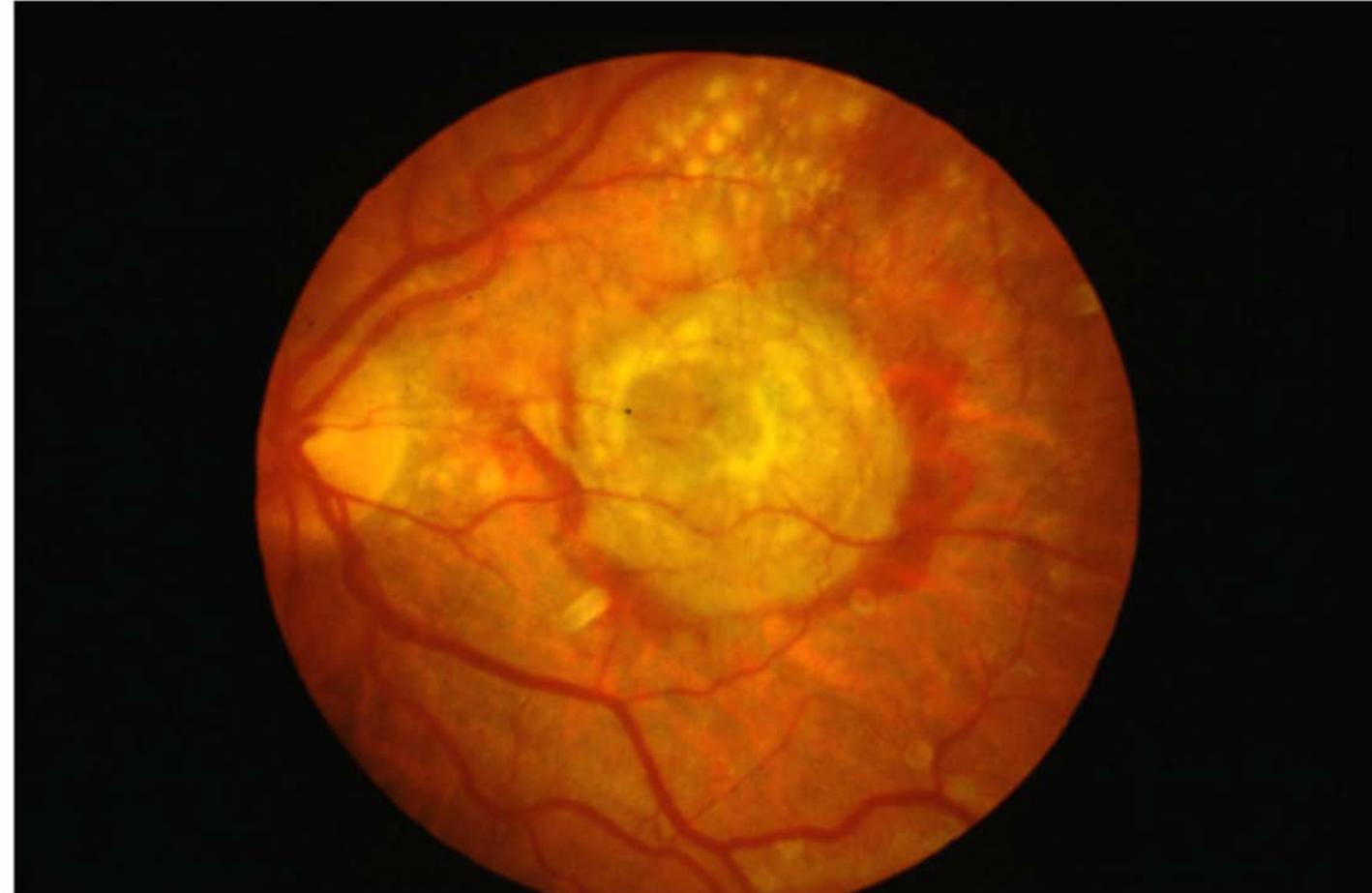
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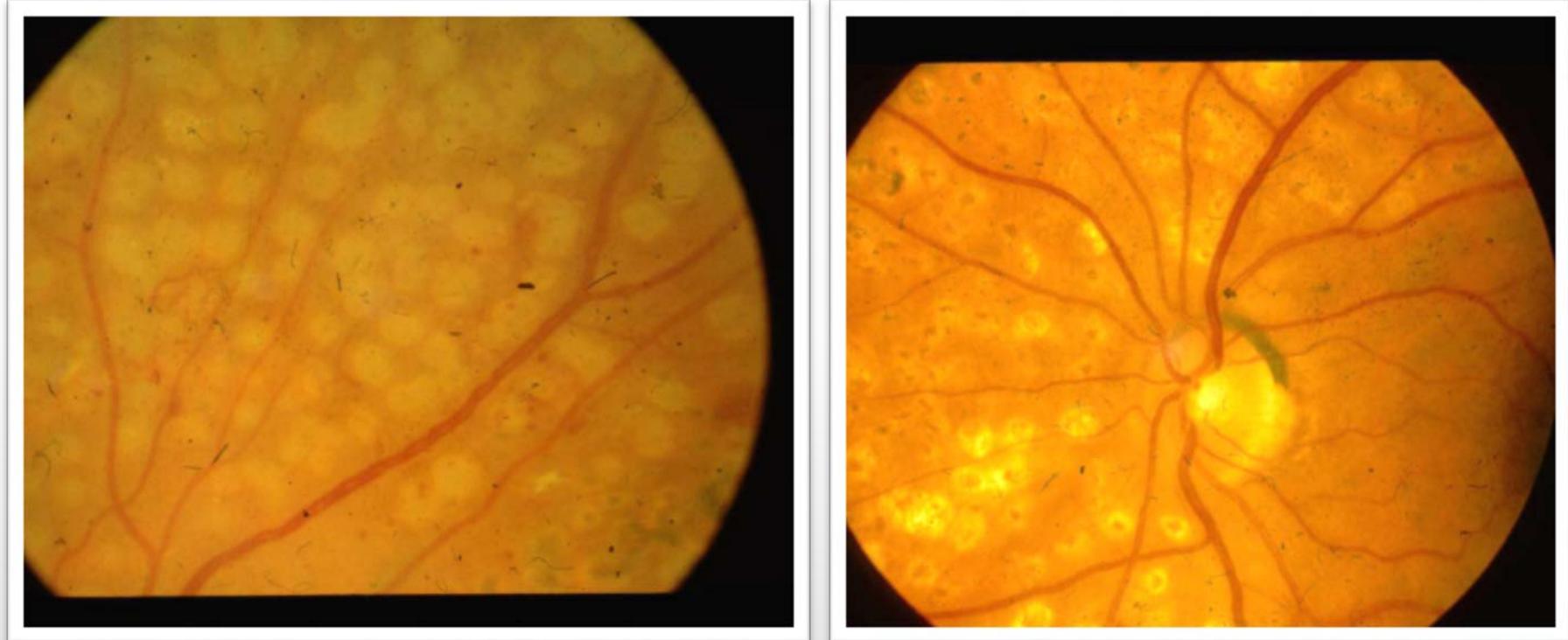
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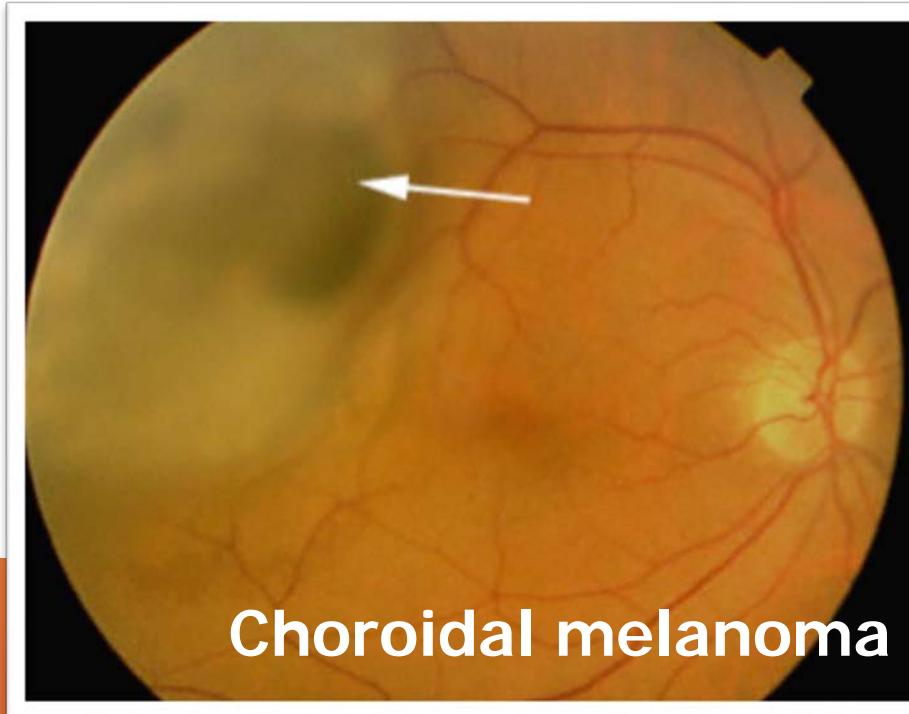
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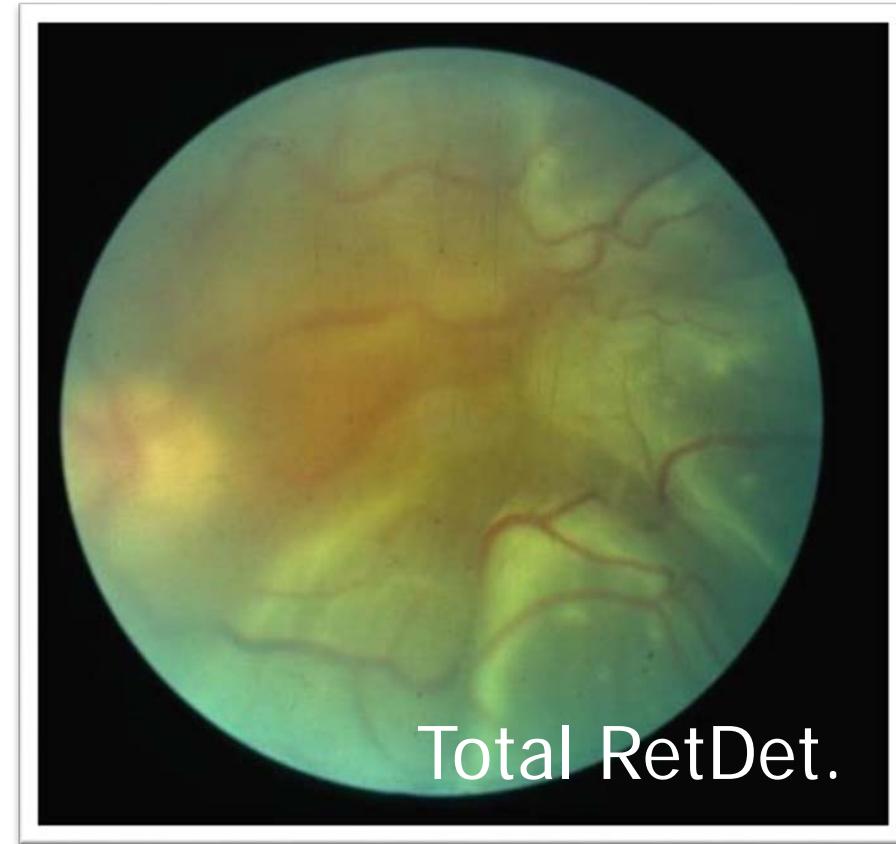


Elevations of the Retina

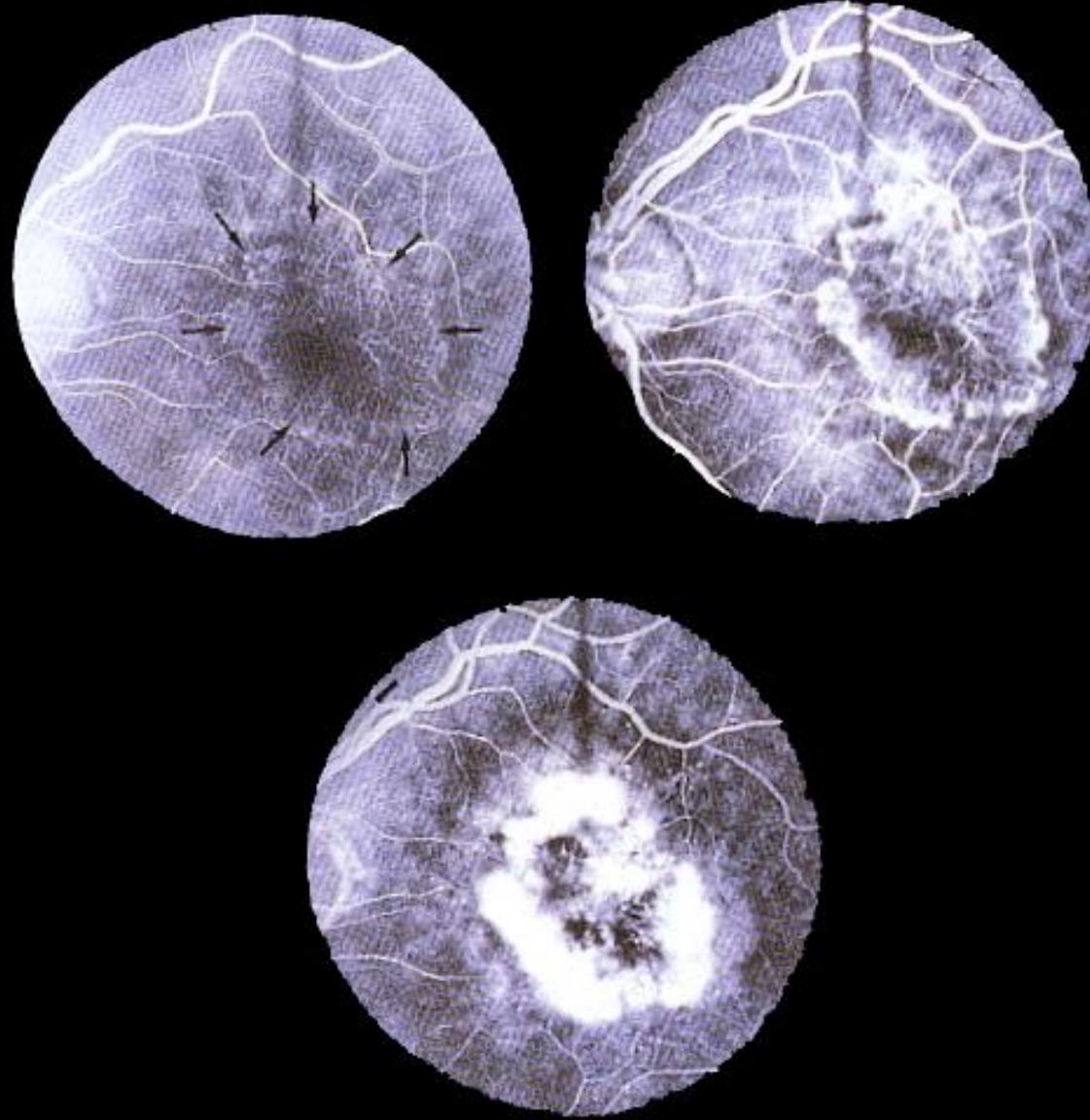
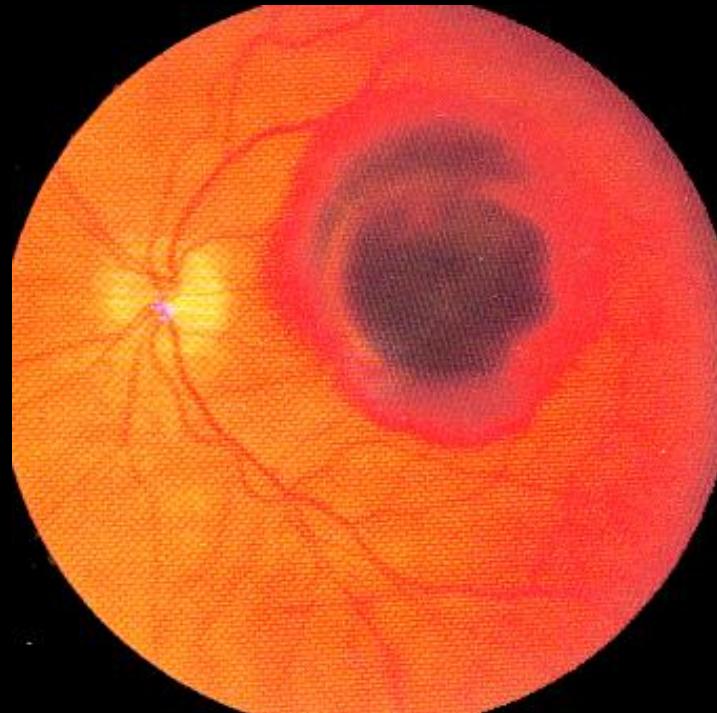
- by fluid – retinal detachment
- by solid mass - tumours
- Choroidal neovascularisation



Choroidal melanoma



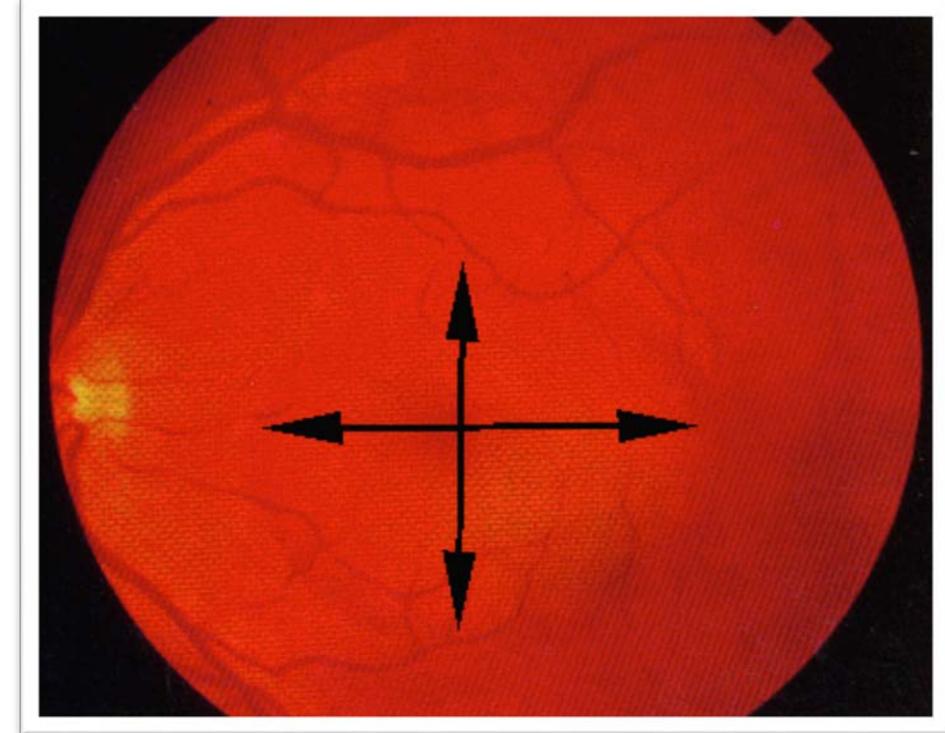
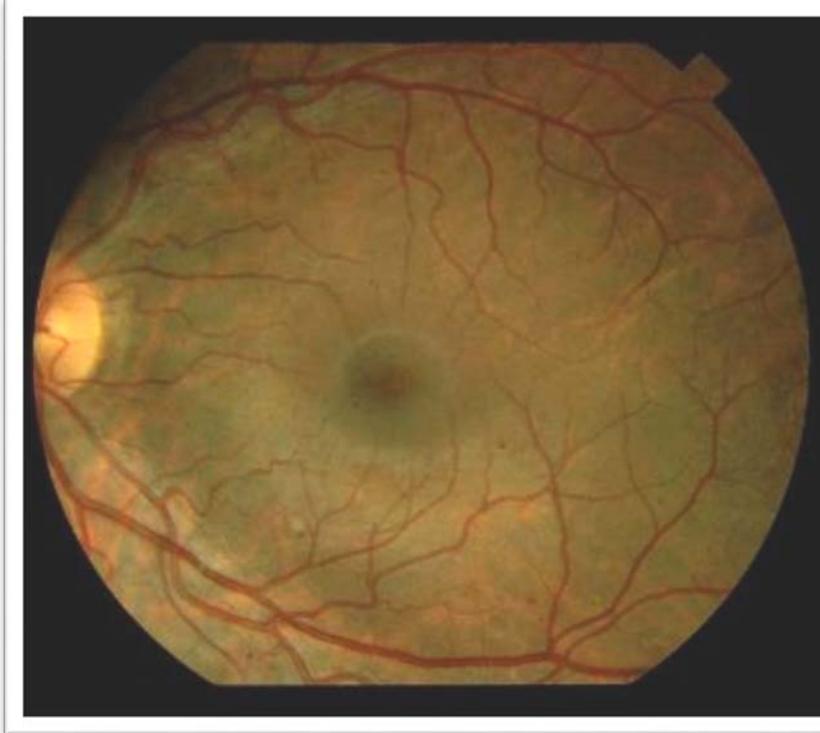
Choroidal neovascularisation (CNV)
– *with subretinal haemorrhage*



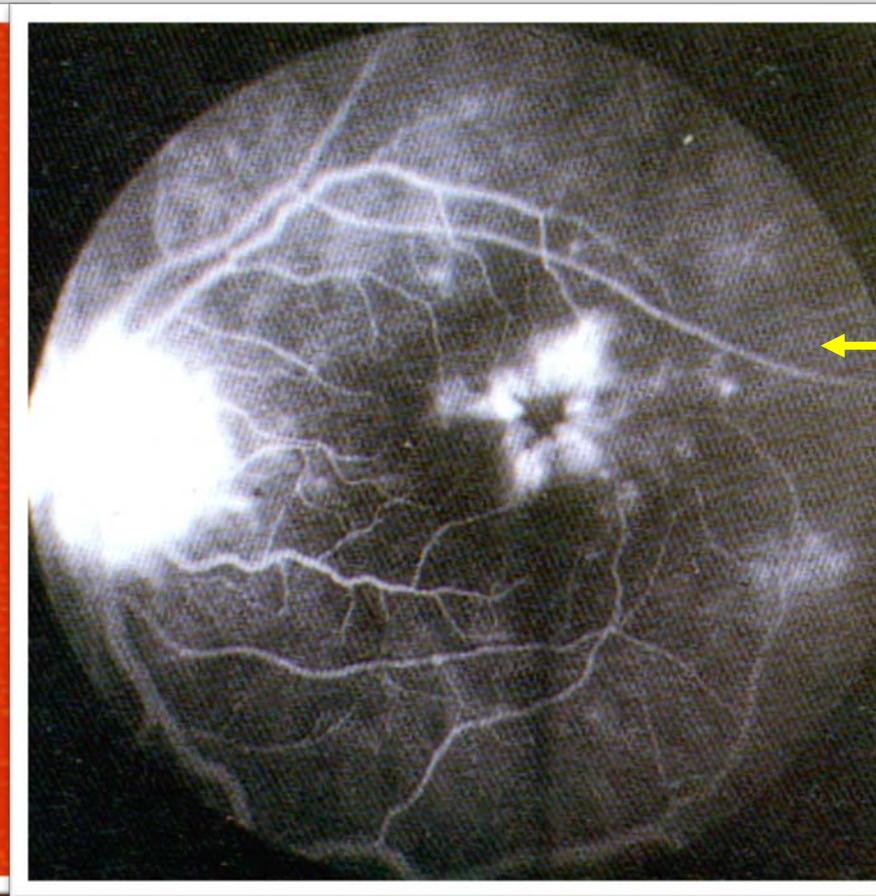
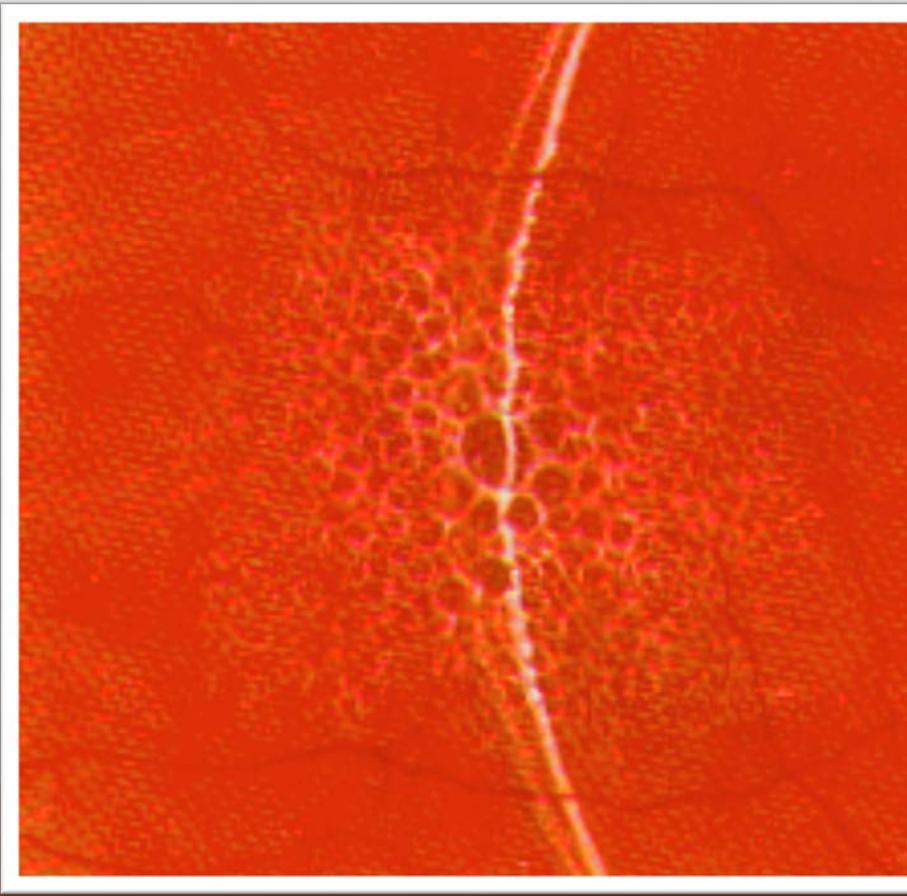
Fluorescein angiogram – showing large CNV at macula

The Macula

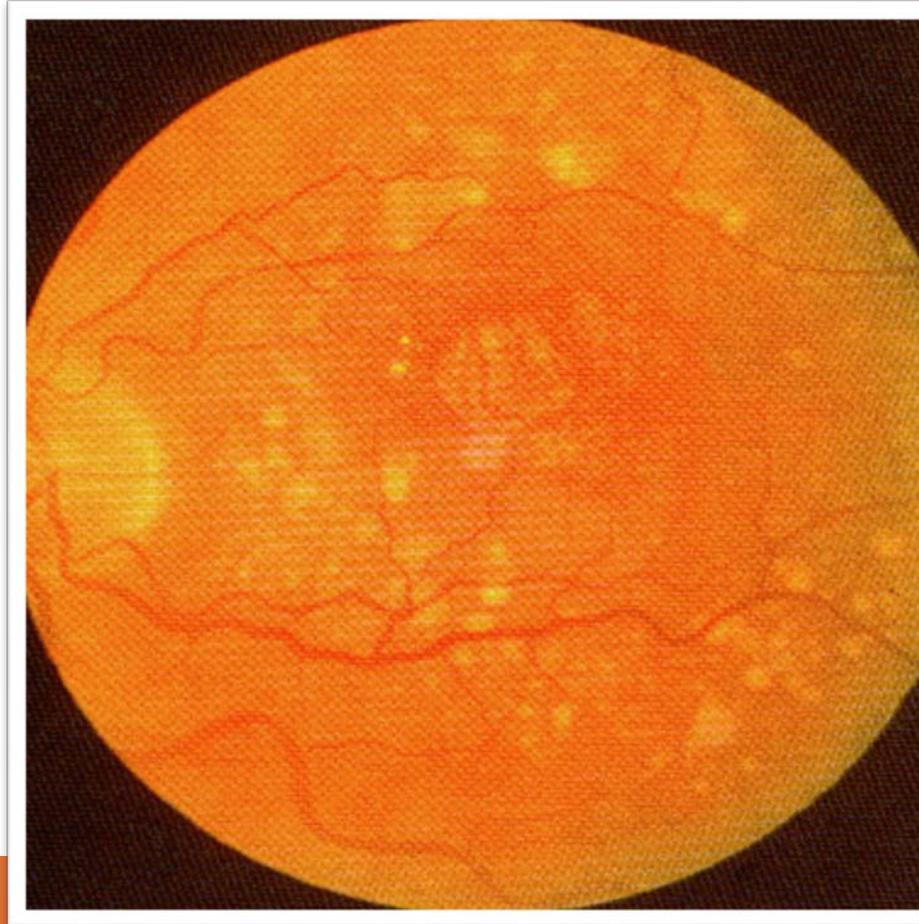
- Oedema
- Drusen
- Atrophy
- Scarring
- Pigmentation



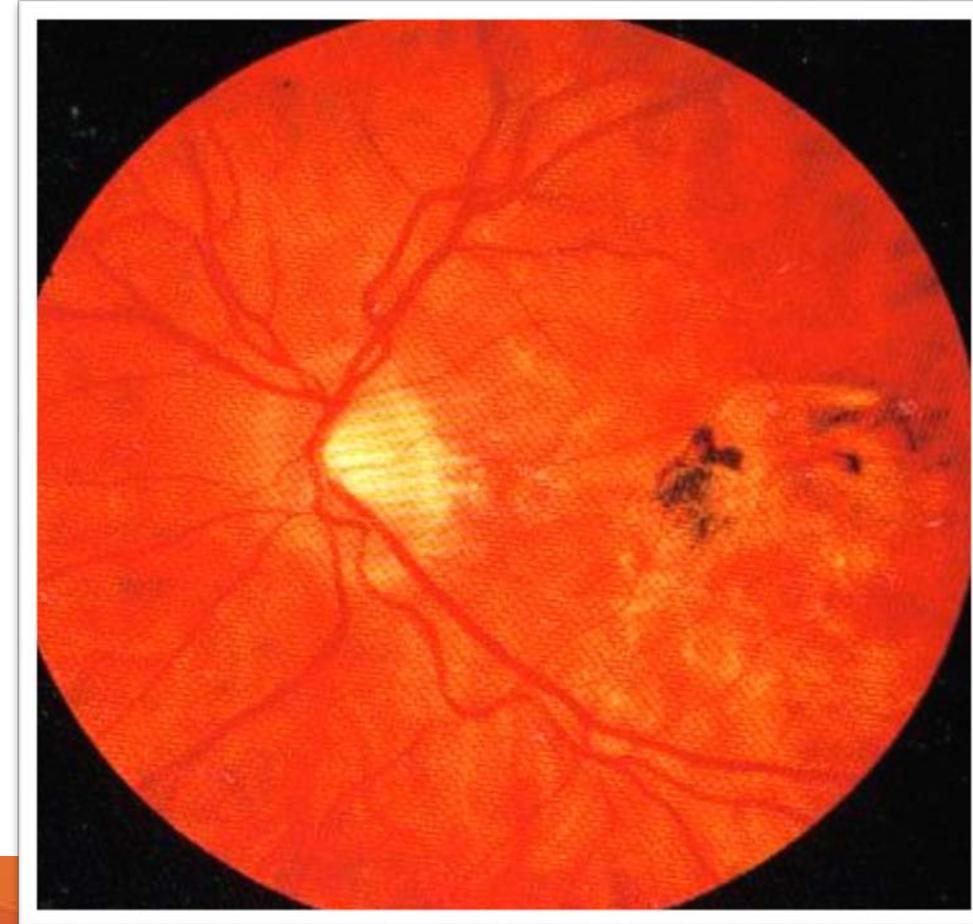
Cystoid macular oedema – (CMO/CME) petaloid appearance on FFA



Drusen and atrophy



Atrophy and pigmentation

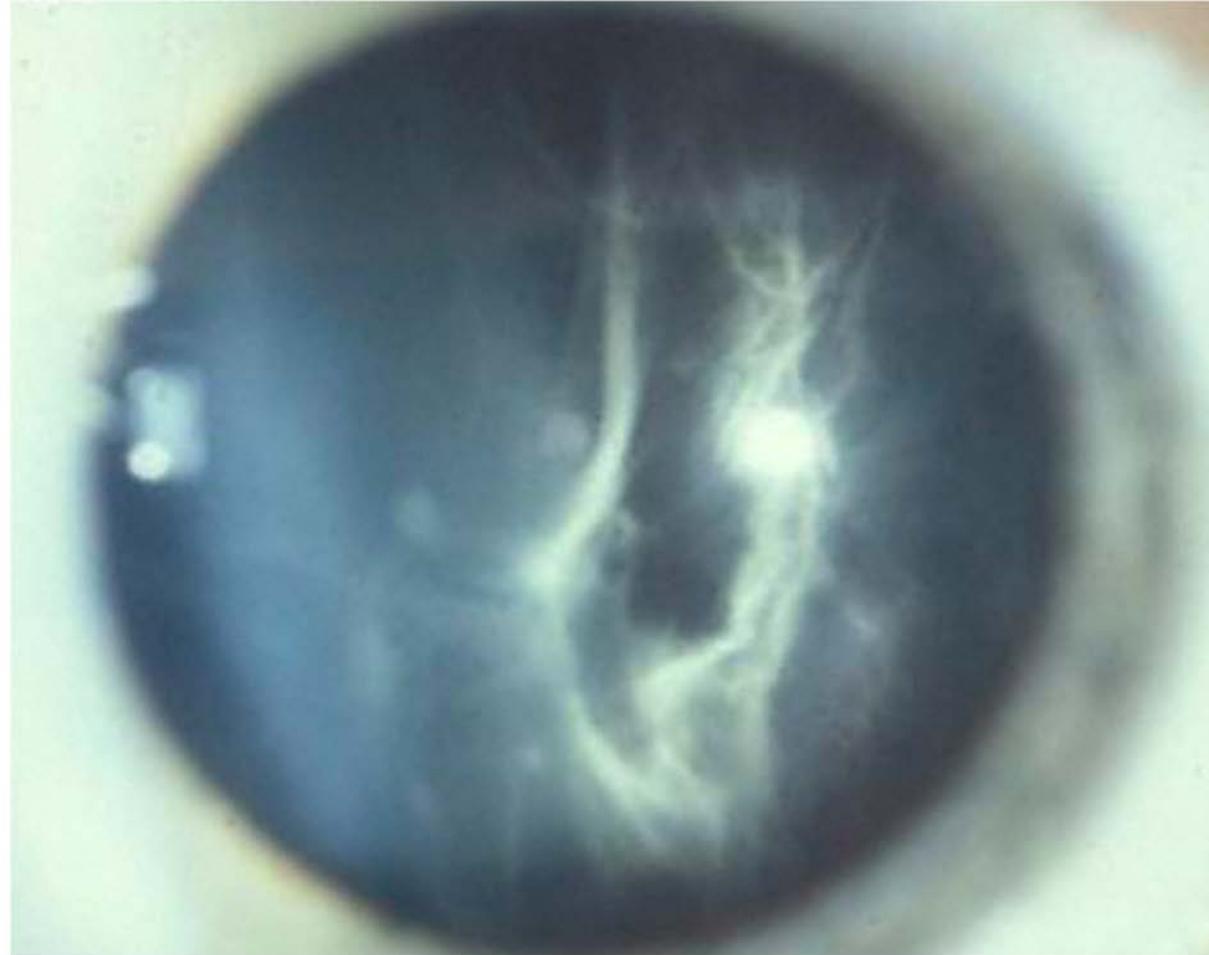


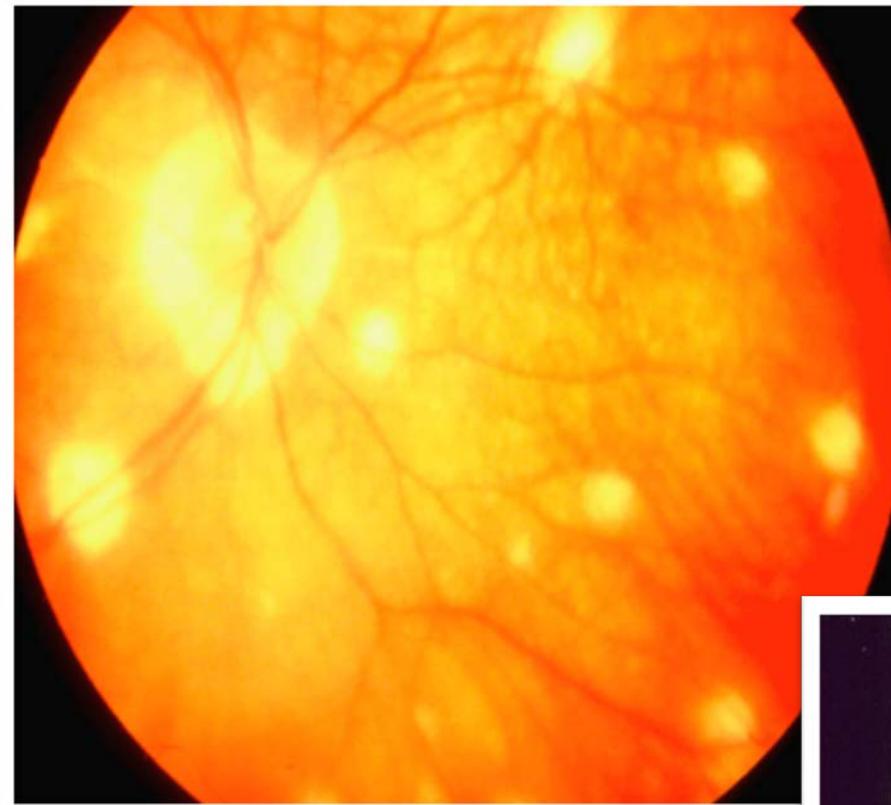
Signs of Inflammation-

Posterior uveitis

- **Vitreous opacities, cells, snowballs**
- **Choroiditis** – deep yellow or grey lesions
- **Retinitis** – white cloudy lesion with obscuration of retinal vessels
- **Vasculitis** – periphlebitis (veins) or periarteritis – fluffy haziness around blood column
- **Granulomas** – choroidal or preretinal

Vitritis



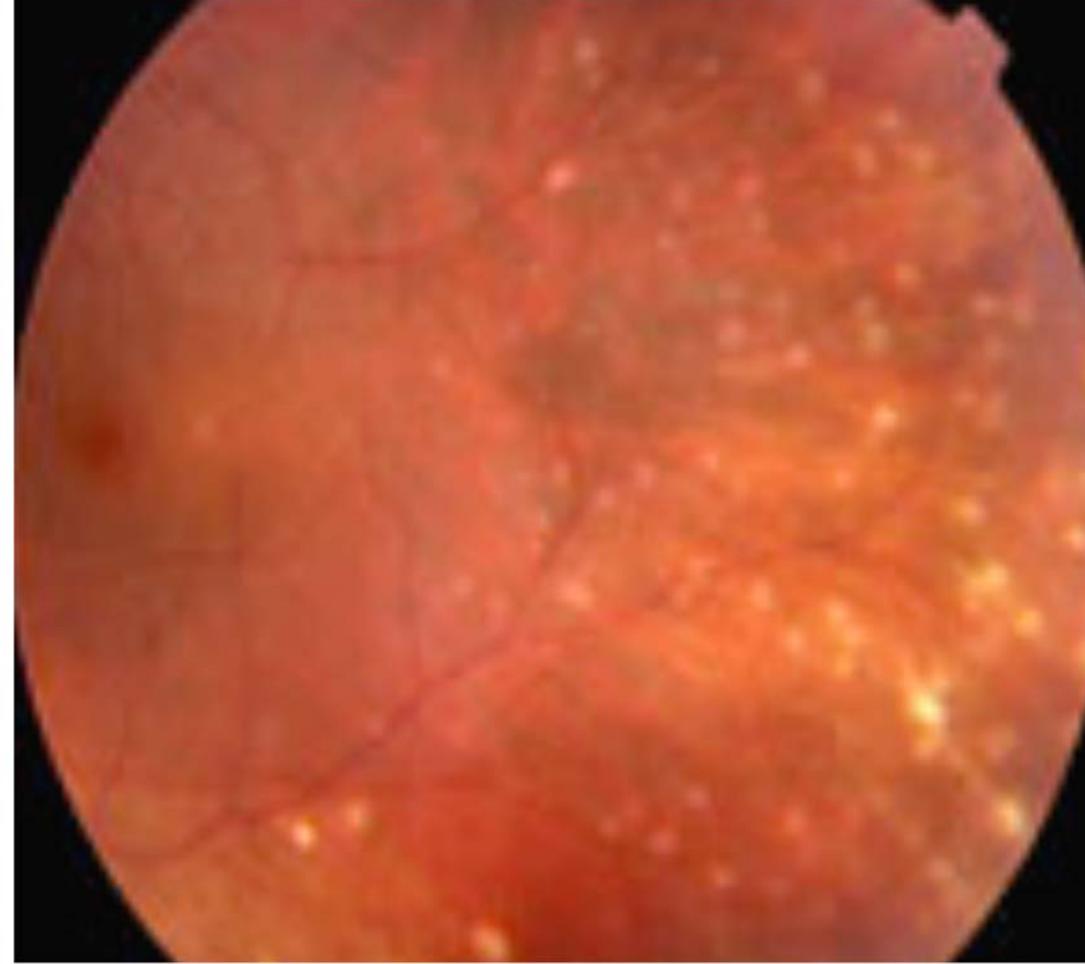


Multifocal choroiditis

Retinitis



Granulomas



Self-Assessment: retinal diseases

(All diagnoses covered in preceding PPt)



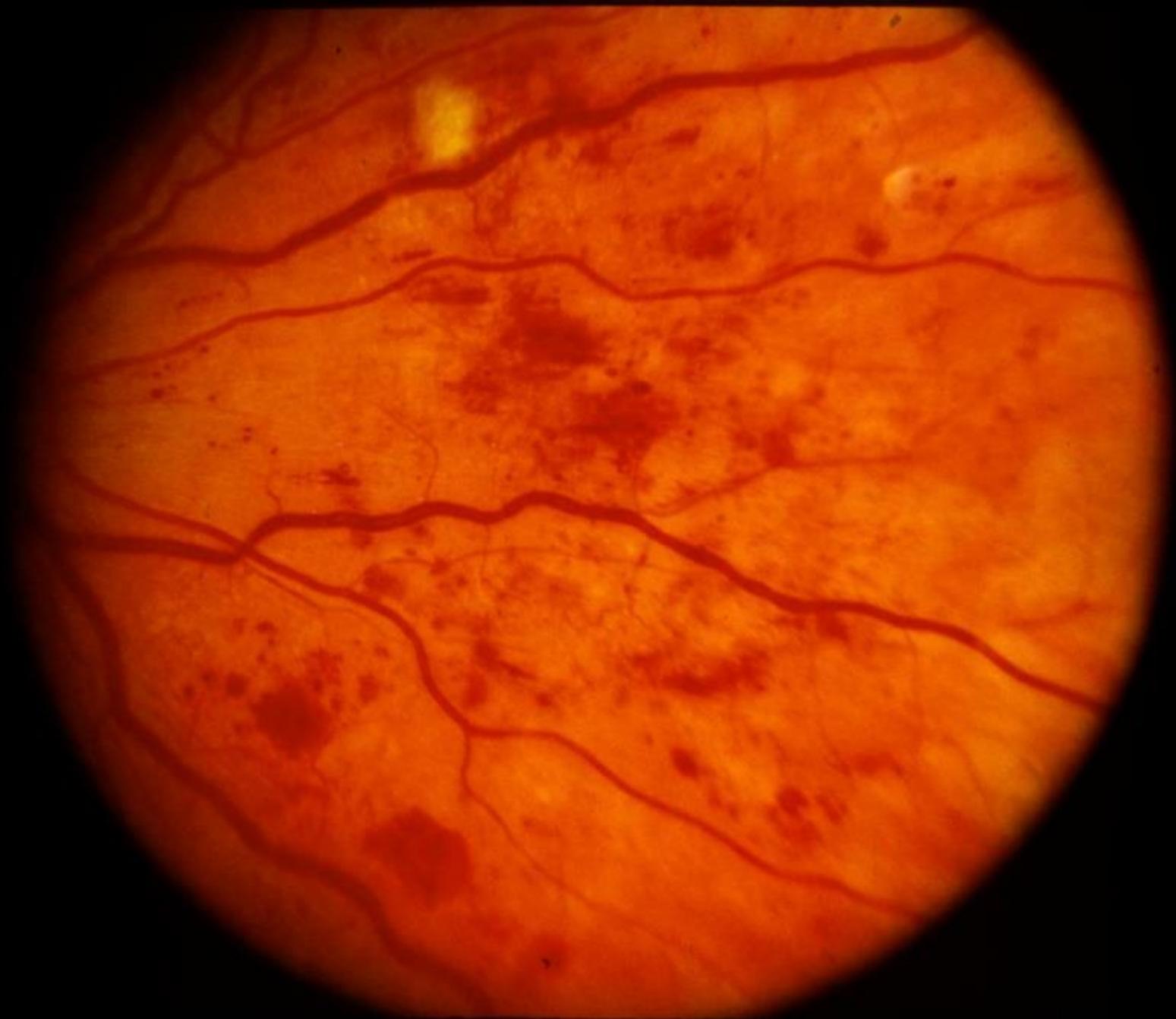




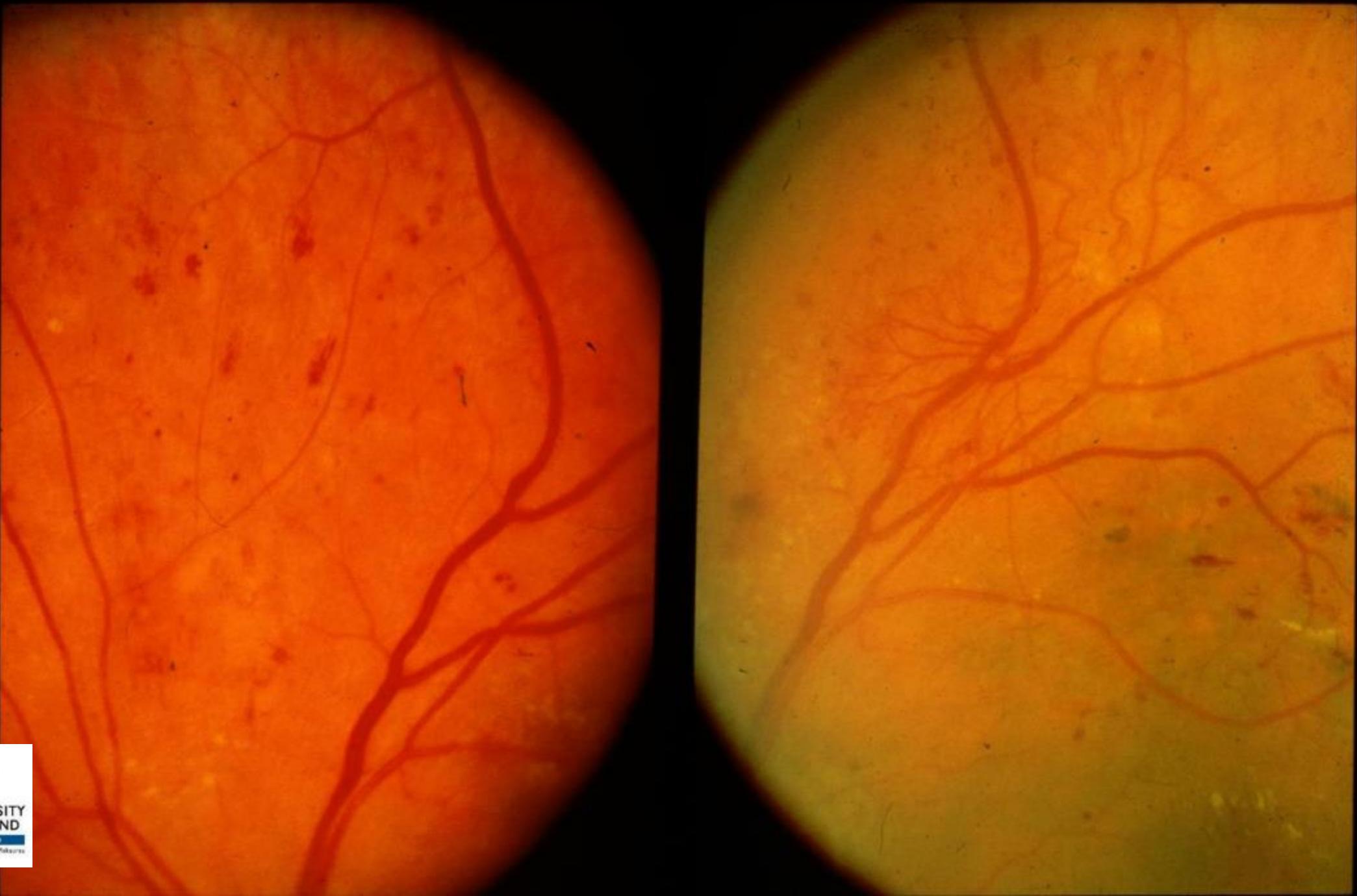




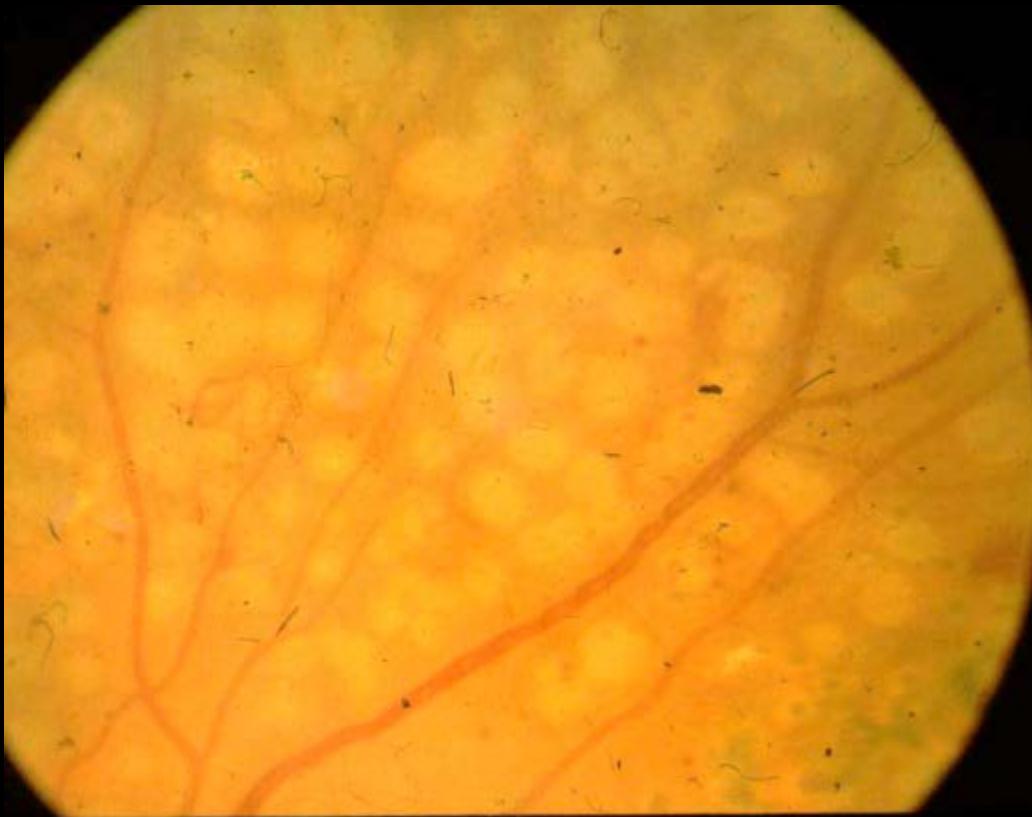






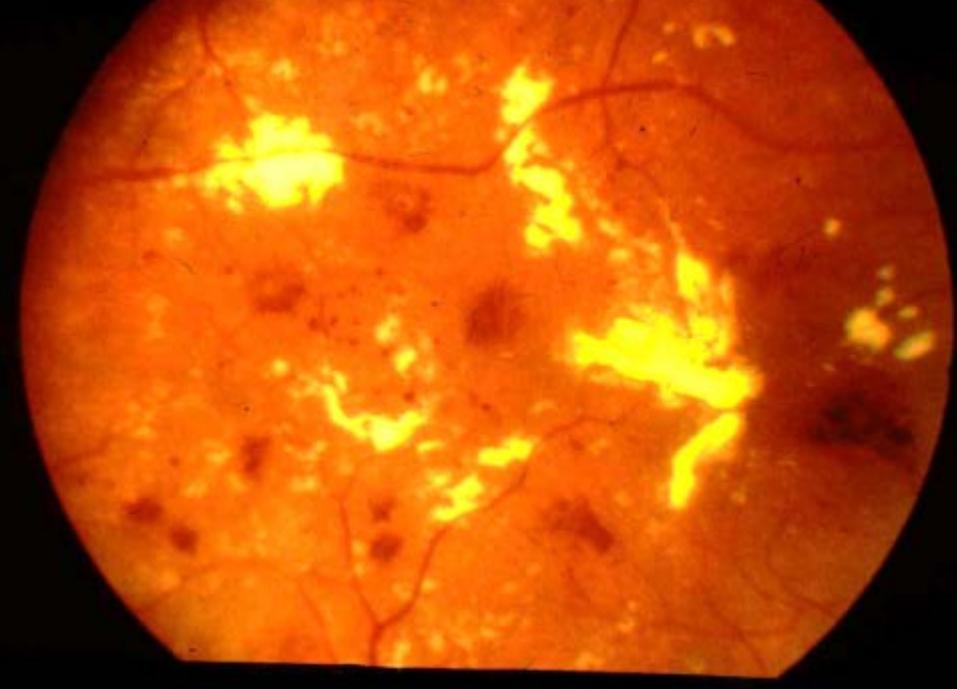




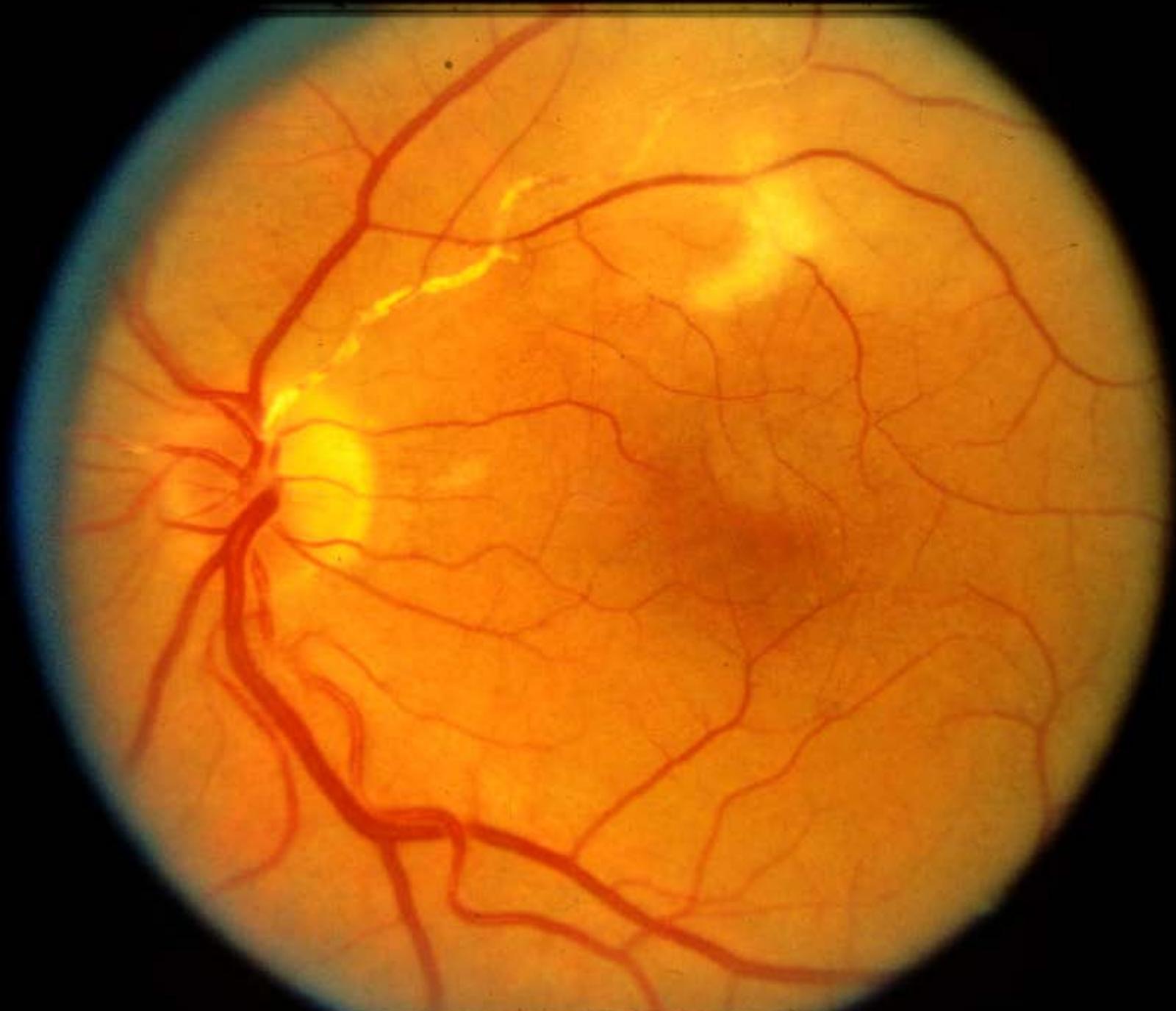




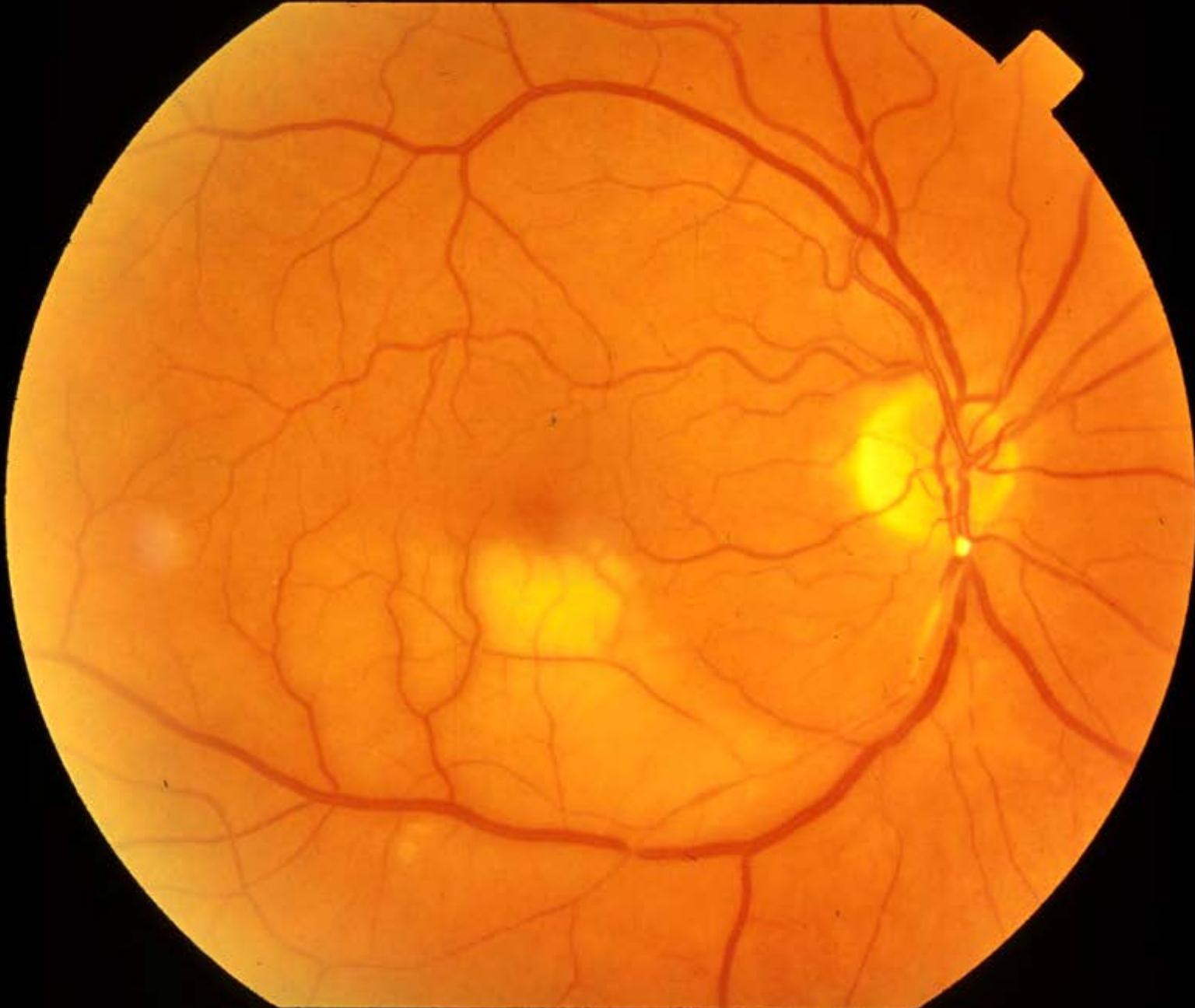


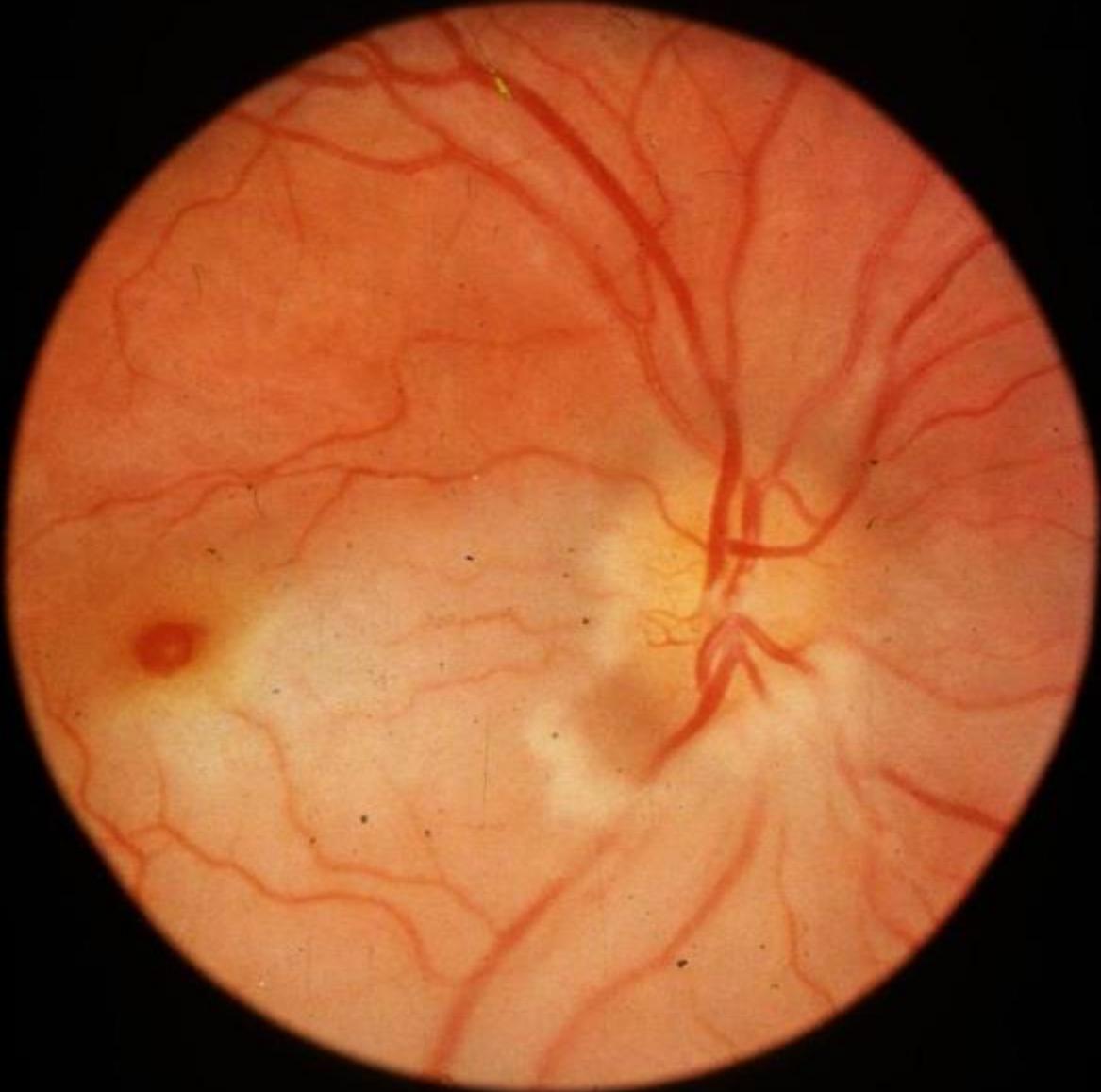


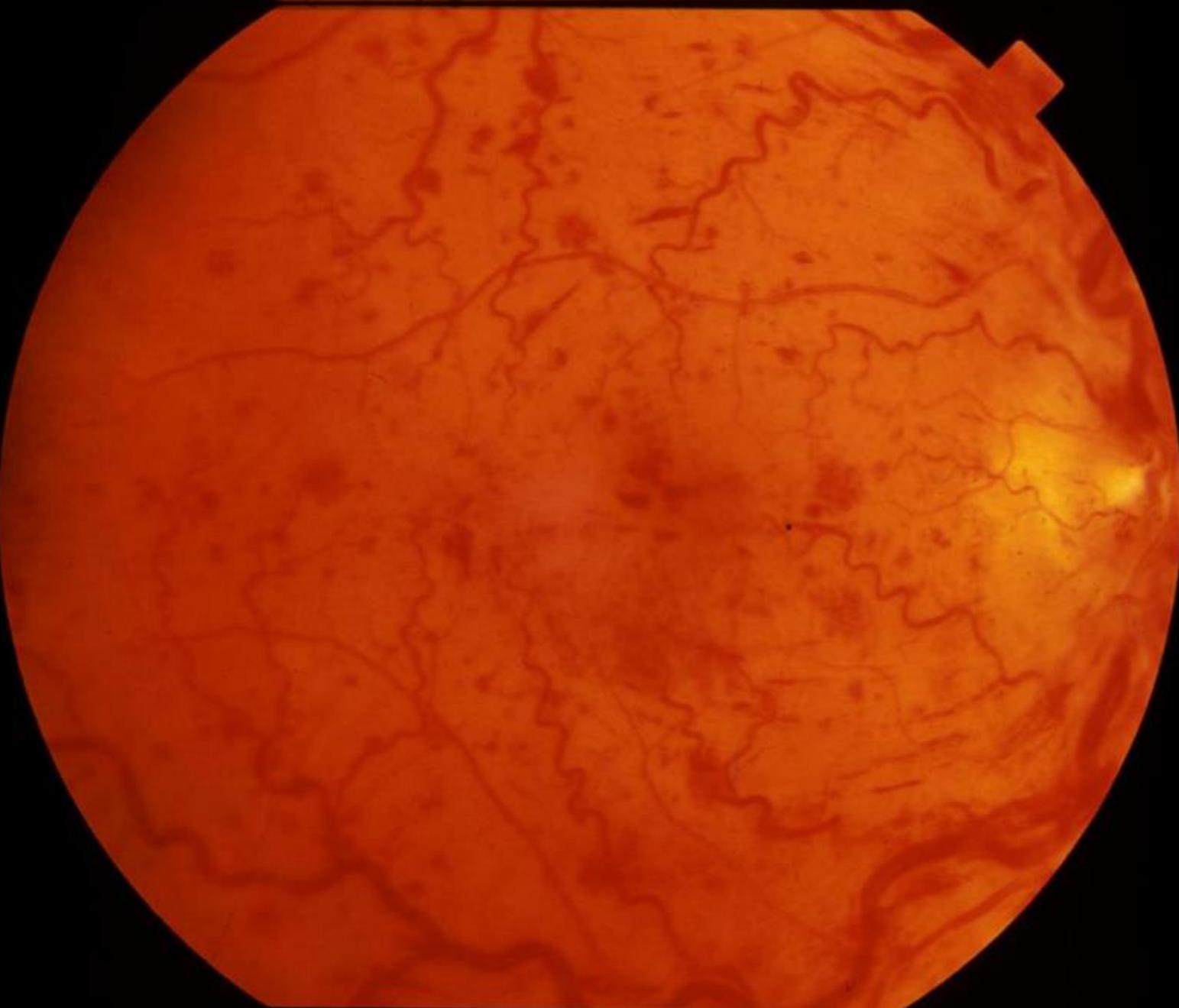




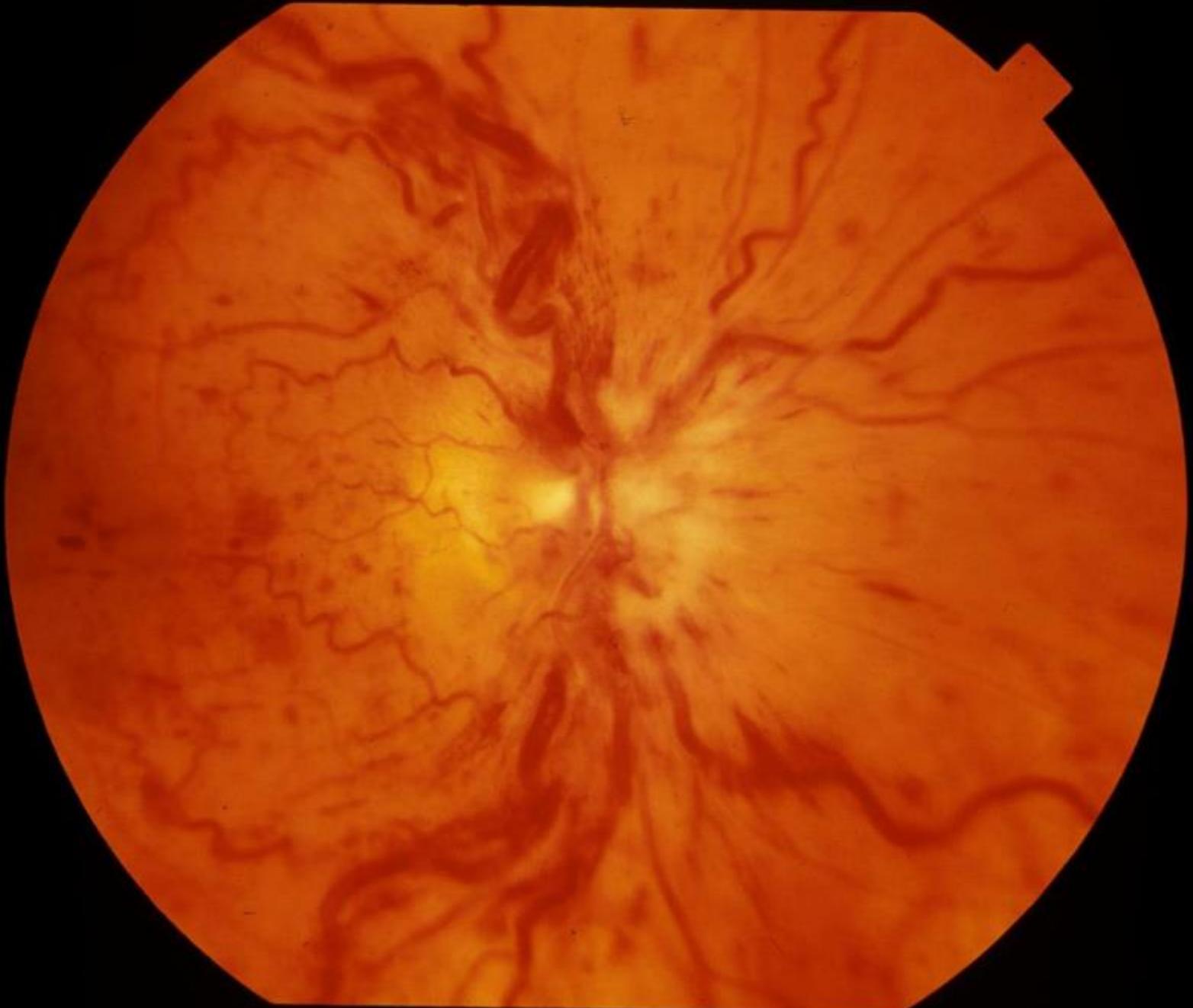
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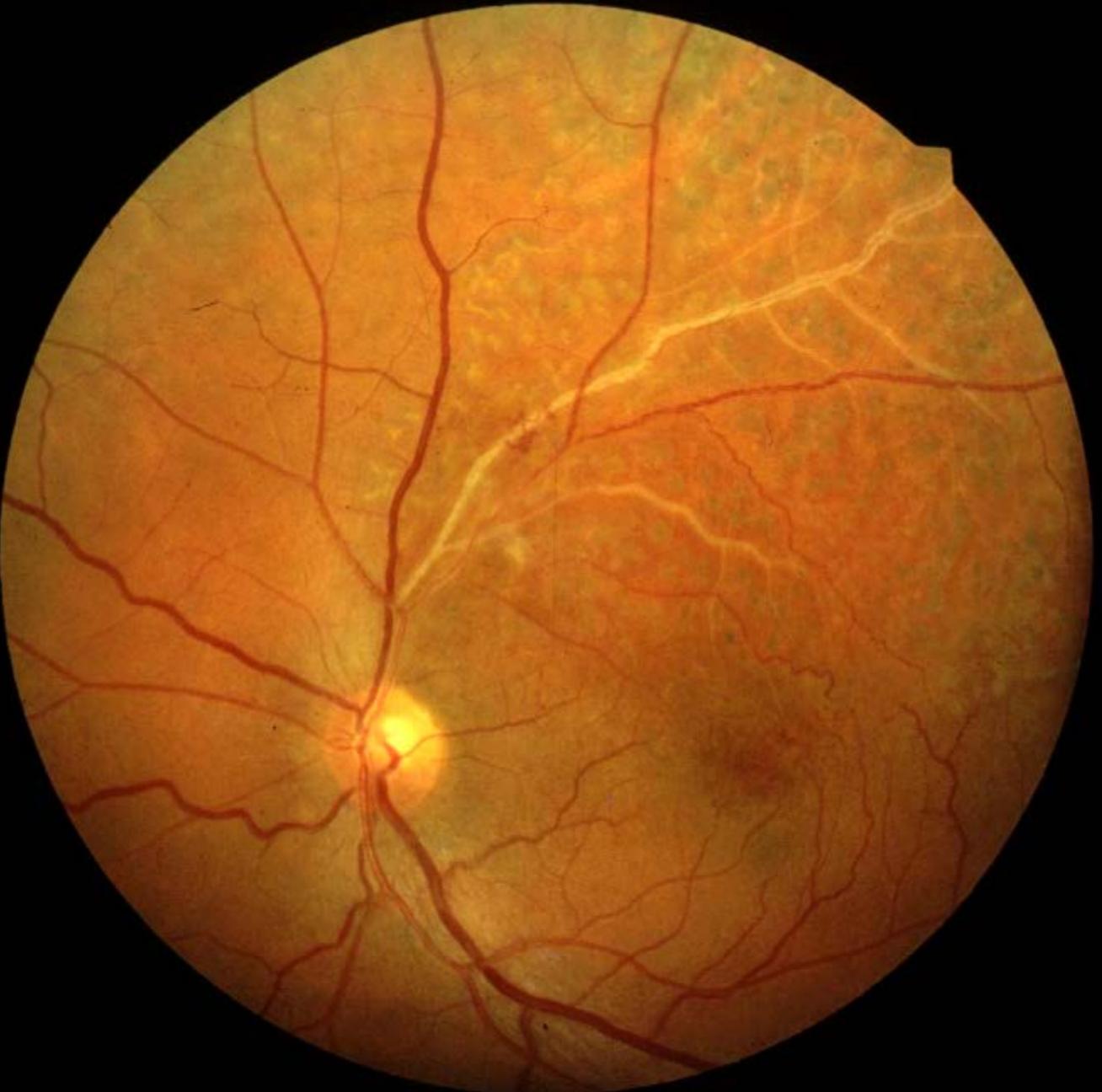




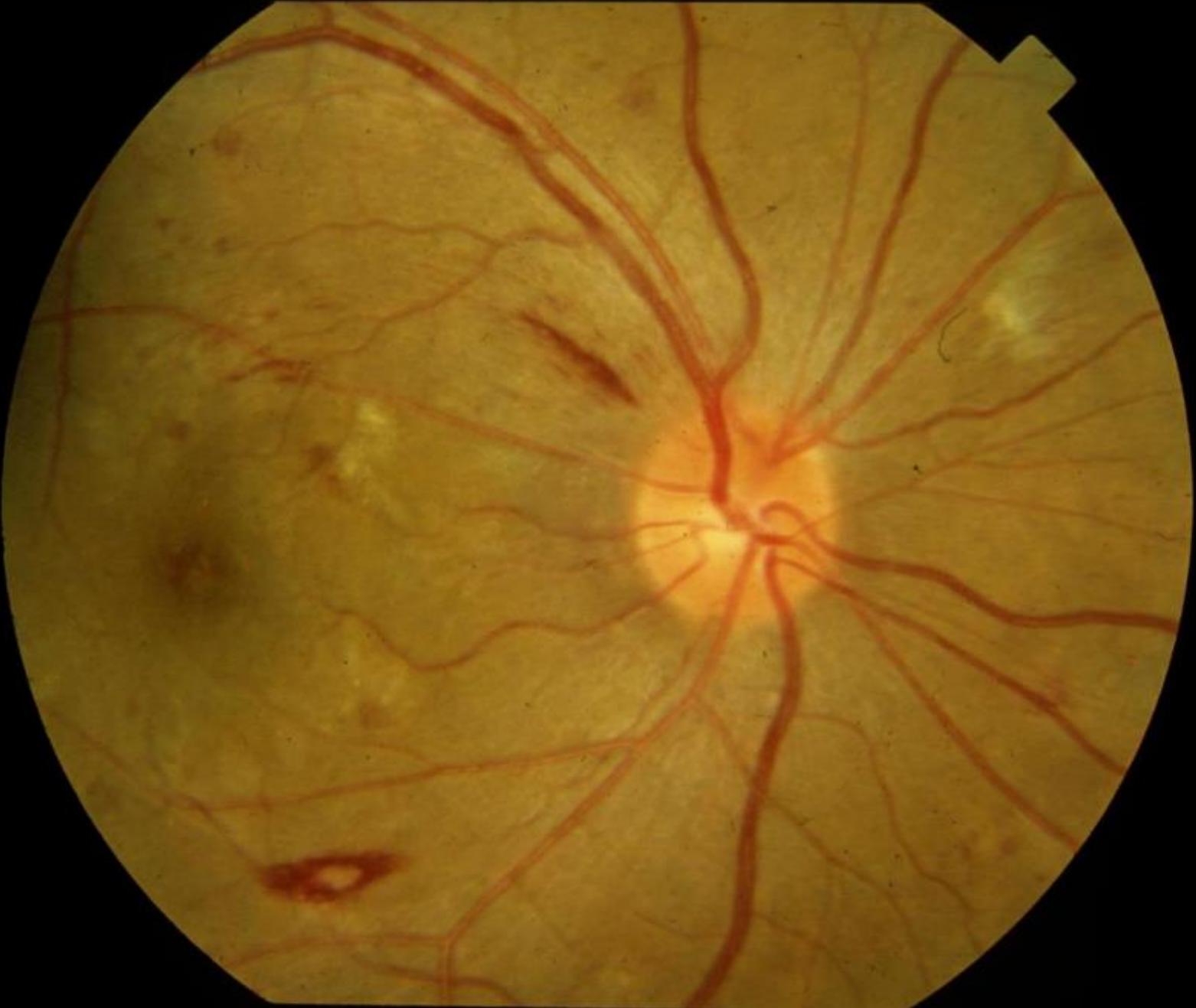
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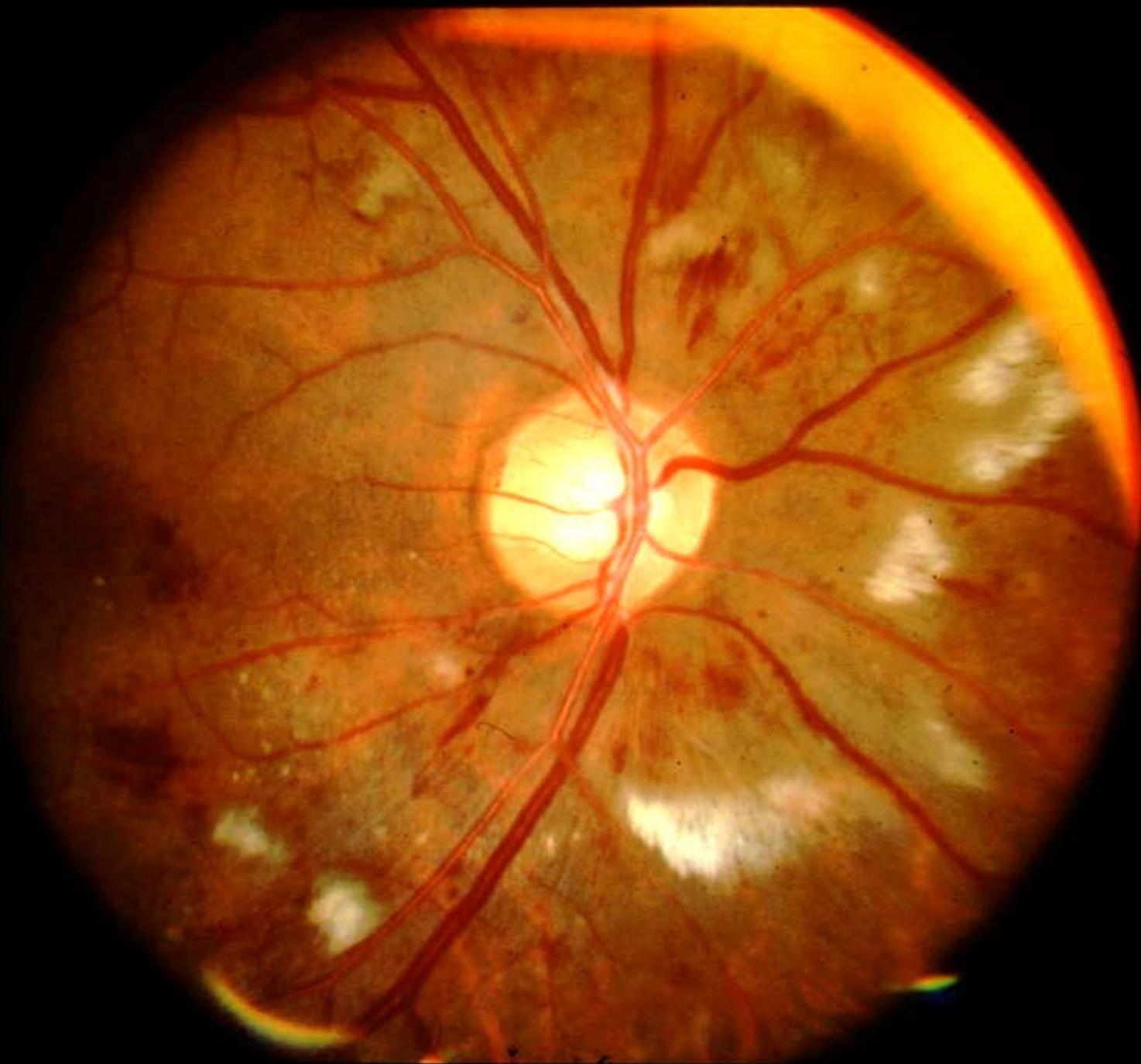






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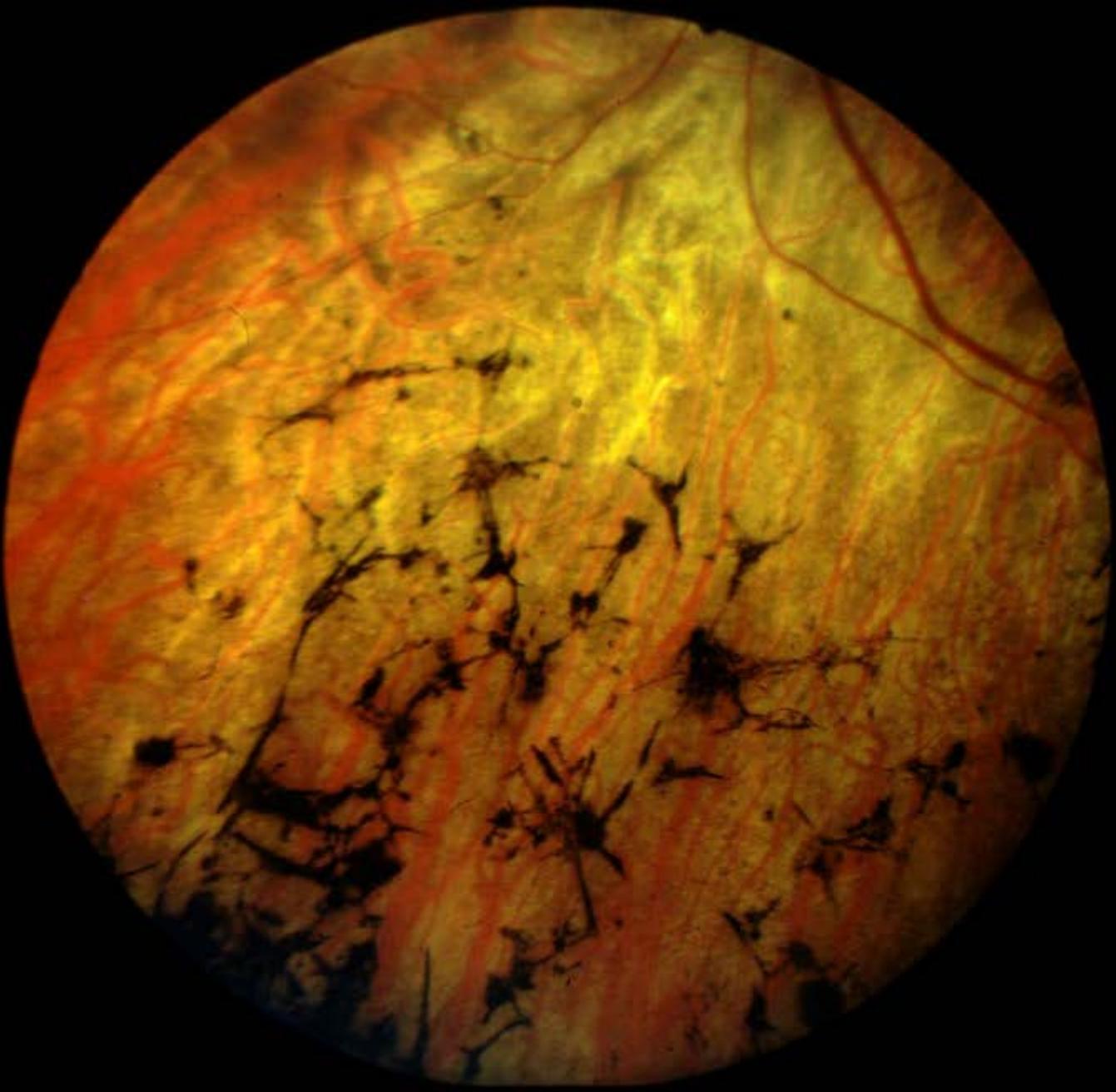












Translational Vision Research



Department of Ophthalmology

The End

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