HealthPathways Melbourne

Putting knowledge into practice

CASE STUDY 14:

HealthPathways Melbourne assistance with ophthalmology

Tom is 30 years old and presents to his local GP clinic with a four-day history of a painful right eye. He reports that a week ago he was dancing in a mosh pit at a music festival when his girlfriend accidentally poked him in the eye with her fingernail. The discomfort was initially significant, but quickly settled into a minor irritation. Two days later he awoke with more severe pan in the same eye that has gradually worsened since.

The GP initially suspects Tom has a corneal abrasion but opts for a more general symptomatic approach rather than immediately consulting the Trauma in Eyes or Corneal Ulcers and Abrasians pathways. She opens the Red Eye pathway to assess and consider a range of possible diagnoses.

She discovers that Tom is a contact lens wearer with no other past medical history. He uses two-weekly disposable lenses during the day and usually stores them in solution overnight, but while at the music festival, he accidentally slept in them. His symptoms include progressively worsening pain in the right eye, blurred vison, photophobia, and a newly developed discharge.

The Red Eye pathway proves particularly useful, providing guidance for a succinct eye examination (including revelant photographic and video tips) which she completes.

Tom's right conjunctiva is diffusely injected and there is a yellow purulent discharge.

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CASE STUDY 14:

His pupils are symmetrical in shape, size and reaction to light, but his red reflex seems slightly more dull on the right, suggesting possible corneal haze. His best corrected visual acuity is reduced in the right eye (6/18, compared to 6/6 in the left) with no improvement using a pinhole occluder.

Due to Tom's obvious discomfort, the GP instils topical anesthetic drops as described in the Red Eye pathway before examining the cornea with fluorescein and the blue light filter on her ophthalmoscope.

2. Perform examination:

- If history suggestive of penetrating eye injury, do not examine or instil any topical anaesthetic drops, as this may cause further injury.
- Assess pupil shape, symmetry, and reaction.
- Check visual acuity.
- If vision is watery or patient is in pain, instil topical anaesthetic drops and retry. This should only be done if confident there is no penetrating eye injury.

Topical anaesthetic

Consider instilling local anaesthetic into both eyes as this reduces blepharospasm:

- Topical tetracaine 1%, or
- Topical oxybuprocaine 0.4%.

Both take approximately 20 seconds for onset of action and last up to 20 minutes, but tetracaine may have a longer initial sting on application (30 seconds, compared with 10 seconds for oxybuprocaine).

Prior to using, see Australian Medicines Handbook or a similar authoritative source.

A central area of corneal opacification with corresponding fluorescein straining is revealed, but no foreign bodies or hypopyon are seen.

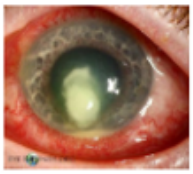
Using the linked Keratitis pathway, the GP confirms that the history and examination findings are consistent with possible microbial keratitis, which she knows is potentially sight-threatening if not treated properly.

- Microbial keratitis ^ – any patient who wears contact lenses and develops a red, painful eye must be assumed to have microbial keratitis.

Microbial keratitis

- Typically presents with a 1 to 3 day history of red eye, moderate to severe pain (progressive), photophobia and lid oedema. May also have mucopurulent discharge and blurred vision.
- Examination may show an area of corneal opacification with a matching area of fluorescein staining, reduced visual acuity, and/or hypopyon (if severe).
- The usual cause is contact lens wear. but it can also be a result of corneal injury, a compromised ocular surface (e.g., dry eye, facial nerve palsy), or having an immunocompromising condition.
- A helpful mnemonic to distinguish between microbial keratitis and other non-infective conditions is PEDAL - microbial keratitis is more likely in the presence of:
  - Pain
  - Epithelial defects
  - Discharge (purulent)
  - Anterior chamber reaction (uveitis, hypopyon)
  - Location – central changes

See Keratitis.



Keratitis (the white infiltrate in the cornea) and a hypopyon

Source: EyeRounds

Following the Acute Ophthalmology Referral pathway, the GP speaks to the on-call ophthalmology registrar at the closest public hospital and Tom is sent for a same-day specialist assessment. Because there is likely to be a delay of more than two hours before he is seen and a corneal scrape and culture is performed, the ophthalmology registrar agrees that the GP should collect a swab for bacterial culture and viral PCR and commence topical antibiotics as advised in the Keratitis pathway.

CASE STUDY 14:

Tom is also advised to to not wear his contact lenses, but to take them and their container with him to the hospital for culturing.

Management

1. Refer for early (within 24 hours) optometry or ophthalmology assessment and management, as the extent of corneal involvement will influence the treatment needed.
    - If significantly reduced vision, severely painful red eye or corneal opacification, seek urgent ophthalmology advice.
    - If a contact lens wearer, advise the patient to not use their contact lenses and to take their current lenses and container with them for culturing.
2. If microbial keratitis is suspected and a delay of > 2 hours to specialist assessment with corneal scrape and culture is likely, seek urgent ophthalmology advice.
    - Note that the specialist may recommend collecting a swab for bacterial culture and viral PCR, then initiating topical antibiotics for microbial keratitis ^.

> **Topical antibiotics for microbial keratitis**
>
> Ofloxacin eye drops (0.3%), 1 drop hourly into affected eye day and night until review (within 48 hours).
>
> Be aware that, due to emerging resistance, quinolones such as ofloxacin should be reserved for highly probable or confirmed cases of microbial keratitis (under supervision by, or following discussion with, an ophthalmologist).
>
> Prior to prescribing, see Australian Medicines Handbook or a similar authoritative source.

Two months later, Tom returns to the GP fully recovered from his microbial keratitis. This time he is accompanied by his 78-year-old grandmother, Flo, who has been experiencing a vision problem. She is having trouble with things such as faces and the television in the centre of her vision, and is also having trouble reading in low lighting. Because Flo's mother and aunty both "went blind from the macula", Flo is scared and hasn't been willing to see an optometrist, but eventually agreed to see the GP after Tom raved about his recent eye care at the clinic.

Consulting the Macular Degeneration pathway, the GP identifies multiple risk factors for the conditon in Flo's history including a family history of age-related macular degeneration (AMD), age more than 55 years, hypertension and smoking.

Visual acuity assessment reveals a reduction in both eyes that is not improved with the use of a pinhole occluder (left 6/18, right 6/24). The GP shows Flo an Amsler grid downloaded from the link on the pathway and an area of wavy lines is noticed in the centre when she looks at it with either eye, despite wearing her reading glasses.

At this point in the consultation, the GP is mindful from reading the pathway that ocular coherence tomography (OCT) performed by an eye care specialist is the gold standard for diagnosing AMD and determining the stage of the disease according to the new Beckman classification.

If competent, perform fundus examination and consider the stage of AMD present using the Beckman classification. However, be aware that ocular coherence tomography (OCT) is the gold standard investigation for diagnosing and monitoring age-related macular degeneration (AMD). This test will be performed by an optometrist or treating ophthalmologist.

Beckman classification

AMD classification	Definition
No apparent ageing changes	No drusen and no AMD pigmentary abnormalities
Normal ageing changes	Only small drusen (≤ 63 micrometres) and no AMD pigmentary abnormalities
Early AMD	Medium drusen (> 63 micrometres and ≤ 125 micrometres) and no AMD pigmentary abnormalities
Intermediate AMD	Large drusen (> 125 micrometres) or any AMD pigmentary abnormalities with medium or large drusen (> 63 micrometres)
Late AMD	Neovascular AMD (nAMD) and/or geographic atrophy (GA)

After the GP explains what AMD is, the supports available, and the changes in treatment since her mother and aunty suffered with the condition (as outlined in the pathway), Flo accepts a referral to the local optometrist for a full assessment.

CASE STUDY 14:

The GP uses the Optometry Referral pathway to guide her. She also advises Flo that if late AMD with certain features is identified (neovascular AMD), the optometrist will likely refer her to an ophthalmologist for further assesment and treatment as per the Statewide Referral Criteria referenced in the Non-Acute Ophthalmology Referral pathway.

Public Hospitals

1. Check the statewide referral criteria relevant to your patient.

Statewide referral criteria

Patients referred to specialist clinics are assigned to a priority category based on their clinical need and related psychosocial factors. The clinician reviewing the referral will use their clinical judgement to determine the best service response for the patient. Note that the criteria are not exhaustive and that referrals for conditions not covered in the criteria may still be accepted.

- Age-related macular degeneration
- Assessment for cataract surgery
- Corneal conditions
- Diabetic eye disease
- Glaucoma

The GP encourages Flo to return for a review in one week to discuss the outcome of the optometry appointment, explore support options and address her modifiable risk factors such as hypertension and smoking.

Do you have a case study?

If you would like to be involved, submit a case study, or for more information email info@healthpathwaysmelbourne.org.au