



# OPHTHALMIC EMERGENCIES

Dr Ernest Wong

# LEARNING OBJECTIVES

Initial assessment

Red flags

Ophthalmic presentation of systemic illnesses

# INITIAL ASSESSMENT - HISTORY

## ROS

- Pain
- Vision/loss of vision (+ description of visual loss)
- Distortion of vision
- Bumping into things
- Double vision
- Flashes
- Floaters
- Halo

## PMH

- Prescription of glasses
- Contact lens
- Trauma
- Other health problems: DM, HTN, stroke, glaucoma

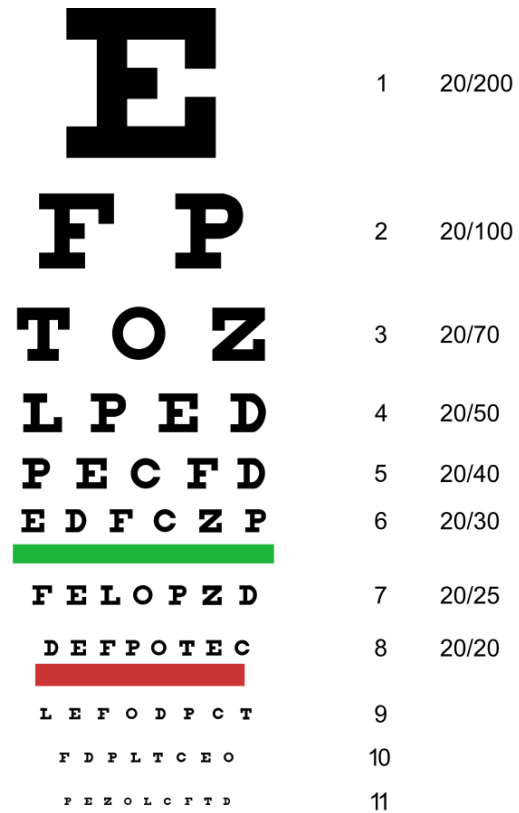
## FHx

- Eye problems

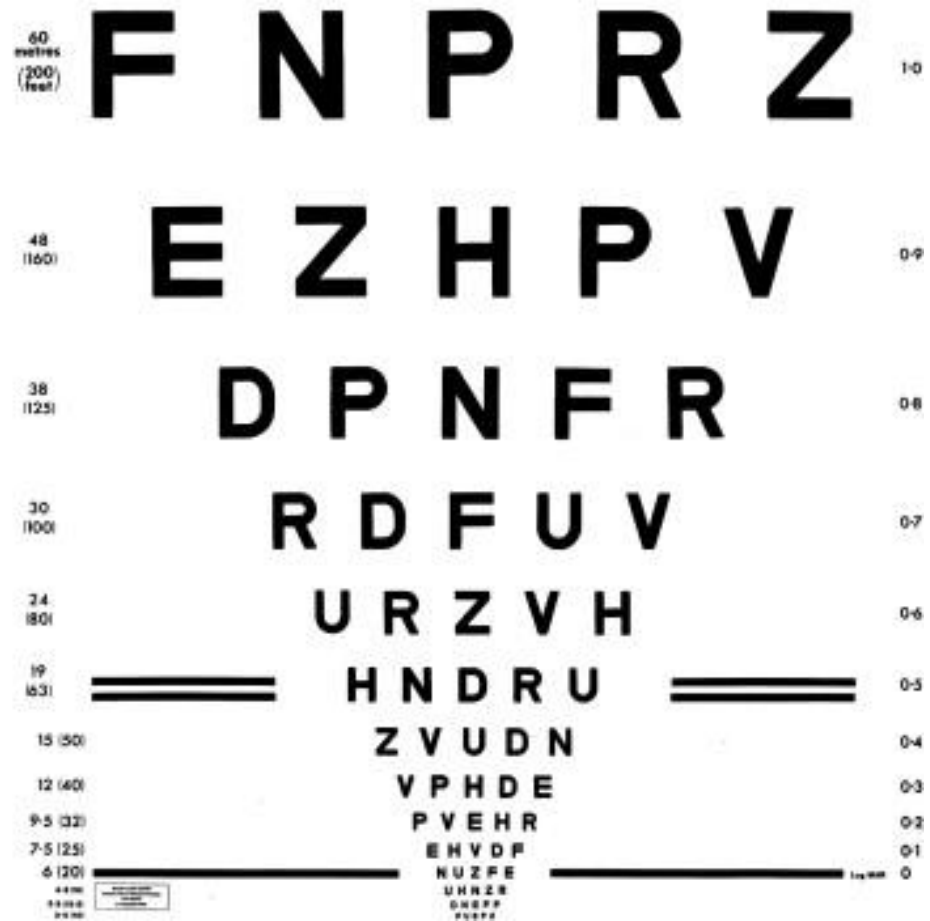
## SHx

- Smoking & recreational drugs

# VISUAL ACUITY



Snellen chart



LogMAR chart



# VISUAL ACUITY (CONT.)

## Steps

1. Ensure adequate lighting
2. Position patient appropriately – 6m for Snellen, 4m for logMAR
3. Test with spectacles on (best corrected)
4. Test one eye at a time by covering the other
5. Read from top, left to right
6. If vision is not 6/6, try using pinhole if available  
(or poke a hole in paper with a pen, diameter should be around 1.2mm)
7. If patient unable to read letter in the top row, position the patient closer to the chart, 1 meter at a time
8. If patient unable to read top letter at 1 meter from the chart, try counting fingers (CF), then hand movements (HM), then perception of light (PL).
9. If patient unable to see any of the above, then record as no perception of light (NPL)



# VISUAL ACUITY (CONT.)

Documentation if using Snellen

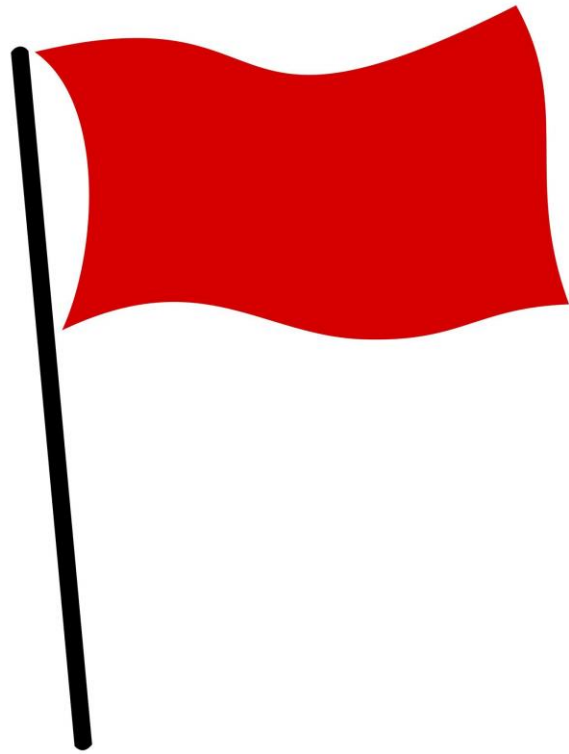
Documented as a fraction

Top number is the distance between the patient and the chart

Bottom number is the distance which people with normal visual acuity can see the letter from

E.g. If patient sitting at 6 meter can read the 24-meter line =  $6/24$

# RED FLAGS



# WHEN SHOULD YOU BE WORRIED?

Traumatic injuries, foreign body & chemical burns

Bulging eye after blunt trauma

Very painful, cloudy red eye with fixed dilated pupil

Flashes, floaters & cobwebs + loss of vision

Temporal headache/Jaw pain + loss of vision

Painful red eye (within 2 months) after eye operation

Sudden partial/total loss of vision



# WHEN SHOULD YOU BE WORRIED?

Traumatic injuries, foreign body & chemical burns

Bulging eye after blunt trauma

Very painful, cloudy red eye with fixed dilated pupil

Flashes, floaters & cobwebs + loss of vision

Temporal headache/Jaw pain + loss of vision

Painful red eye (within 2 months) after eye operation

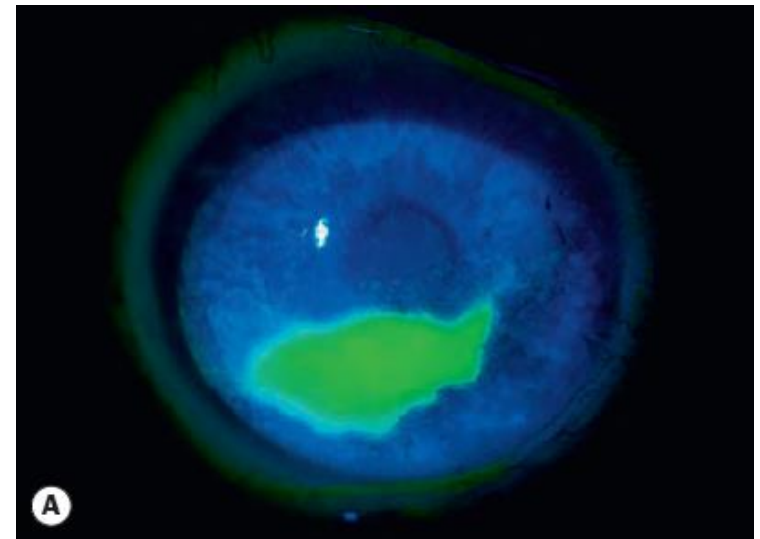
Sudden partial/total loss of vision

# ABRASION

Fingernail scratching the eye, trauma from blunt objects

Superficial injury to surface of cornea, breaching the epithelium

Can be difficult to visualize without staining

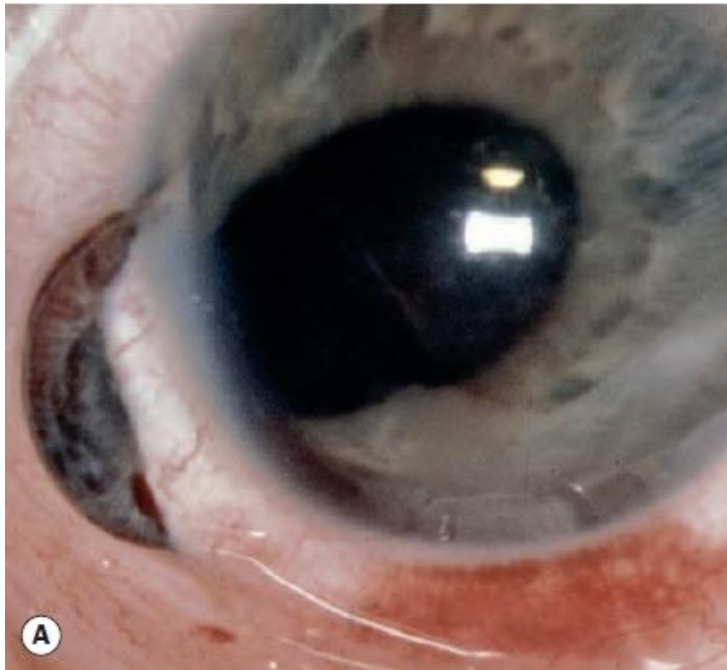


WHAT CAN YOU SEE?



# LACERATION

Full-thickness defect in the eye

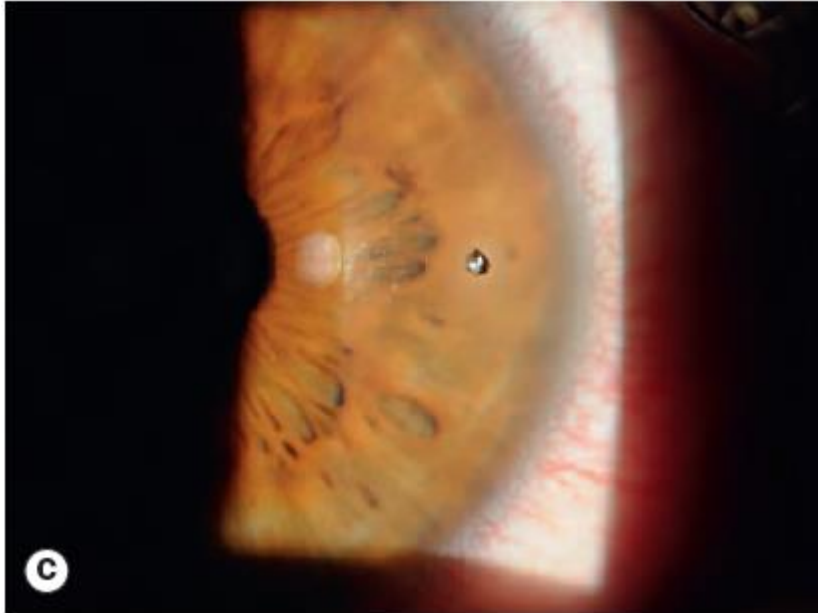


Scleral laceration with iris prolapse



Corneal laceration with stitches

# FOREIGN BODY



Superficial foreign body



Penetrating injury (full-thickness)



Intraocular foreign body

# WHAT TO DO?

Advice patient to not rub/touch the eye

Do not move the foreign body

Protect the eye, if possible use eye shield

Get help



WHAT CAN YOU SEE?



# CHEMICAL INJURY

Alkali vs acid burn

Alkali more common – more widely available

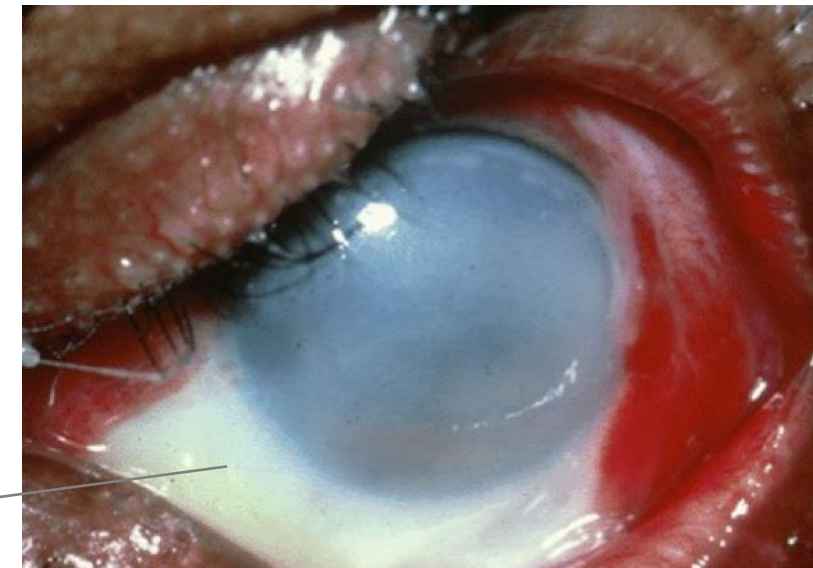
Alkali cause liquefaction vs Acids cause coagulation

Alkali penetrate more deeply

Causes necrosis of corneal/conjunctival epithelium

Penetration can cause damage to underlying structures

Substance	Chemical	pH
<b>Common alkalis</b>		
Oven cleaning liquid	Sodium hydroxide	14
Drain cleaning fluid	Sodium/potassium hydroxide	14
Plaster	Calcium hydroxide	14
Fertilizers (some)	Ammonium hydroxide	13
<b>Common acids</b>		
Battery fluid	Sulfuric acid	1
Lavatory cleaning fluid	Sulfuric acid	1
Bleach	Sodium hypochlorite	1
Pool cleaning fluid	Sodium/Calcium hypochlorite	1



White eye is a more worrying sign!



# CHEMICAL INJURY

Management

Measure pH

Topical anaesthetic

Evert the eyelids



Irrigate with A LOT OF water, 2L at a time

Can take many many many litres of irrigation

Normal saline or Hartmann's/Plasma-Lyte (through IV giving set)

Immediate referral to ophthalmology



# WHEN SHOULD YOU BE WORRIED?

Traumatic injuries, foreign body & chemical burns

Bulging eye after blunt trauma

Very painful, cloudy red eye with fixed dilated pupil

Flashes, floaters & cobwebs + loss of vision

Temporal headache/Jaw pain + loss of vision

Painful red eye (within 2 months) after eye operation

Sudden partial/total loss of vision

# BULGING EYE AFTER TRAUMA



# WHEN SHOULD YOU BE WORRIED?

Traumatic injuries, foreign body & chemical burns

Bulging eye after blunt trauma

Very painful, cloudy red eye with fixed dilated pupil

Flashes, floaters & cobwebs + loss of vision

Temporal headache/Jaw pain + loss of vision

Painful red eye (within 2 months) after eye operation

Sudden partial/total loss of vision

# CASE STUDY

84-year-old lady

Presented with

- Vomiting
- Abdominal pain
- Generalised headache

What might be the cause?

# ACUTE ANGLE CLOSURE GLAUCOMA

Aqueous humour unable to drain

Build-up of pressure in the eye

Sudden onset, very severe painful red eye

Cloudy cornea

Mid-dilated & fixed pupil

Pain can be so severe, patients may present with headache, nausea & vomiting, abdo pain

Need urgent medical treatment

Some risk factors:

- Far-sightedness (small eyeball)
- Medications - Common ones e.g. anticholinergics (ipratropium), antihistamines (promethazine), antidepressants (amitriptyline, citalopram), topiramate



# WHEN SHOULD YOU BE WORRIED?

Traumatic injuries, foreign body & chemical burns

Bulging eye after blunt trauma

Very painful, cloudy red eye with fixed dilated pupil

Flashes, floaters & cobwebs + loss of vision

Temporal headache/Jaw pain + loss of vision

Painful red eye (within 2 months) after eye operation

Sudden partial/total loss of vision

# RETINAL DETACHMENT

Many types

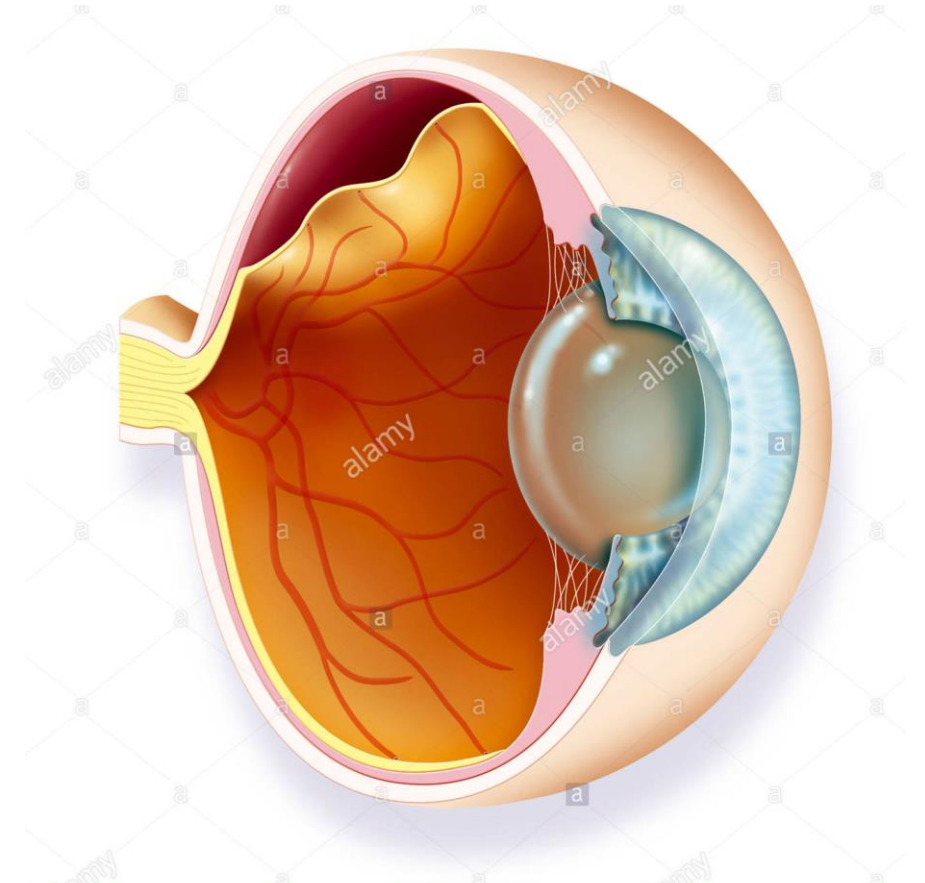
Generally present with flashes of light, floaters, cobwebs

Loss of vision, some describe as like closing a curtain

May need urgent surgery

Some risk factors

- Short sightedness
- Previous eye surgery
- Trauma





# WHEN SHOULD YOU BE WORRIED?

Traumatic injuries, foreign body & chemical burns

Bulging eye after blunt trauma

Very painful, cloudy red eye with fixed dilated pupil

Flashes, floaters & cobwebs + loss of vision

Temporal headache/Jaw pain + loss of vision

Painful red eye (within 2 months) after eye operation

Sudden partial/total loss of vision

# GIANT CELL ARTERITIS

## Diagnostic criteria

- Age >50 (Almost exclusively >50, median age 70-80<sup>1</sup>)
- New headache
- Tender temporal artery/decreased pulsation
- Raised ESR/CRP (median CRP 52<sup>2</sup>)
- Abnormal artery biopsy

## Risk factors

Female  
Old age  
Polymyalgia rheumatica

1. Gonzalez-Gay et al 2009
2. Kermani et al 2012

# WHEN SHOULD YOU BE WORRIED?

Traumatic injuries, foreign body & chemical burns

Bulging eye after blunt trauma

Very painful, cloudy red eye with fixed dilated pupil

Flashes, floaters & cobwebs + loss of vision

Temporal headache/Jaw pain + loss of vision

Painful red eye (within 2 months) after eye operation

Sudden partial/total loss of vision

# BACTERIAL ENDOPHTHALMITIS

- Ocular surgery is a major risk factor
- Can occur weeks-months after surgery
- Urgently need antibiotic injection



# WHEN SHOULD YOU BE WORRIED?

Traumatic injuries, foreign body & chemical burns

Bulging eye after blunt trauma

Very painful, cloudy red eye with fixed dilated pupil

Flashes, floaters & cobwebs + loss of vision

Temporal headache/Jaw pain + loss of vision

Painful red eye (within 2 months) after eye operation

Sudden partial/total loss of vision

# SUDDEN LOSS OF VISION

Many causes

Some require urgent treatment to preserve sight

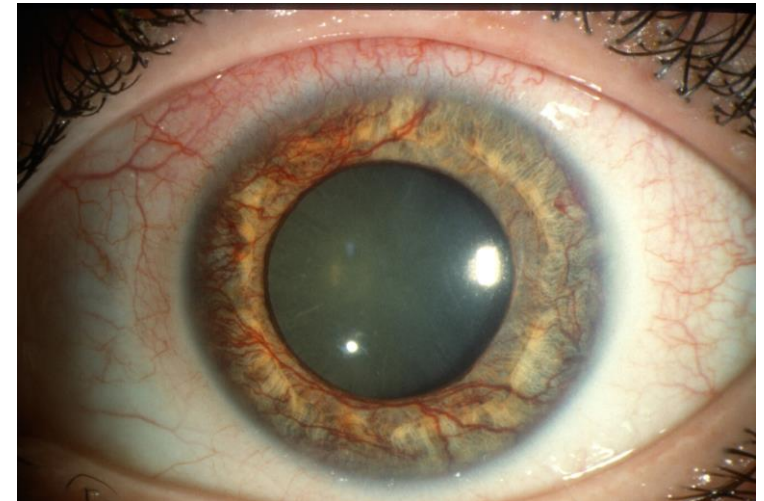
E.g.

- Retinal artery/vein occlusion – affects blood supply to the retina
- Giant cell arteritis – affects blood supply to the optic nerve

# SYSTEMIC ILLNESS & THE EYE

Cardiovascular diseases e.g. hypertension

Metabolic diseases e.g. Diabetes

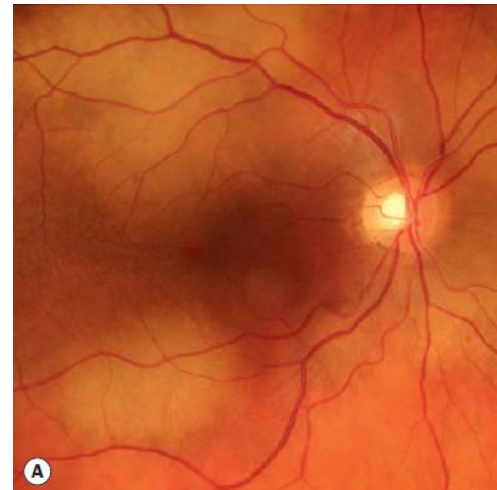
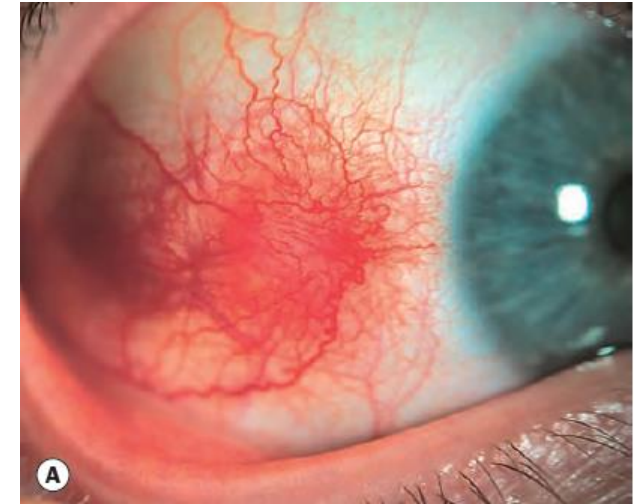


# SYSTEMIC ILLNESS & THE EYE

Inflammatory diseases e.g. rheumatoid arthritis

Infections e.g. tuberculosis

Metastatic cancers e.g. from breast





# CONCLUSION

If in doubt, get help

<https://tinyurl.com/7f277b2x>

