Eye emergencies

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GP SYNERGY
advancing medical training

Australian Government
Department of Health

AGPT

Case 1

Kelly Baker, aged 22 years, presents with a 3 day history of a painful red left eye.

What differential diagnoses should be considered for Kelly's presentation?

What further aspects of history should be obtained regarding Kelly's presentation?

Red eye differential

Table 1. Differential diagnosis of a unilateral red eye

Condition		Features
Conjunctivitis	Allergic	• Usually bilateral • Itch • History of atopy
	Viral	• Symptoms often start in one eye and then develop in the other a few days later • Watery discharge • Pre-auricular lymphadenopathy • ± recent viral illness • Consider herpes simplex virus if there is history of cold sores and/or a dendritic corneal lesion on examination
	Bacterial	• Purulent discharge; often bilateral • Consider Pseudomonas/Acanthamoeba keratitis in contact lens wearers
Corneal foreign body		• Irritation • ± ocular trauma/metal work
Acute anterior uveitis		• Pain • Photophobia • Blurred vision • ± irregular pupil (posterior synechiae) • Slitlamp examination – cells in anterior chamber
Acute angle closure (acute glaucoma)		• Severe pain and headache • Photophobia • Visual impairment • Nausea, vomiting • Pupil fixed and mid-dilated • Cloudy cornea
Microbial keratitis		• Suspect (especially in contact lens wearer) • May get infiltrate or abscess (white lesion on cornea) • Needs prompt specialist assessment
Endophthalmitis		• History of previous intraocular surgery • Severe pain is typical • Hypopyon (pus in anterior chamber) is often present • If endogenous, patient may be immuncompromised • Needs urgent specialist treatment (within hours not days)

Sharma NS, Ooi JL, Li MZ. A painful red eye. Aust Fam Physician. 2009 Oct;38(10):805-7

Table 40.1

The red and tender eye: diagnostic strategy model

Probability diagnosis

Conjunctivitis:

- bacterial
- adenovirus
- allergic

Irritants:

- stye
- pterygium/pinguecula

Serious disorders not to be missed

Acute glaucoma

Uveitis:

- acute iritis
- choroiditis

Corneal ulcer

Herpes simplex keratitis

Microbial keratitis (e.g. fungal, amoebic, bacterial)

Herpes zoster ophthalmicus

Penetrating injury

Endophthalmitis

Orbital cellulitis

Trachoma

Pitfalls (often missed)

Scleritis/episcleritis

Foreign body

Trauma—contusion, penetrating injury

Ultraviolet light 'keratitis'

Blepharitis

Cavernous sinus arteriovenous fistula

Seven masquerades checklist

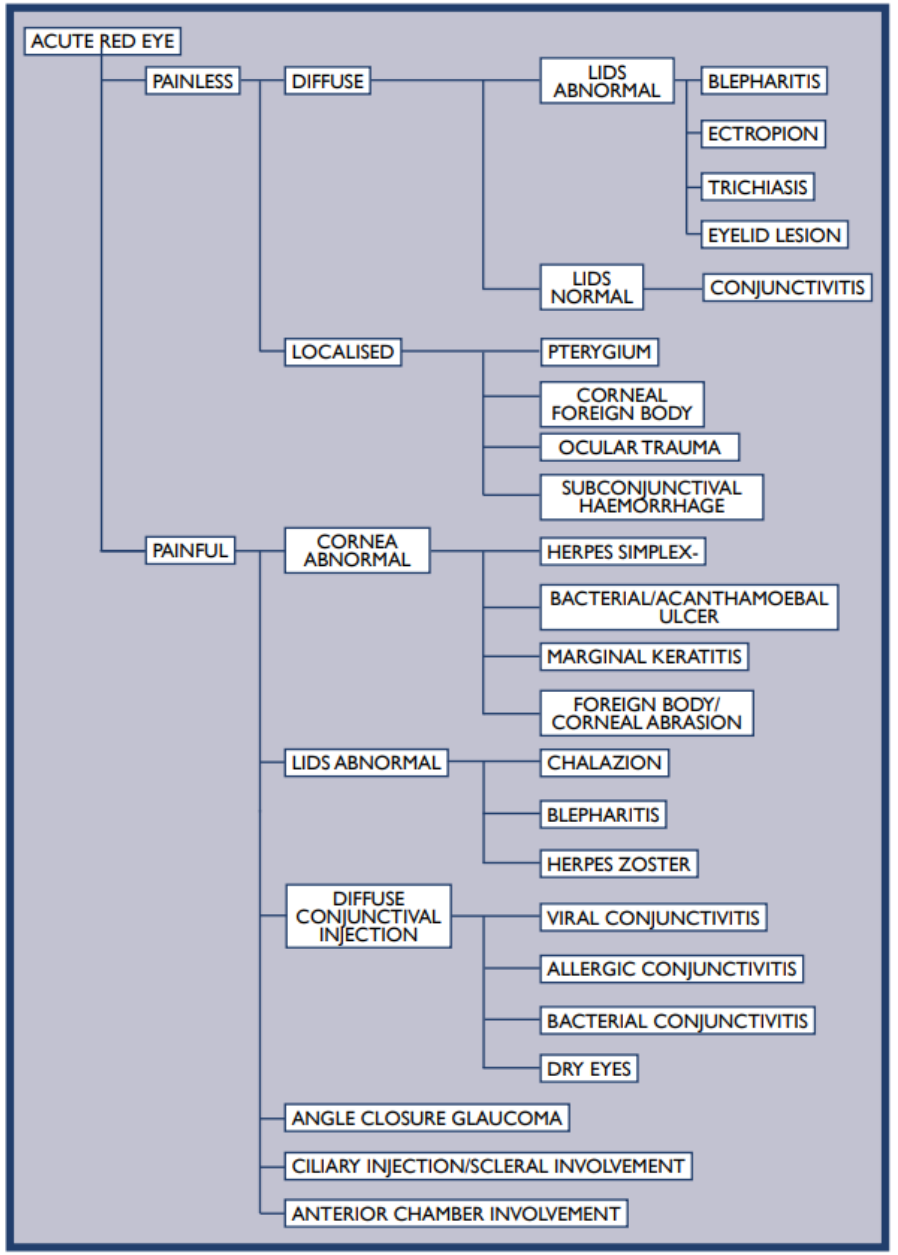
Drugs (hypersensitivity)

Thyroid disorder (hyperthyroidism)

Is the patient trying to tell me something?

Unlikely.

Chapter 40: The red and tender eye Murtaghs 8th Edition



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GP SYNERGY

Case 1

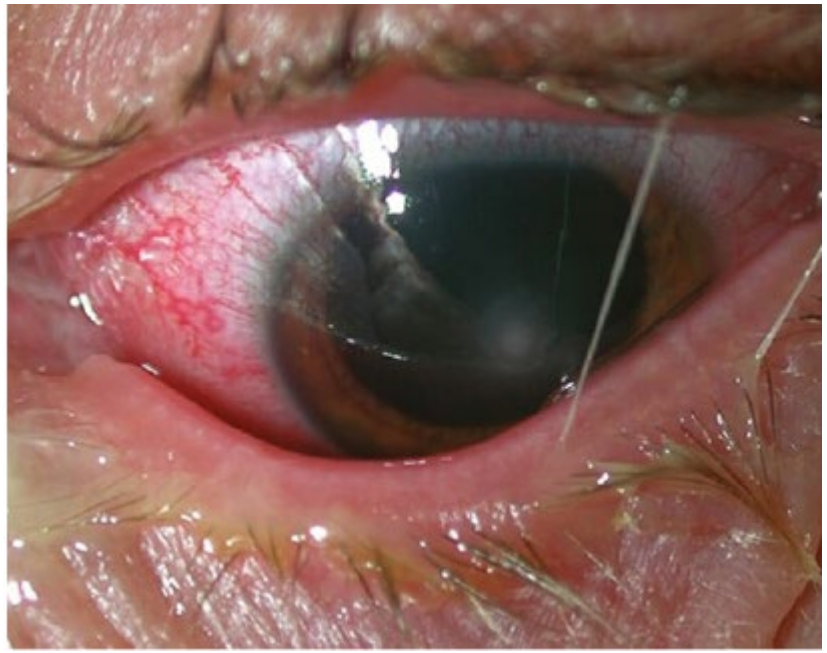
Kelly Baker, aged 22 years, presents with a 3 day history of a painful red left eye. She has had blurred vision, photophobia and yellow discharge.

She wears soft contact lenses and follows the manufacturers instructions. A week ago she slept with them in overnight, but states she hasn't had issues with this is the past.

On examination, the patient's visual acuity in the right eye was 6/6 with her contact lens, and in her left eye 6/36 unaided. Through a pinhole, her vision improved to 6/18.

What is the most likely diagnosis?

What are the next steps in management?



Nguyen V, Lee GA. Aust J Gen Pract. 2019 Aug;48(8):516-519.

Bacterial Keratitis

Management:

- Urgent referral to Ophthalmology for confirmation of diagnosis, scrapings for MCS, intensive antibiotics and follow-up.
- It is best to avoid commencing antibiotics until ophthalmology review, as scrapings of the ulcer will need to be performed and sent for microscopy and sensitivities
- Stop use of contact lens (use glasses) – bring case and lens to appt as may also be sent for culture

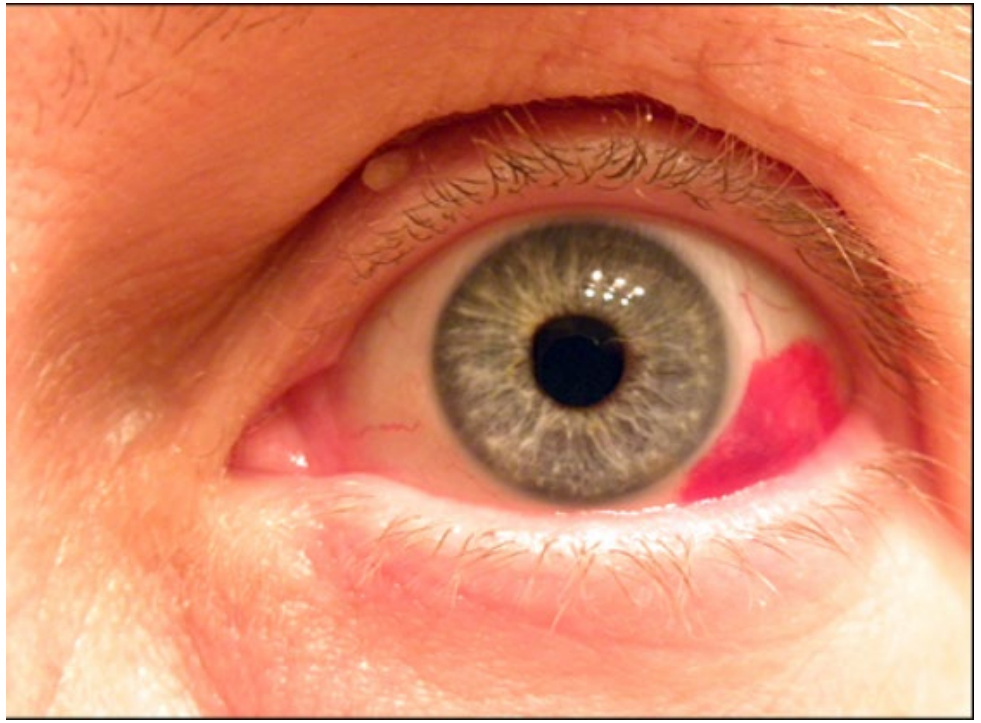
Nguyen V, Lee GA. Aust J Gen Pract. 2019 Aug;48(8):516-519.

Case 2

Janet Williams a 55-year-old woman presents with acute onset of redness in her left eye, which she noted upon awakening in the morning. She has no pain, discharge, photophobia, blurry vision, or history of blunt trauma. On examination, she was normotensive. Her pupils were equal and reactive, and her corrected vision was 6/6.

What is the most likely diagnosis?

What are the next steps in management?



https://www.aafp.org/afp/2013/1015/p533.html

Suconjunctival haemorrage

NB: consider Non Accidental Injury (NAI) in children

History:

Mild to no pain, no visual disturbances, no discharge

Causes:

Spontaneous causes: hypertension, severe coughing, straining, atherosclerotic vessels, bleeding disorders

Traumatic causes: blunt eye trauma, foreign body, penetrating injury

Examination:

Make sure to check for corneal involvement or penetrating injury

Normal vision; pupils equal and reactive to light; well demarcated, bright red patch on white sclera; no corneal involvement

Management:

Reassurance (blood will reabsorb over the next few weeks), check and manage BP and if on warfarin (check INR). Consider warm compresses and ocular lubricants

Cronau H, Kankanala RR, Mauger T. Diagnosis and management of red eye in primary care. Am Fam Physician. 2010 Jan 15;81(2):137-44.
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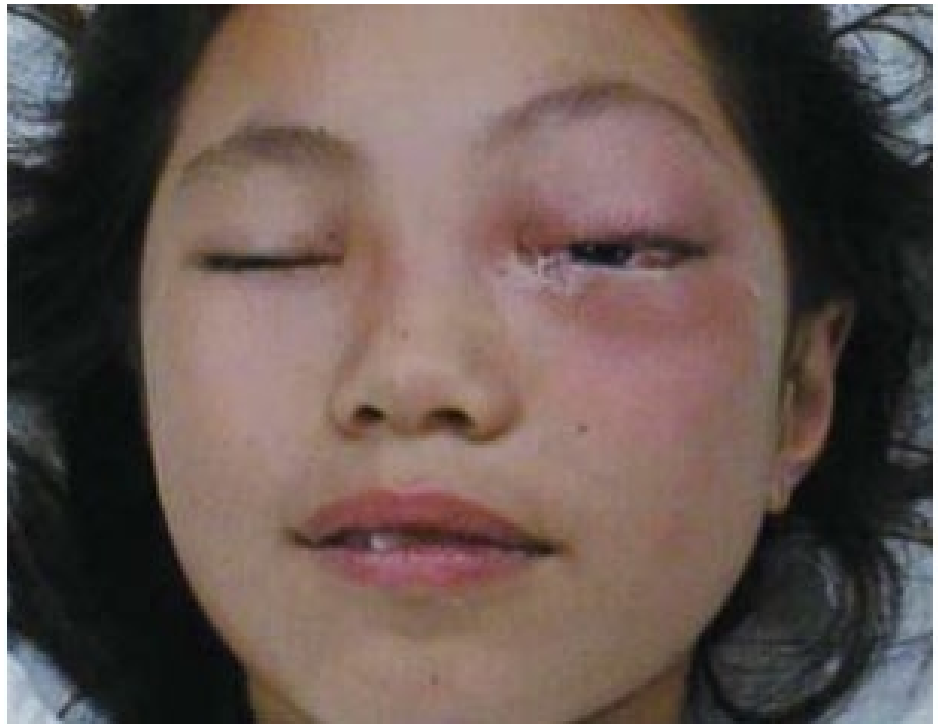
Case 3

Jennifer Smith, aged 9 years, presents with an acutely swollen left eye. She describes pain and has had a fever in the last 24hrs.

What is the most likely diagnosis?

What physical examination findings should be sought for Jennifer's presentation?

What are the next steps in management?



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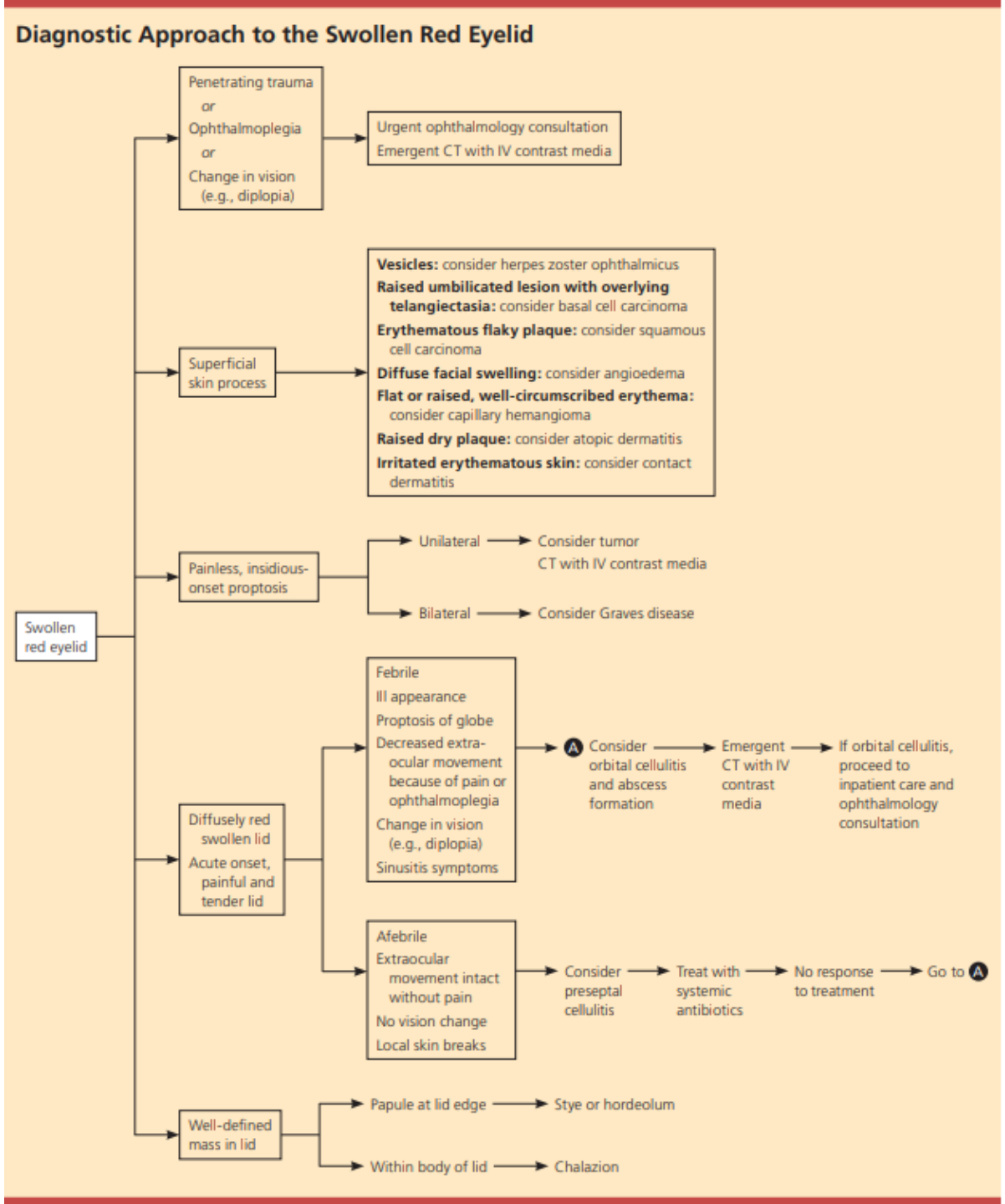


Carlisle RT, Digiovanni J. Differential Diagnosis of the Swollen Red Eyelid. Am Fam Physician. 2015 Jul 15;92(2):106-12.

Case 3

Periorbital (pre septal) cellulitis: soft tissue infection of the eyelids

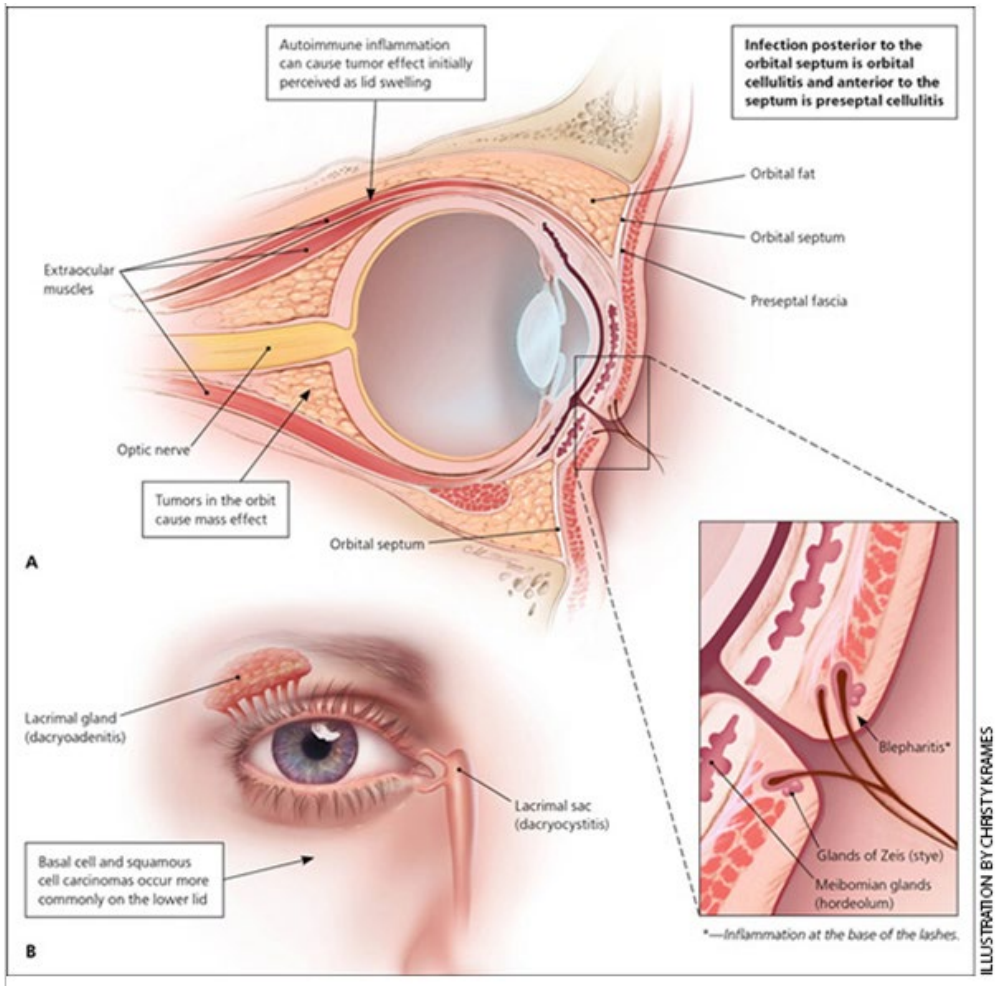
Orbital (post septal) cellulitis: arises from infection of the paranasal sinuses, dental abscess or orbital trauma – can lead to loss of vision

Examination:

Assess for reduced vision, limited or painful eye movements, diplopia, proptosis or chemosis +/- systemically unwell

Management:

Urgent referral to ED, IVABs, CT scan orbits and sinuses



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Carlisle RT, Digiovanni J. Differential Diagnosis of the Swollen Red Eyelid. Am Fam Physician. 2015 Jul 15;92(2):106-12

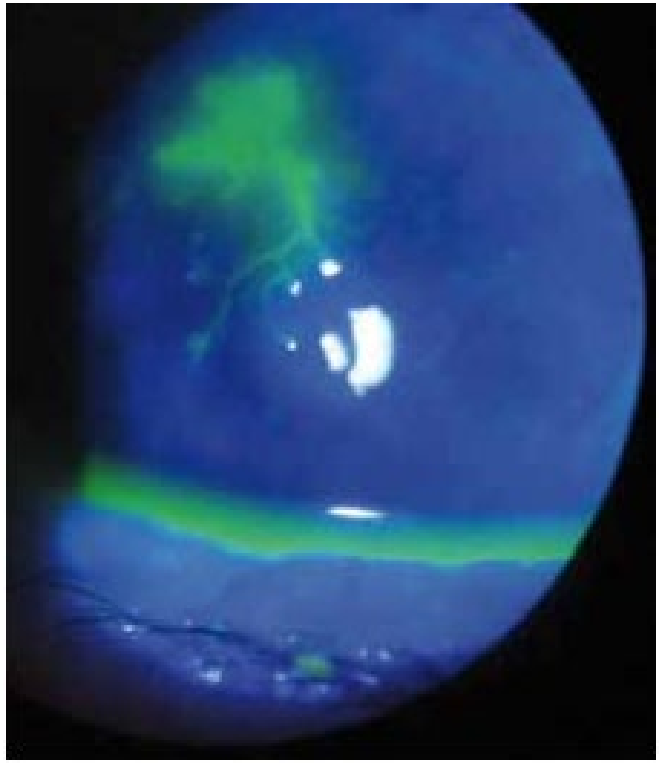
Case 4

Jim Stevens, a 75 year old male, presents with a red, painful, watery right eye of 1 week duration. He has found the light too bright to look at, but denies blurred vision. He saw the pharmacist 5 days ago and was commenced on chlorsig drops, but there has been no improvement in his symptoms. Fluorescein staining shows the following findings.

What is the most likely diagnosis?

What are the next steps in management?

What are the potential ocular complications of this condition?



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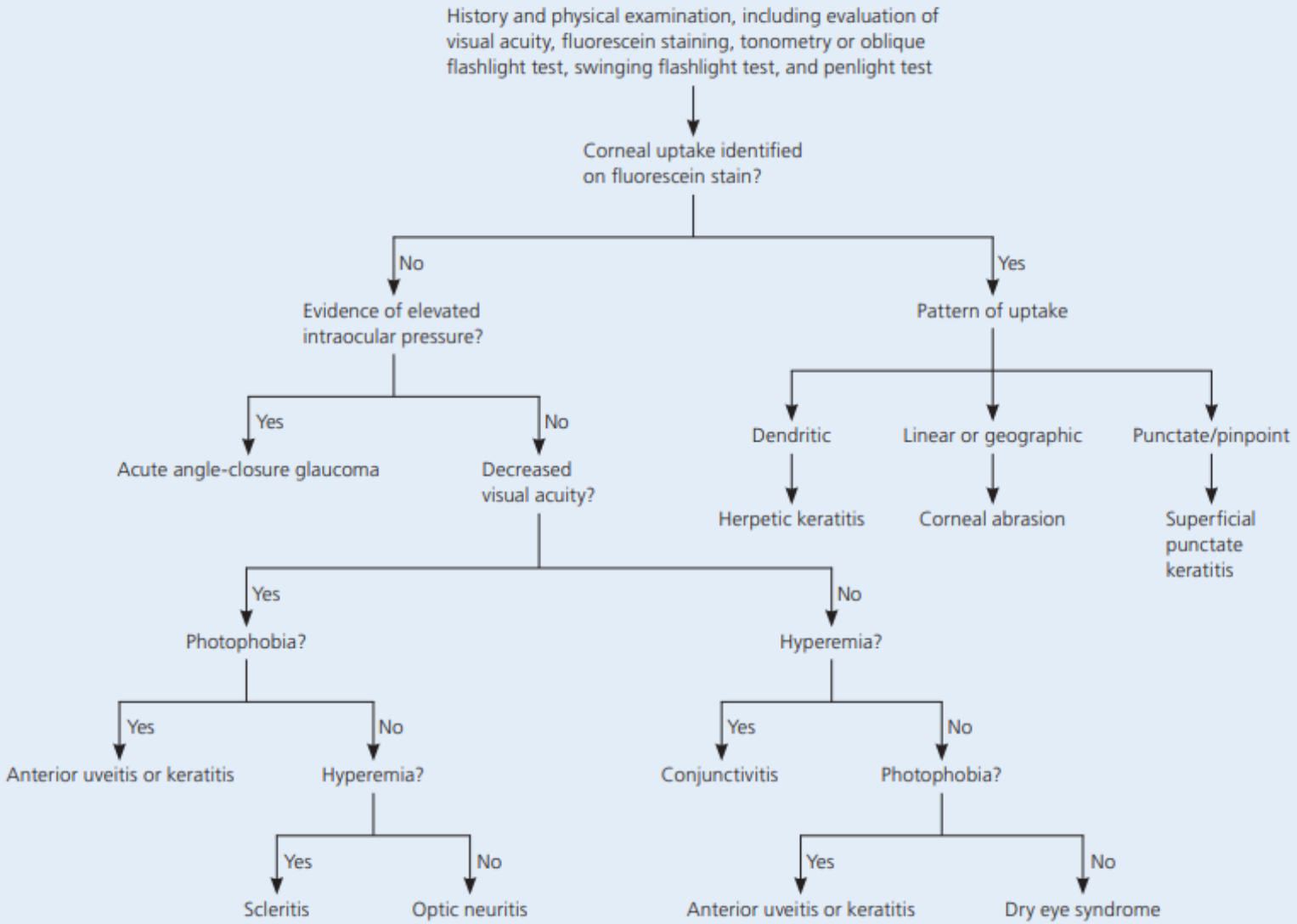
Diagnosing the Cause of Eye Pain



https://www.aafp.org/afp/2016/0615/afp20160615p991.pdf

HSV dendritic ulcer

Management:

- Referral to Ophthalmology
- Topical acyclovir ointment
- Infection control measures

NB: Do not use steroid drops in this condition

Corneal HSV infection may be complicated by the following conditions:

- disciform keratitis
- uveitis
- raised intraocular pressure
- vitritis
- retinitis (may lead to total visual loss).

Sharma NS, Ooi JL, Li MZ. A painful red eye. Aust Fam Physician. 2009 Oct;38(10):805-7

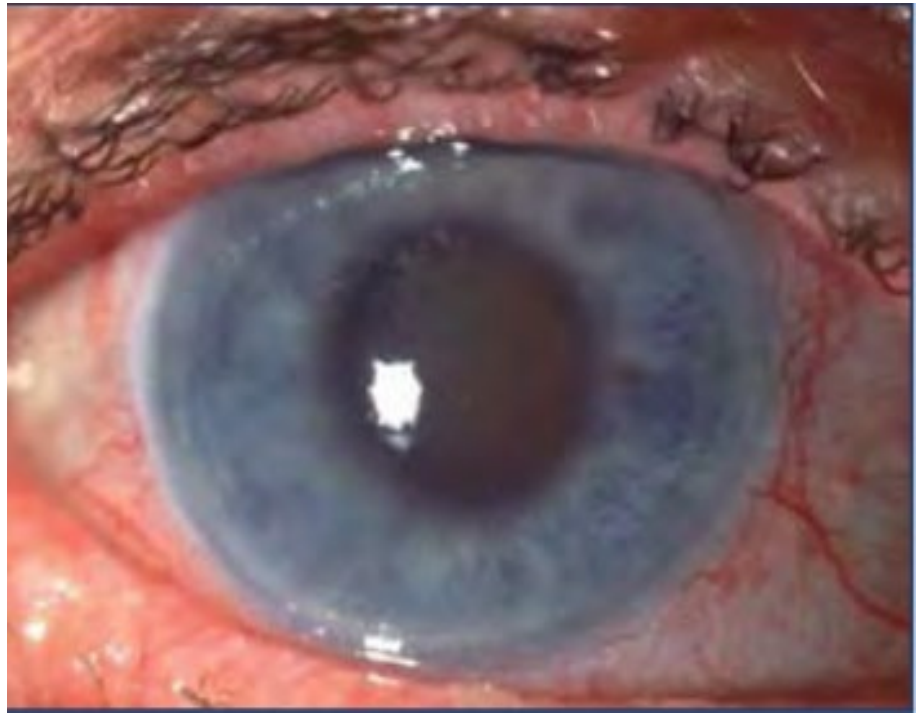
Case 5

Fred Mcintosh, aged 65 years, presents to your rural ED with an acute onset of severe right eye pain, blurred vision, haloes around lights and vomiting.

What is the most important diagnosis to consider for Fred's presentation?

What are the risk factors for this condition?

What are the immediate management actions for Fred's presentation?



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Acute angle closure glaucoma

- Increased Intraocular Pressure (IOP) caused by an anatomical block of the aqueous drainage from the eye.
- Patients are typically >50, F>M, long sighted and there may be a family history

Examination:

Reduction in visual acuity, injected eye, hazy cornea, pupil mid dilated and eyeball is tender and firm to palpation (raised IOP)

Management:

Urgent referral to tertiary hospital for Ophthalmology review

Consider Acetazolamide IV, timolol and pilocarpine drops on discussion with Ophthalmology team

Hodge C, Lawless M. Ocular emergencies. Aust Fam Physician. 2008 Jul;37(7):506-9

Case 6

James Smith, aged 34 years, presents as an urgent fit in with decreased vision, eye pain and watery eye for the last 2 hours after spraying fertiliser in his backyard. His visual acuity on presentation is reduced, and on examination he has swollen upper and lower eye-lids, conjunctival injection, and an opaque cornea.

What are the immediate management actions for James presentation?

Gelston CD, Deitz GA. Eye Emergencies. Am Fam Physician. 2020 Nov 1;102(9):539-545.

Immediate management

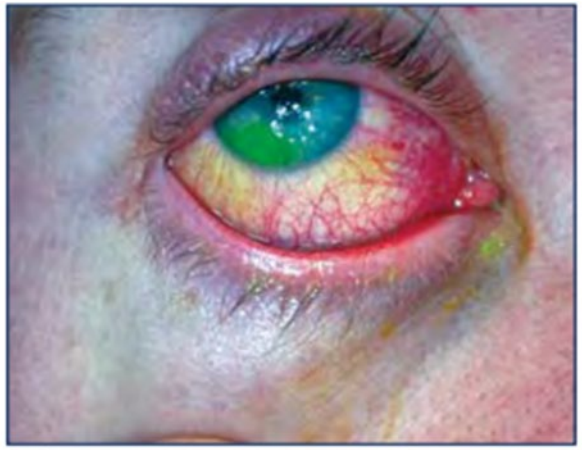

Fig 1 Acute alkali chemical injury: mild-moderate

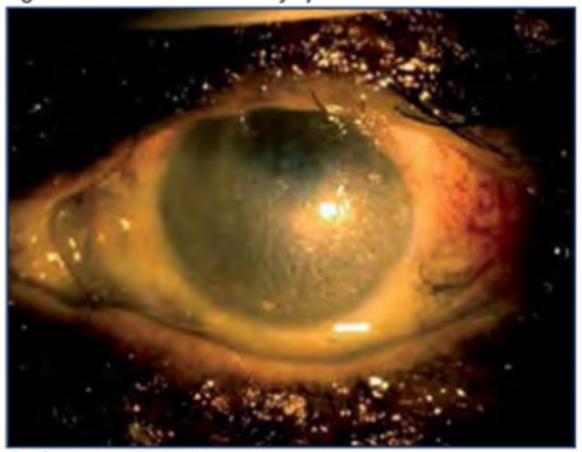

Fig 2 Acute alkali chemical injury: severe

Chemical Burns

ATS CATEGORY 2 (ASSESS & TREAT WITHIN 10 MINS)

IMMEDIATE - EYE IRRIGATION FOR CHEMICAL BURNS

1. Instil local anaesthetic drops to affected eye/eyes.
2. Commence irrigation with 1 litre of a neutral solution, eg N/Saline (0.9%), Hartmann's.
3. Evert the eyelid and clear the eye of any debris / foreign body that may be present by sweeping the conjunctival fornices with a moistened cotton bud.
4. a. Continue to irrigate, aiming for a continuous irrigation with giving set regulator fully open.
   b. If using a Morgan Lens, carefully insert the device now.
5. Review the patient's pain level every 10 minutes and instil another drop of local anaesthetic as required.
6. a. After one litre of irrigation, review.
   b. If using a Morgan Lens, remove the device prior to review.
7. Wait 5 minutes after ceasing the irrigation fluid then check pH. Acceptable pH range 6.5-8.5.
8. Consult with the senior medical officer and recommence irrigation if necessary.
9. Severe burns will usually require continuous irrigation for at least 30 minutes.

ALL CHEMICAL BURNS REQUIRE AN URGENT OPHTHALMOLOGY CONSULT BY PHONE

Refer to manufacturer's instructions if using Morgan Lens

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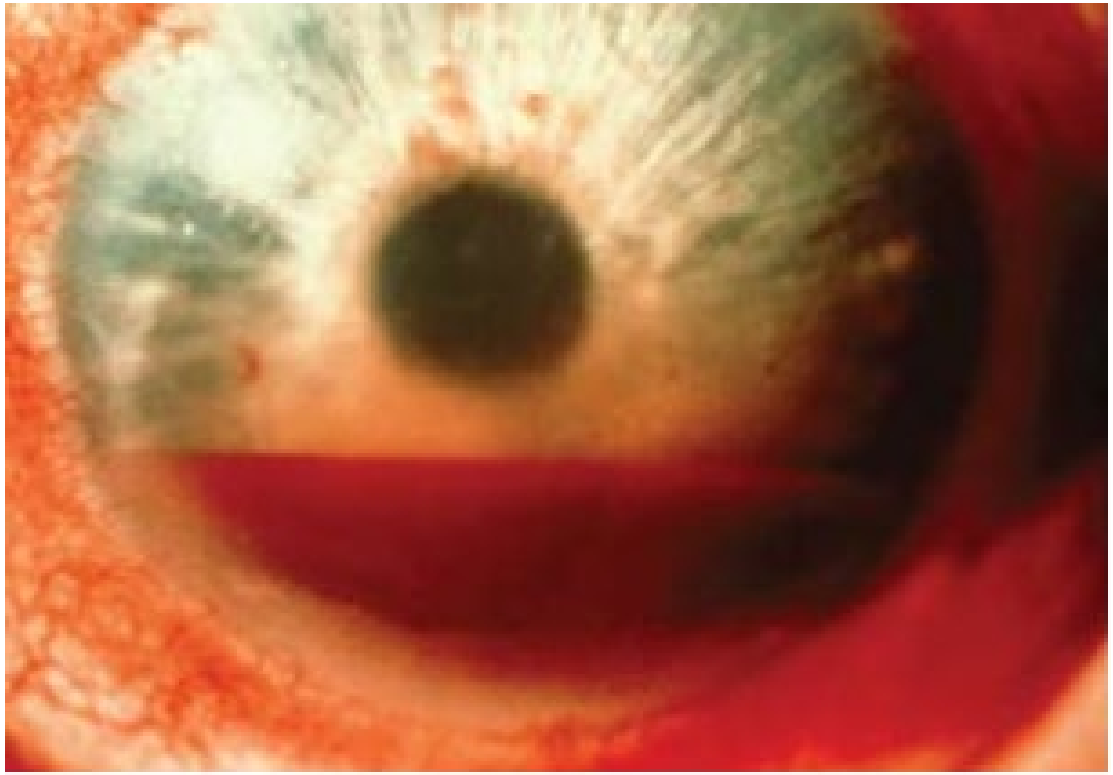
Case 7

- David is a 24 year old male that presents to your clinic on a Saturday afternoon after being hit in the eye by a cricket ball.

What is the most likely diagnosis for David's presentation?

What are the immediate management actions for David's presentation?



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Hyphaema

- Hyphaemas may cause decreased visual acuity, photophobia, and eye pain, but no discharge. Patients with a hyphaema require assessment for penetrating eye trauma
- Can lead to further ocular complications such as raised Intraocular pressure (IOP)
- Hospitalisation required for:
    - High IOP
    - Hyphaema fills >50% anterior chamber
    - Children

Table 1. Classification of blunt trauma and treatment action

	Mild	**Moderate**	**Severe**
Visual acuity	Better than 6/12	6/12 to 6/24	Worse than 6/24
Hyphaema	No	Micro	Macro
Pupil abnormal	No	Dilated	Defect
Action	Dilated fundus examination	Dilated fundus examination/eye shield	Eye shield
Referral	Within 48 hours and/or speak to tertiary referral for guidance	Within 24 hours Speak to tertiary referral for guidance	Immediate referral to hospital emergency department

Hodge C, Lawless M. Ocular emergencies. Aust Fam Physician. 2008 Jul;37(7):506-9.

Case 8

Sally Smith, aged 60, presents with new floaters in her right eye vision and a series of flashing lights. Over the last days she has also noted an enlarging black spot in her superior visual field.

What is the most important diagnosis to consider for Sally's presentation?

What are the risk factors for this condition?

What are the next management actions for Sally's presentation?

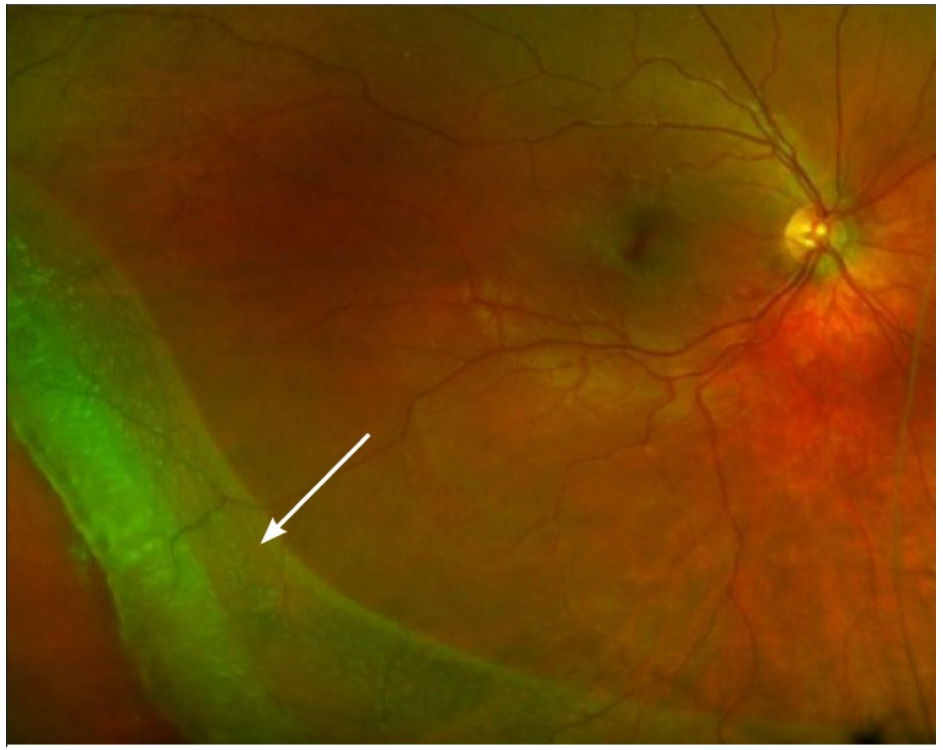
Retinal detachment

Risk factors:

Age >50, ocular trauma/surgery, myopia (short sightedness), family history and previous detachment in the other eye

Management:

Immediate Ophthalmology referral for surgical treatment (laser, intraocular gas or scleral bubble)



Gelston CD, Deitz GA. Eye Emergencies. Am Fam Physician. 2020 Nov 1;102(9):539-545.

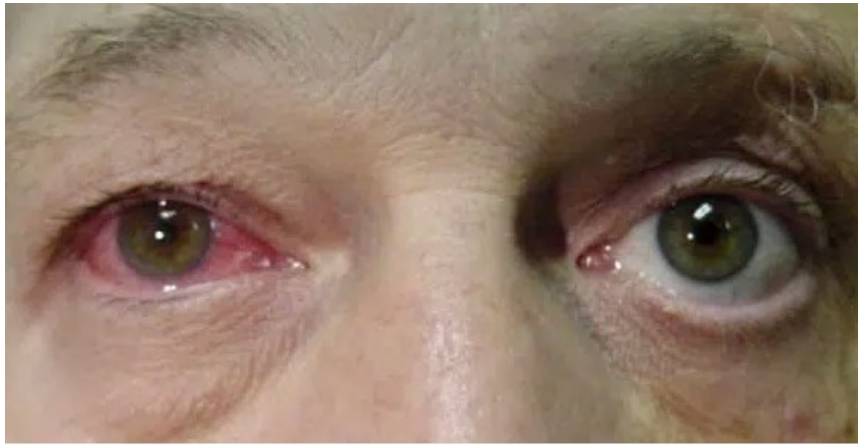
Case 9

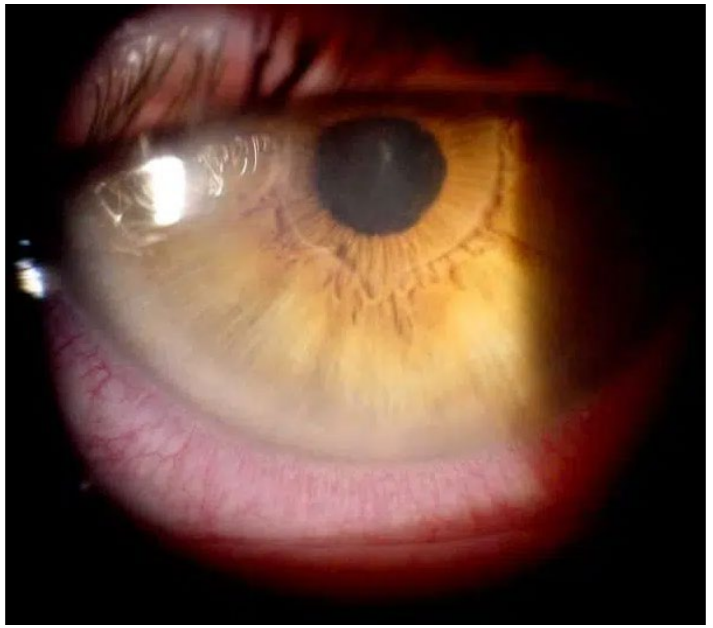
Steve Pearson, aged 60, presents with a 24hr history of a painful right eye, which is worse in bright light

What is the most important diagnosis to consider for Steve's presentation?

What underlying causes should be considered for this condition?

What are the next management actions for Steve's presentation?





https://litfl.com/the-aching-red-photophobic-eye/

Uveitis

Underlying causes:

- **Inflammatory** (HLA B27+ in 30-70% patients, spondyloarthropathies, sarcoid etc)
- **Traumatic** (traumatic iritis – blunt trauma)
- **Infectious** (parasitic, viral, bacterial)
- **Drug induced**

Management:

- Urgent referral to ophthalmology
- Seek and treat underlying cause
- Combination therapy with phenylephrine, atropine and steroid drops +/- systemic steroids/immunosuppressants depending on underlying cause

https://litfl.com/the-aching-red-photophobic-eye/

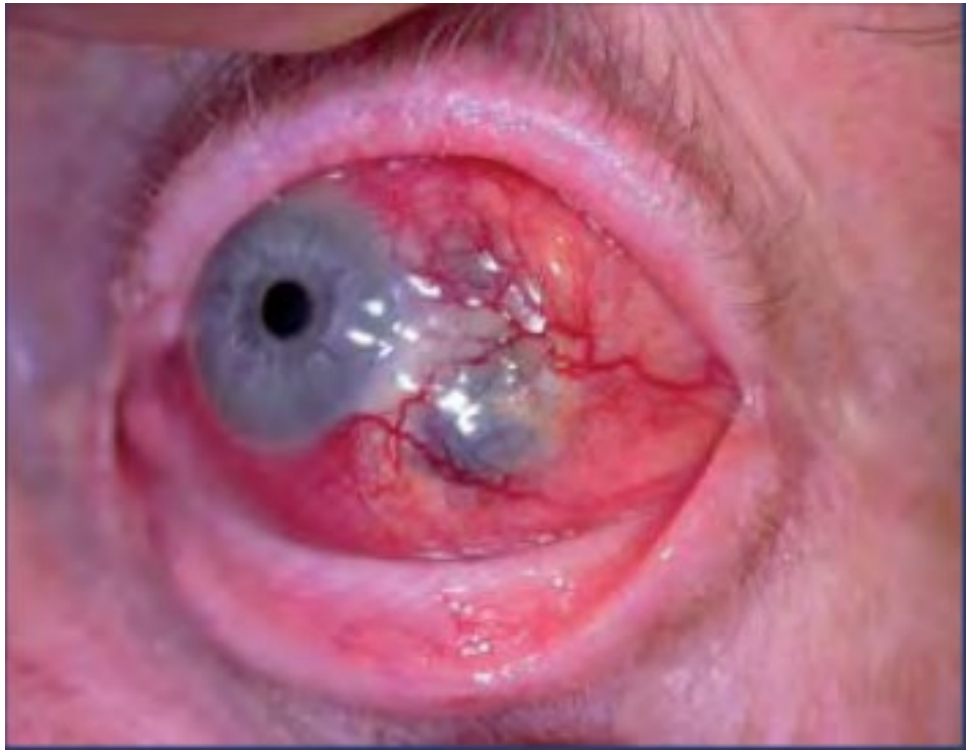
Case 10

Janet Crossman, aged 78, presents with a 2 week history of severe left eye pain and associated redness. The pain had gradually worsened over that time to a sharp, stabbing quality. She also describes photophobia, blurry vision and eye irritation.

What is the most important diagnosis to consider for Janet's presentation?

What underlying causes should be considered for this condition?

What are the next management actions for Janet's presentation?



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https://eyewiki.aao.org/Scleritis

Scleritis

Causes:

Systemic diseases, such as rheumatoid arthritis, Wegener granulomatosis, reactive arthritis, sarcoidosis, inflammatory bowel disease, syphilis, tuberculosis

Management:

Urgent referral to ophthalmology for confirmation of diagnosis, ocular and systemic workup, systemic immunosuppression or antibiotics depending on the aetiology

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Lu SJ, Lee GA, Gole GA. Acute red eye in children: A practical approach. Aust J Gen Pract. 2020 Dec;49(12):815-822

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Questions