

# Hypertensive Eye diseases

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# Hypertension

- ACC and AHA
- Blood pressure more than 120 systolic and 80 diastolic labelled as high
- Changes in life style
- Medications

- Retinopathy
- Choroidopathy
- Optic neuropathy
- Vein occlusion
- Artery occlusion

# RETINOPATHY

- **Arteriolar narrowing**
- **Cotton wool spots**
- **Vascular leakage**
  - flame-shaped retinal haemorrhages and retinal oedema
- **Arteriosclerosis**
  - involves thickening of the vessel wall characterized histologically by intimal hyalinization, medial hypertrophy and endothelial hyperplasia

# Pathophysiology

## Vasoconstrictive Phase:

- due to the elevated luminal pressures, local autoregulatory mechanisms cause retinal arteriole narrowing and vasospasm to reduce flow.

## Sclerotic Phase:

- the layers of the endothelial wall undergo changes such as intimal thickening, medial hyperplasia, worsening arteriolar narrowing, AV crossing changes, and silver and copper wiring.

## Exudative Phase:

- there is a disruption of the blood-retinal barrier and leakage of plasma and blood causing retinal hemorrhages, hard exudates, retinal ischemia, and necrosis of smooth muscle.

# Grading

## Grading of hypertensive changes

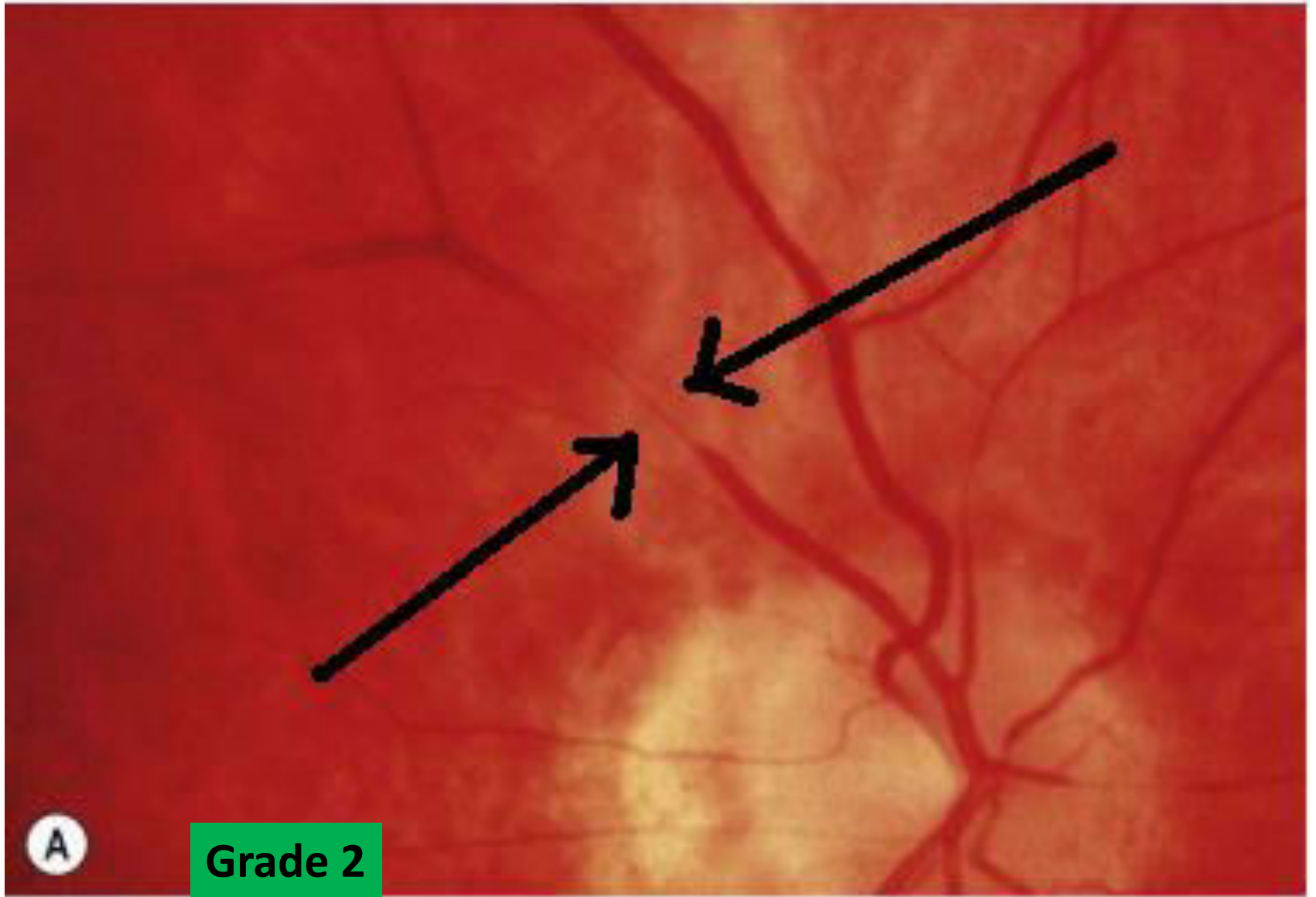
Grade 0: No changes

Grade 1: Barely detectable arterial narrowing

Grade 2: Obvious arterial narrowing with focal irregularities (Figure 1)

Grade 3: Grade 2 plus retinal hemorrhages, exudates, cotton wool spots, or retinal edema (Figure 3)

Grade 4: Grade 3 plus papilledema (Figure 4)



A

Grade 2





HYPERTENSIVE RETINOPATHY : GRADE 3-4

GENERALISED  
ARTERIOLAR ATTENUATION



A-V CROSSING CHANGES



COTTON WOOL SPOTS

FOCAL ARTERIOLAR ATTENUATION



EARLY MACULAR STAR



**Grade 3**

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B

Grade 4

## RISK FACTORS

duration of elevated blood pressure

degree of blood pressure elevation over normal

high salt diet,

obesity,

tobacco use,

alcohol,

family history,

stress,

## INVESTIGATIONS

- FFA
- OCT MACULA

## TREATMENT

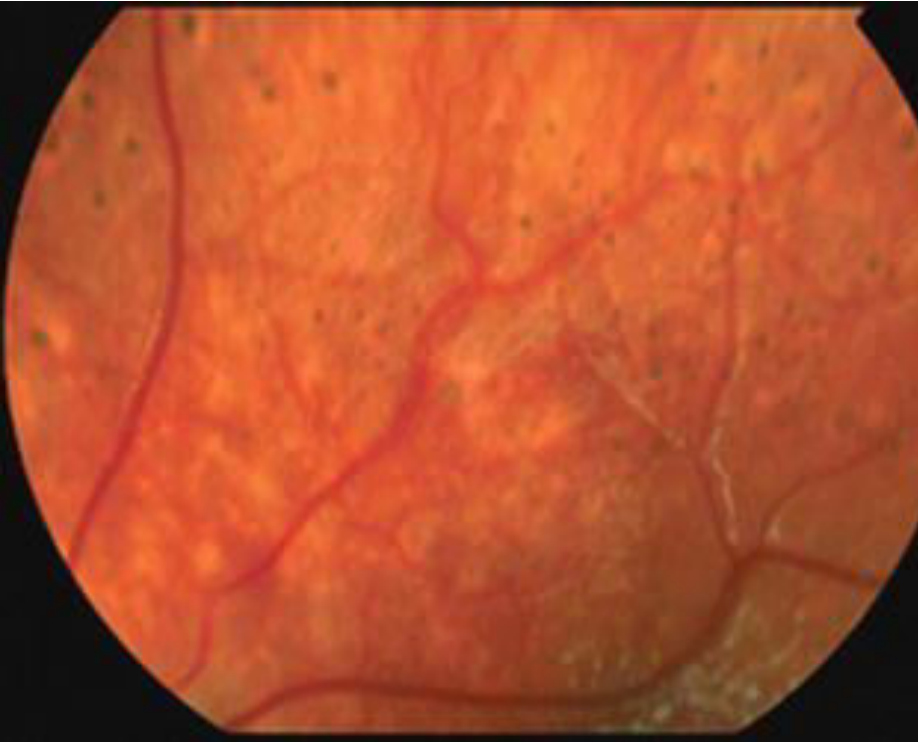
- Control blood pressure and other associated risk factors
- Treatment of ocular complications if any.

# OTHER EFFECTS OF HYPERTENSION ON EYE

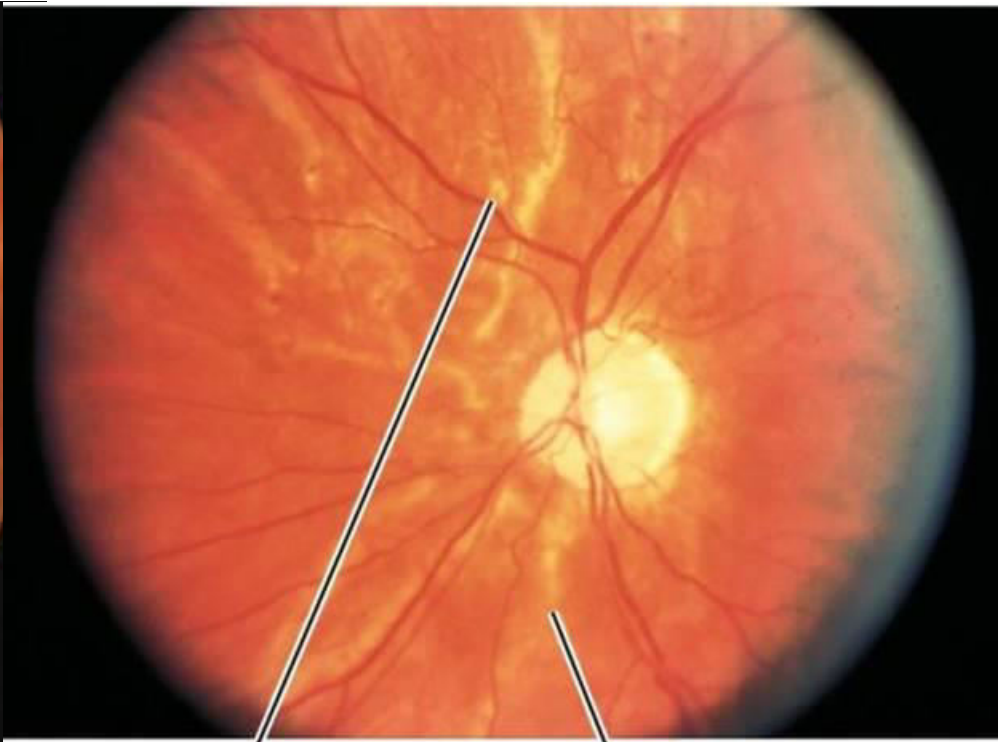
- Choroidopathy
- Optic neuropathy
- Artery occlusion
- Vein occlusion

# Choroidopathy

- Choroidopathy is rare but may occur as the result of an acute hypertensive crisis in young adults.
- **Elschnig spots** are small black spots surrounded by yellow halos which represent focal choroidal infarcts.
- **Siegrist streaks** are flecks arranged linearly along choroidal vessels indicative of fibrinoid necrosis associated with malignant hypertension
- **Exudative retinal detachment**, sometimes bilateral, may occur in severe acute hypertension such as that associated with toxemia of pregnancy.



**Elschnig spots**



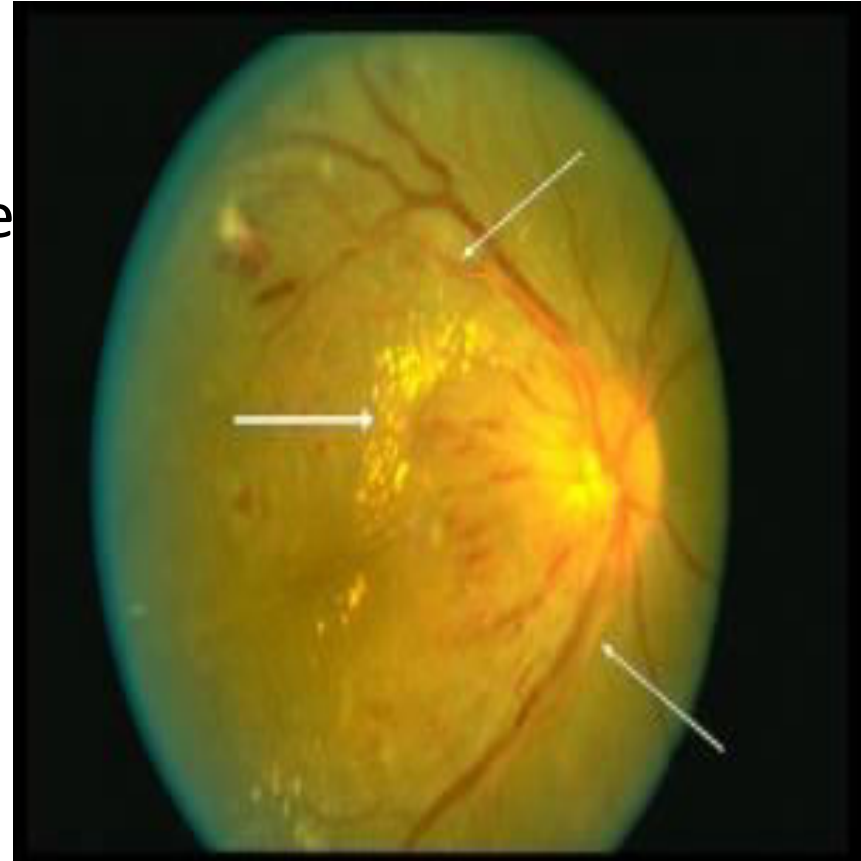
Elschnig spots

Siegrist streaks

# OPTIC NEUROPATHIES

## OPTIC DISC SWELLING

- flame shaped hemorrhages at the disc margin,
- blurred disc margins,
- congested retinal veins,
- papilledema
- secondary macular exudates



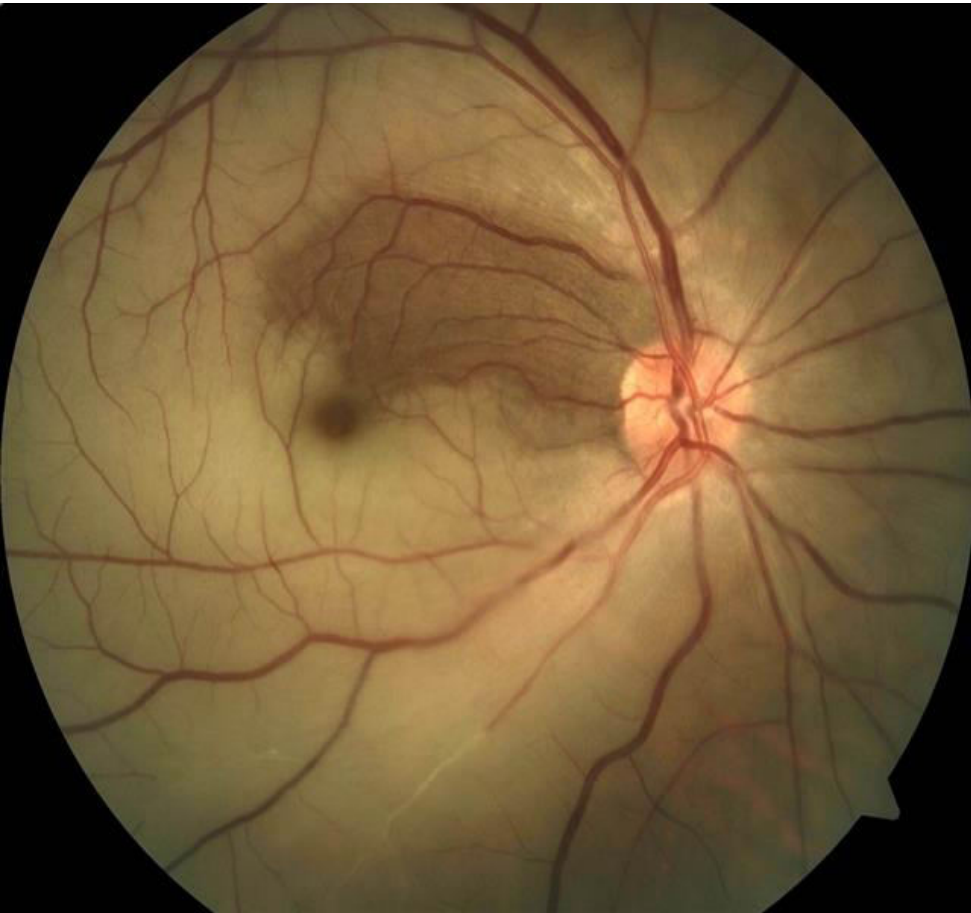


## Non-arteritic anterior ischemic optic neuropathy (NAION)

- Sudden painless loss of vision or visual field problem
- Sectoral or total swollen disc with hemorrhages



# ARTERY OCCLUSIONS



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CRAO

BRAO

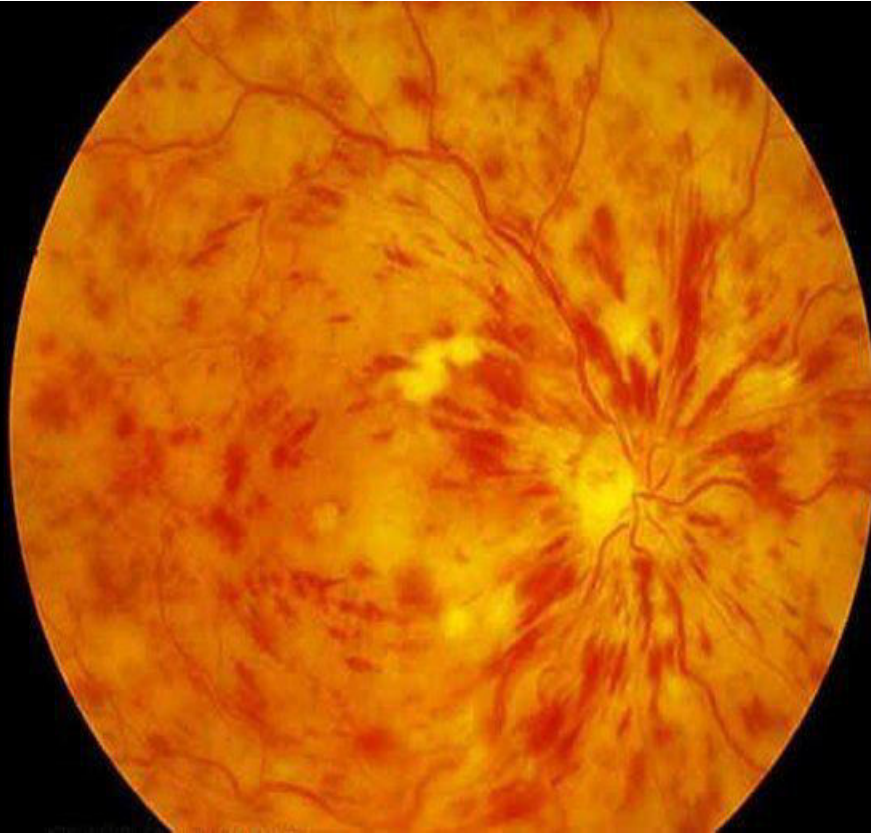
# SYMPTOMS

- PAINLESS SUDDEN UNILATERAL LOSS OF VISION. ( PL or NPL)
- AMAUROSIS FUGAX

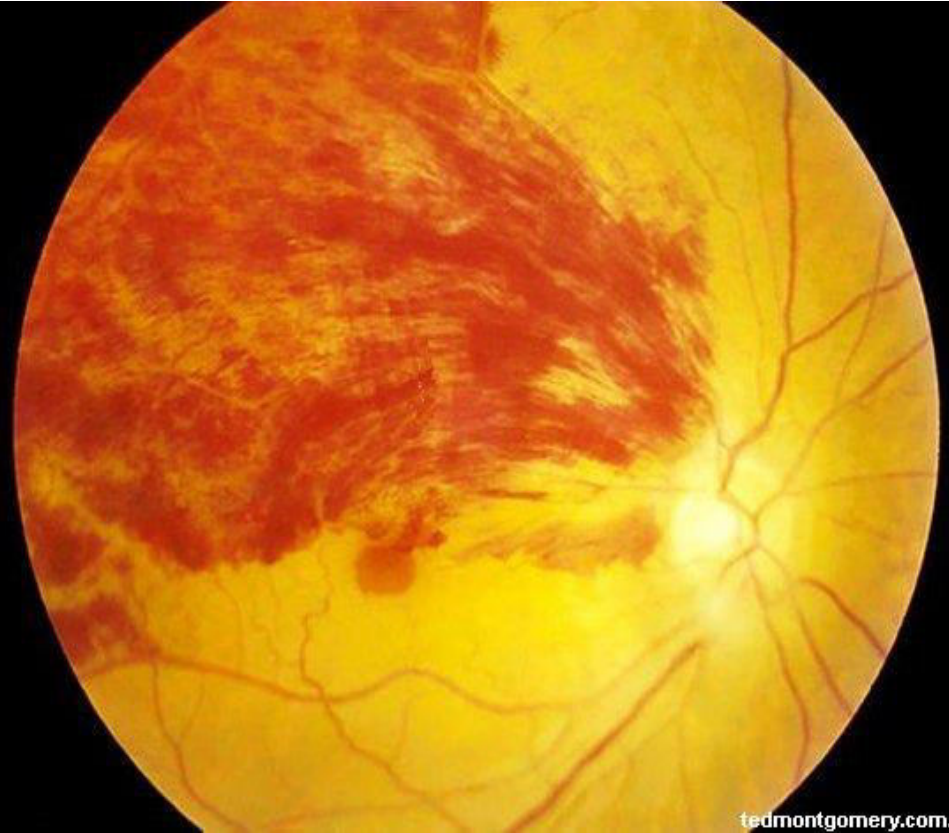
# SIGNS

- LARGER ARTERIES THREAD LIKE AND ARTERIOLES ARE INVISIBLE.
- VEINS NORMAL .
- FEW HOURS THE RETINAL LOSES ITS TRANSPARENCY AND BECOME MILKY WHITE.
- CHERRY RED SPOT

# VEIN OCCLUSIONS



CRVO



BRVO

# SYMPTOMS

- PAINLESS SUDDEN UNILATERAL LOSS OF VISION.

# FUNDUS

- MILD TORTUOSITY AND DILATATION .
- H'AGES-DOT n BLOT , FLAME SHAPED H' GES.
- COTTON WOOL SPOTS
- DISC EDEMA.
- MACULAR EDEMA

Thank you