Neuro-ophthalmology Grand Rounds 2010

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Unexplained Visual Loss

Where is the problem?

- Refractive / Media
- Retina / Choroid
- Optic Nerve / Visual Pathway
- Nonorganic

The Drinking Dentist

CC: 60-yr-old Dentist c/o gradual bilateral blurriness.
PMH: hypertension
Social: 1 vodka martini/day
Dx: Tobacco-Alcohol Amblyopia
Told to stop drinking

VA: 20/60 OU N: J2 OU
Color: 10/10 HRR OU
Pupils: moderate, no RAPD
VF: normal
Fundus: normal DX: Tobacco-Alcohol Amblyopia?

Refractive / Media

Evaluation
- pinhole
- near vision
- retinoscopy/corneal topography
- direct ophthalmoscopy
- rigid contact lens over-refraction
- color vision
Neuro-op Secret Weapon

Central visual loss from optic neuropathy causes decreased color vision! Color not affected by refraction, media, retinal disease unless acuity < 20/200.

- Hardy-Rand-Rittler - more sensitive
- Ishihara

Effect of Refractive Error on Ishihara Testing

The Drinking Dentist

VA: 20/60 OU  N: J2 OU
Color: 10/10 HRR OU

Further Testing
Direct Ophthalmoscopy: blurry view
Potential Acuity Meter: 20/20 OU
Repeat SLE: oil drop cataracts

The Disabled Secretary

VA: 20/20 OU  N: J1+ OU
Otherwise normal exam
After Reading:
VA: 20/30 OU  N: J2 OU
20 minutes later: back to base line

Corneal Topography Before & After Reading

Summary - Refractive / Media

These are the easy ones!
But, they are often missed.

- pinhole, retinoscopy, corneal topography
- color vision, direct ophthalmoscopy
- rigid contact lens over-refraction

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Retina/Choroid

History

- “distorted” “crooked” “broken-up”
  are terms used to describe metamorphopsia, usually due to macular disease.
- tiny central scotoma also retinal

Retina/Choroid

Exam

- no or small RAPD
- Amsler grid

Exam Ancillary Studies

- FANG / ICG
- OCT
- ERG

57-yo-WF c/o peripheral vision loss after colonoscopy.
PMH: HTN, lung ca
EXAM

VA: 20/25 OU  Color: NL
Pupils: moderate, no RAPD
SLE: rare ant vit cell OU
Next Step?

**Cancer Associated Retinopathy (CAR)**
- rapid visual loss (peripheral first)
- positive visual phenomenon
- ring scotomas early
- vitreal cell / retinal vasc attenuation
- ERG abnormal
- anti-retinal antibodies

- 63 y/o c/o intermittent spots in his vision on and off for 3 months
- PMH – DM, HTN for 6 yrs
- Meds – Glucophage and Norvasc

- Vac – 20/20, 20/30
- Pupils: brisk, no RAPD
- Color, Amsler, HVF, motility: normal
- DFE – normal except for one small blot
  IRH temporal to fovea OS
• Started ASA 325mg bid
• Carotid duplex – minimal plaque RICA; 40% stenosis LICA
• Cardiac echo – normal
• Two Month f/u – No more amaurosis, 20/20 OU, IRH resorbed, HHP in distal location as before.

Andy Lee’s 1st rule of unexplained visual loss:

If referred by retinal service, the problem is always retinal.

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Relative Afferent Pupillary Defect (RAPD)

Most:
⇒ critical, objective
⇒ under-emphasized
⇒ over-delegated
Must get your doctor to check!
**RAPD**
- Dark room – Bright light
- 2 eyes, ≥1 working pupil
- Pt: fix at distance

**Secret Weapon!**
- HRR
- Ishihara

**Perimetric Strategies**
- Automated 24-2, 30-2
- Amsler grid
- Automated 10-2

**75-yr-old WF c/o difficulty reading since yesterday.**
**PMH:** Hypertension
**EXAM**
- VA: 20/20 OU  N: J1+ OU
- Color: NL  VF: CFx4 OU
- SLE: pcIOL OU
- Fundus: scattered drusen

**Humphrey 24-2**

**Humphrey 10-2** can pick up scotomas that fit between tested points on the 24-2.

Left superior paracentral homonymous hemianopic scotoma  Dx: occipital stroke
71-yr-old WM c/o difficulty reading x 4 months. Has seen 3 doctors and has 5(!) new pairs of glasses. Wife notes occasional clumsiness.

**EXAM**

VA: 20/20 OU      N: 20/20 OU
HVF 24-2 & 10-2: NL OU
Everything NL

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**Visual Variant of Alzheimer’s Disease**

- reading difficulties (90%)
- simultanagnosia (66%)
- spacial disorientation (56%)
- ocular apraxia (50%)
- homonymous VF defects (25%)

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**Unexplained Visual Loss**

Cerebral & Optic Nerve Conclusions

- Did I miss a RAPD?
- Is color vision normal?
- Did I do the correct visual field?
- Is there diffuse cerebral dysfunction?

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**Unexplained Visual Loss**

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28-yr-old WF c/o poor vision OS after being kicked in eye.
POH: HLA B27+ uveitis, h/o macular edema, best corrected VA 20/40
EXAM
VA: 20/40 OD, CF OS  Pupil: no RAPD
SLE/Fundus: NL   ????

Nonorganic
Approach depends on laterality & severity
Easy
• severe bilateral or unilateral
• moderate unilateral

Difficult
• mild, moderate bilateral
• non-organic overlay

Nonorganic
Severe bilateral visual loss
• observe ambulation
• sunglasses – red flag
• OKN drum

Nonorganic
Moderate – severe unilateral visual loss
• start with tiny letters
• DKR – “doctor killing refraction”
• gradual fogging in phoropter
• stereopsis – for decreased near vision
• vertical prism test

Nonorganic
The vertical prism test
• single Snellen letter, 2 lines bigger than best Va in good eye
• 4 PD prism placed base-down over good eye
• “What do you see?”
The vertical prism test

Conclusions

- simple & quick
- sees 2 letters – you got ‘em!
- sees 1 letter – look for etiology of visual loss

Our patient 20/40 OD, Count fingers OS

If vision is bad in one eye, 1 letter will be seen.

She saw 2 letters
46-yr-old WM c/o blurry vision OU for 2 months. Referring retina specialist notes pt looking at small pocket calendar - suspects nonorganic visual loss.

EXAM
VA: 20/60 OD, 20/200 OS
Pupils: no RAPD
SLE/Fundus: nl

If vision is bad in one eye, 1 letter will be seen.

Focal ERG shows abnormal macular response

60-yr-old BM c/o of poor vision since childhood, no changes noted.

PMH: HTN
Social: recently released from prison after 25 yrs

EXAM
VA: HM OU Pupils: brisk, no RAPD
VF: sees motion in all quadrants
Fundi/ERG: NL OKN drum: nystagmus
Follow-up

Pt returns for handicapped parking sticker.
Observed to drive away.

Unexplained Visual Loss
Summary

1. Where is the problem?
2. Use common tools: color vision, direct ophthalmoscopy
3. Get the correct visual field test.
4. Prove nonorganic! (vertical prism test)