Sudden or Recent Vision Loss

Disclaimer

COVID-19 note

The Royal Australian and New Zealand College of Ophthalmologists (RANZCO) and The Royal Australian College of General Practitioners (RACGP) have made recommendations regarding eye examination during the COVID-19 pandemic. See RANZCO – COVID-19: Practical Guidance for General Practitioners Performing Eye Examinations.

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Red Flags

- Recent profound vision loss with an afferent pupillary defect
- History of sudden and profound vision loss within the last 12 hours
- Visual field defects affecting both eyes
- Giant cell arteritis

Background – About Sudden or Recent Vision Loss

Sudden or recent vision loss can be due to either disorders of the eye or a lesion along the optic tract. Disorders of the eye which may cause sudden or recent vision loss include:

- vitreous haemorrhage
- retinal detachment
- central retinal artery occlusion (CRAO)
- central retinal vein occlusion (CRVO)
- giant cell arteritis (GCA)
- optic neuritis
- acute angle closure glaucoma

Assessment

1. Take a history:
   - If symptoms of long duration or uncertain onset, or intermittent, consider a non-acute cause (e.g., cataract, which may be discovered by chance when one eye is covered).
   - Consider associated symptoms.

Associated symptoms

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Possible diagnosis</th>
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</thead>
<tbody>
<tr>
<td>Floaters or flashes</td>
<td>Retinal detachment</td>
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<tr>
<td>Painful eye:</td>
<td></td>
</tr>
<tr>
<td>- Sharp</td>
<td>Acute angle closure glaucoma</td>
</tr>
<tr>
<td>- Dull</td>
<td>Optic neuritis</td>
</tr>
<tr>
<td>- Boring</td>
<td></td>
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<tr>
<td>- Worse with eye movements</td>
<td></td>
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<tr>
<td>Headache jaw claudication</td>
<td>Giant cell arteritis</td>
</tr>
<tr>
<td>Halos around lights, nausea</td>
<td>Acute angle closure glaucoma</td>
</tr>
</tbody>
</table>
Exclude history of trauma.
Consider previous medical conditions.

**Medical conditions**
- **Stroke, TIA, retinal vascular occlusion**
- **Macular degeneration**
- **Temporal arteritis**
- **Diabetes**
- **Previous eye surgery**
- **Previous eye trauma**
- **History of glaucoma (open angle or acute angle-closure)**
- **Refractory status:**
  - high myopia has a higher risk of retinal detachment
  - high hyperopic has a higher risk of acute angle-closure glaucoma
- **Genetic conditions – i.e. Marfan syndrome increases risk of lens subluxation and retinal detachments**

If vision recovers after a few minutes, or even a second or two, assess according to **Transient Monocular Vision Loss**.

2. Examine the patient:
   - Perform **eye examination**.

**Eye examination**
1. Test vision with usual glasses and pinhole. If pinhole vision is good, send to [optometrist](mailto:optometrist) for glasses or cataract assessment.
2. Look for red reflex and cataract.
3. Test for relative afferent pupillary defect (RAPD) – swinging flashlight test. See [How to Examine RAPD](#) [video, 2 minutes, 29 seconds].
4. **Visual field to confrontation.**
   1. Remind patient to keep looking at your face or nose during the test.
   2. Ask the patient to cover one eye with the palm of their hand.
   3. Present targets into 2 quadrants of the patient’s vision each time i.e., lateral, upper, and medial lower or upper.
   4. Ask the patient to count the number of fingers or identify when a finger begins to move. Keep your hand still until their attention is on your face as this will help ensure that the test is accurate.
   5. Shift your hands to 2 more quadrants until all are tested or retested if the response was uncertain.
   6. Ask the patient to swap hands to the other eye and repeat.
   7. Write down findings after each eye to avoid confusion.

5. **Examine fundus** (optic discs, vessels, peripheral retina, macula) – check for [glaucoma optic nerve head signs](#).
Examine fundus
1. Dim lights.
2. Ask patient to look to a high point on the wall, a picture, door, or window frame.
3. Look through ophthalmoscope at arm’s length to see red reflex, and follow this as you move towards the patient. When you are very close you’ll see the disc and retina.
4. If any significant haemorrhage, ask the patient to look at your light. This represents the very central vision.

➢ Establish the pattern of any visual field loss.

Pattern of visual field loss
The pattern of visual field loss is determined by the site of the lesion along the optic tract:
• Monocular vision loss implies a disorder of the optic tract anterior to the optic chiasm i.e., the eye or the optic nerve.
• Bitemporal visual field loss indicates a chiasmal lesion.
• A homonymous hemianopia or a quadrantanopia indicates a retrochiasmal lesion.

Quadrantanopia
o Superior quadrantanopia – results from a lesion or insult to the optic radiation inferiorly in the temporal lobe.
o Inferior quadrantanopia – results from a lesion or insult to the parietal lobe optic radiation.

Homonymous hemianopia
A loss of the right or left halves of the visual field in both eyes.
o The most common visual field loss – usually the result of a middle cerebral or posterior cerebral artery stroke.
o May present with central (macular) sparing.

➢ Apply fluorescein and examine with blue light to exclude inflammatory and/or infective processes of the cornea leading to decreased vision.

➢ Check pulse, blood pressure, and for carotid bruits if atrial fibrillation or suspected retinal artery occlusion.

➢ Check for temporal artery tenderness.

3. Consider differential diagnosis:
➢ Disorders of the eye:
   • Acute angle-closure glaucoma
   • Retinal detachment
   • Vitreous haemorrhage

Vitreous haemorrhage
May occur in diabetic patients, especially those with:
o known retinopathy.
o central retinal vein occlusion.
Disorder of the optic nerve:

- **Optic neuritis**

  **Optic neuritis**
  
  - Patients aged 17 to 50 years. Outside these boundaries, optic neuritis due to demyelinating disease is extremely unlikely.
  
  - Progressive onset of poor vision over 1 to 2 weeks (usually 6/30 to 6/60, but may be as bad as vision loss of hand movements), unilateral.
  
  - Some patients experience retro-ocular pain, especially on attempted eye movement.
  
  - Examination shows positive relative afferent pupillary defect (RAPD) and colour desaturation.
  
  - It is uncommon to see swelling of the optic nerve head in demyelinating disease. However post viral infection, vasculitis, and cat scratch disease, especially in younger patients may cause optic swelling with haemorrhages.
  
  - The cornea and lens are normal i.e., normal red reflex.
  
  - A red eye, diplopia, abnormal eye movements, proptosis, or ptosis suggest other diagnoses.

- **Anterior ischaemic optic neuropathy** (older patients)

  **Anterior ischaemic optic neuropathy**
  
  An infarction of the anterior part of the optic nerve:
  
  - Non-arteritic is associated with age, hypertension, and phosphodiesterase inhibitors e.g., Viagra.
  
  - Arteritic can be caused by giant-cell arteritis (GCA) or other rare causes of vasculitis.

- Chiasmal lesion which produces a bitemporal visual loss

- **Retrochiasmal lesion**

  **Retrochiasmal lesion**
  
  A homonymous hemianopia
  
  - A loss of the right or left halves of the visual field in both eyes.
    - The most common visual field loss – usually the result of a middle cerebral or posterior cerebral artery stroke.
    - May present with central (macular) sparing.
  
  - Quadrantanopia
    - Superior quadrantanopia – results from a lesion or insult to the optic radiation inferiorkly in the temporal lobe.
    - Inferior quadrantanopia – results from a lesion or insult to the parietal lobe optic radiation.

- Vascular disorders:

  - **Symptoms and history suggesting giant cell arteritis (GCA)** – when vasculitis or arteritis causes arterial occlusion. Consider in any patient aged > 50 years.
**Giant-cell arteritis (GCA)**

Symptoms suggestive of giant-cell arteritis (GCA):

- Headache
- Jaw claudication
- Scalp tenderness
- Past history of GCA or polymyalgia rheumatica (PMR)

See [Giant-cell Arteritis](#).

- Central **retinal artery occlusion** – the most frequent cause of sudden, total vision loss

**Retinal artery occlusion**

- Rapid onset of severe and sudden, central or paracentral vision loss
- In elderly patients, most common cause is embolism arising from atheroma of carotid arteries
- Pale milky fundus with "cherry red" foveal spot

**Retinal vein occlusion**

- Vision loss may be severe, but onset is typically subacute compared to the sudden visual loss of central retinal artery occlusion.
- Patients often aged between 60 and 79 years.
- More common in patients with hypertension.
- The retinal veins are tortuous and dilated with a congested fundus (storm clouds), and there may be vitreous haemorrhage.

**Anterior eye**

- Keratitis – viral, bacterial or fungal
  - Red eye, painful, tearing and irritated
  - Fluorescein uptake present
- Hyphema – can be spontaneous in diabetes
  - Blood in the anterior chamber
  - Can lead to dangerous increase in intraocular pressure (IOP)
- Lens subluxation/luxation
- Iritis – red, painful light sensitivity

- Space-occupying lesion exerting pressure on part of the optic tract
- Non-organic cause e.g., conversion disorder, malingering – consider only after a complete neuro-ophthalmic examination
Management

Practice Point

Consider sudden persistent loss of vision

All presentations of sudden persistent loss of vision require prompt ophthalmology advice.

1. If profound persistent loss of vision (e.g., of hand movements, light perception, worse) within the last 12 hours, seek ophthalmology advice as it indicates serious damage to the retina or optic nerve.
   - The most frequent cause is central retinal vessel occlusion, which may be treatable.
   - The patient must not drive themselves – arrange transportation by car or ambulance.

2. If diagnosis is clear, manage as per appropriate pathway e.g., giant cell arteritis (GCA), macular disease, retinal detachment, acute glaucoma, cataract, iritis (anterior uveitis), keratitis.

3. If visual field defect:
   - Bilateral (i.e., likely neurological cause) – arrange immediate neurology referral or admission for urgent neuro-imaging.
   - Bitemporal – arrange an MRI scan, not CT brain scan.
   - Homonymous hemianopia or quadrantanopia in:
     - an older patient, or a patient with vascular risk factors – treat as stroke and arrange immediate neurology referral or admission.
     - a younger patient, or a patient with minimal risk factors for a stroke – consider arranging a CT brain scan, as there may be a cerebral lesion.
   - If uncertain about which visual field defect is present, arrange urgent or routine ophthalmology referral or optometry referral, and consider also requesting an automated visual field test.

4. If mild, non-acute reduction in vision without any relevant past ocular history, consider optometry referral.

5. If vision improves to 6/9 or better with pinhole, advise the patient to see an optometrist for glasses.

6. For further advice, seek ophthalmology advice.

7. If suspected non-organic cause, refer for formal vision testing from optometrist and consider urgent or routine ophthalmology referral to rule out other causes of vision loss.

Referral

- If sudden persistent loss of vision (e.g., of hand movements, light perception, worse) within the last 12 hours, seek ophthalmology advice.
- Arrange immediate neurology referral or admission if:
  - bilateral visual field defect.
- Homonymous hemianopia or quadrantanopia in an older patient, or a patient with vascular risk factors.

- If homonymous hemianopia or quadrantanopia in a younger patient, or a patient with minimal risk factors for a stroke, consider arranging a CT brain scan, as there may be a cerebral lesion.

- If bitemporal field defect, arrange an MRI scan.

- If uncertain about which visual field defect is present, arrange urgent or routine ophthalmology referral or optometry referral.

- Consider optometry referral:
  - Mild, non-acute reduction in vision without any relevant past ocular history.
  - Vision improves to 6/9 or better with pin hole.

- For further advice, seek ophthalmology advice.

- If suspected non-organic cause, refer for formal vision testing from optometrist and consider urgent or routine ophthalmology referral to rule out other causes of vision loss.

**Information**

**For health professionals**

**Further information**
- BMJ Learning – Acute Painless Loss of Vision: Diagnostic Picture Tests [requires paid login]
- GP Eyes – Monocular Vision Loss [requires subscription]
- Patient – Visual Field Defects
- RACGP – Sudden Loss of Vision: History and Examination
- YouTube – How to Examine RAPD [video, 2 minutes and 28 seconds]

**For patients**
- MSD Manual – Vision Loss, Sudden
- Patient – Visual Problems

Disclaimer

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