Unexplained Vision Loss: Where Do I Go From Here

Denise Goodwin, OD, FAAO
Coordinator, Neuro-ophtalmic Disease Clinic
Pacific University College of Optometry
goodwin@pacificu.edu

Objectives
- Know the importance of diagnosing and managing visual loss
- Be familiar with characteristics that help localize the cause of visual loss
- Be able to differentially diagnose the causes of visual loss

History
- Onset
- Location/laterality
- Timing
- Associated symptoms
- Ocular history
- Systemic illness
- Medications

Drug Induced Vision Loss
- Uveitis
  - Bisphosphonates (e.g. Fosamax)
- Cataracts
  - Corticosteroids
  - Thorazine
- Maculopathy
  - Chloroquines
  - Tamoxifen
  - Phenothiazines (e.g. thoridazine)
  - Canthaxanthin
  - Interferon-alpha
  - Niacin
  - Statins
  - Gabapentin

Characteristics Possible Diagnoses
- Duration of seconds Dry eye; increased intracranial pressure
- Duration of 1-10 minutes Amaurosis fugax
- Gaze evoked vision loss Tumor at orbital apex
- Scintillations lasting 20-30 minutes Migraine aura
- Complete recovery over 4-6 weeks Demyelinating optic neuritis
- Slowly progressive loss Compressive optic neuropathy
Drug Induced Vision Loss

- Optic neuropathy
  - Ethambutol
  - Isoniazid
  - Amiodarone
  - Erectile dysfunction agents
  - Topiramate (angle closure glaucoma)

- Pseudotumor cerebri
  - Levothyroxine
  - Isotretinoin
  - Tetracycline
  - Amiodarone
  - Contraceptives
  - Lithium
  - Corticosteroids
  - NSAID (ibuprofen)

Examination

- Monocular visual acuities
- Pinhole
- Contrast sensitivity
- Color vision
- Pupils
- Visual fields
- Biomicroscopy
- Fundus exam

- 64 yo diabetic white male
- BCVA: 20/25-1 OD, 20/20 OS
- PIP: 9/17 OD, 16/17 OS
- Pupils: equal, reactive, no RAPD
Additional Testing
- Topography
- Photostress recovery test
- Optical coherence tomography
- Electrodiagnostic testing
- Autofluorescent imaging
- Neuroimaging

60 arcminutes
30 arcminutes
25 arcminutes
Potential Causes

- Media opacities
- Retinal abnormalities
- Neurologic disease
- Functional disorders

Media Opacities

- Tears
- Cornea
  - Edema
  - Keratoconus
- Anterior chamber
  - Uveitis
  - Angle closure glaucoma
- Lens: cataract
- Vitreous
Retinal Abnormalities

- Vascular insufficiency
  - Retinal artery occlusion
  - Ocular ischemic syndrome
  - Giant cell arteritis

Retinal Abnormalities

- Unilateral
  - Macular edema
  - Choroidal neovascularization
  - Epiretinal membrane
  - Macular hole
  - Retinal detachment
  - Acute zonal occult outer retinopathy

- Bilateral
  - Macular dystrophy
  - Toxic retinopathies
  - Paraneoplastic retinopathies
  - Solar retinopathy

<table>
<thead>
<tr>
<th>Feature</th>
<th>Macula Dysfunction</th>
<th>Optic Neuropathy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual acuity</td>
<td>Markedly reduced</td>
<td>Variable</td>
</tr>
<tr>
<td>Vision characteristics</td>
<td>Metamorphopsia Poor vision in bright and dim light</td>
<td>Central cloud Scotoma</td>
</tr>
<tr>
<td>RAPD</td>
<td>Absent</td>
<td>Present</td>
</tr>
<tr>
<td>Sense of brightness</td>
<td>Variable</td>
<td>Very reduced</td>
</tr>
<tr>
<td>Color vision</td>
<td>Slightly reduced</td>
<td>Very reduced</td>
</tr>
<tr>
<td>Refractive error</td>
<td>Possible hyperopic shift</td>
<td>Unchanged</td>
</tr>
<tr>
<td>Associated signs</td>
<td>Abnormalities with fundus exam, OCT, FA, or ERG</td>
<td>Proptosis Ptosis EOM problems</td>
</tr>
</tbody>
</table>

Neurologic Disease

- Papilledema
- Optic neuropathy
  - Demyelination
  - Toxic / nutritional
  - Hereditary
  - Compressive
  - Ischemic
Neurologic Disease

- Papilledema
- Optic neuropathy
  - Demyelination
  - Toxic / nutritional
  - Hereditary
  - Compressive
  - Ischemic

46 y.o. Hispanic male
- CC: Dry, irritated eyes
- OD: 20/15; OS: 20/30 NIPH
- Pupils: equal, reactive, no RAPD

Chiasm: tumor or aneurysm
- Retrochiasmal
  - Transient
    - Transient ischemic attack
    - Migraine
  - Persistent
    - Stroke
    - Trauma
    - Tumor
Neurologic Disease

- Chiasm: tumor or aneurysm
- Retrochiasmal
  - Transient
    - Transient ischemic attack
    - Migraine
  - Persistent
    - Stroke
    - Trauma
    - Tumor

27 y.o. white female
- CC: darkness on right side of vision a half hour previous
- 20/20 OD, 20/20 OS
- Pupils equal and reactive, no RAPD

Functional Vision Loss

- Finger to finger test
- Mirror test
- Stereoaucity
- Pupil testing
  - Tubular visual field
  - Cloverleaf pattern
- Optokinetic nystagmus
- Visual evoked potential

46 yo white female
- BCVA: HM OD, HM OS
- Pupils: physiologic anisocoria, briskly reactive to light, no RAPD
Thank you

Denise Goodwin, OD, FAAO
Coordinator, Neuro-ophthalmic Disease Clinic
Pacific University College of Optometry
goodwin@pacificu.edu