“We are all but one case away from humility”

Edward W.D. Norton, MD
Bascom Palmer Eye Institute
CASE PRESENTATION #1

65 year-old female presents to her optometrist with four-day history of headache and two-day history of a droopy left eyelid.

PMH: Hypothyroid

POH: Amblyopic left eye, count fingers vision

MEDS: Synthroid
**Vision:** 20/20 right, count fingers left

**Left Lid:** with significant ptosis

**Pupils:** Left pupil is widely dilated and nonreactive, no APD

**Motility:** Left eye is down and out. No movement up, down, or in

**Fundus:** Discs sharp, normal retina OU

**Headache, Droopy Eyelid, Dilated Pupil, Motility Disturbance**
**DIAGNOSIS/TESTING**

**Diagnosis?**
Possible Left 3\textsuperscript{rd} Nerve Palsy

**What testing do you order?**

- MRI / MRA
- Blood glucose/chemistries/ESR/CRP
Oculomotor Nerve (CNIII) Palsy

Normal eye

Abnormal eye

Looking straight ahead

Ptosis
Inactivation of the levator palpebrae

Mydriasis
Decreased tone of the constrictor pupillae muscle

“Down and Out”
Unopposed left superior oblique and lateral rectus muscles
Results of Workup

**Results:** Blood sugar normal. Chemistries/ESR/CRP normal

**MRI/MRA:** All normal

**Family Physician & Optometrist:** send patient home
Few Days Later

No further diagnostic W/U or treatment undertaken

Stat Evaluation
A Definitive Diagnostic Procedure Was Performed

Stat Cerebral Angiography
Cerebral Angiogram

PCOM Aneurysm
Fusiform Aneurysm at junction of left posterior communicating artery and the internal carotid artery

Stat Neurosurgical intervention

Aneurysm is leaking, ready to burst

Successful clipping of aneurysm
Cerebral Angiogram

Pre and Post Surgery

Aneurysm Clipped
Take Home Messages

• 3rd nerve palsy - Pupil involving: PCOM/ PICA Aneurysm (until proven otherwise)
  • Diabetic infarct (pupil sparing)
  • Small vessel disease with infarct of the nerve (non-arteritic vs arteritic)

• What is the responsibility and liability for a specialist who provides phone consultation

• Must pursue one’s clinical suspicion in spite of “negative” test results.

• COMMUNICATE WITH RADIOLOGIST

• When in doubt – REFER
CASE PRESENTATION #2

73-year-old female presents to her primary care physician with 24-hour history of visual loss in right eye. Left eye is unaffected.

Admitted to the hospital for possible CVA.

Neurologist consulted.

MRI and carotid doppler ordered by consultant.
CVA's always cause bilateral visual loss
Homonymous hemianopic defects
NEVER unilateral visual loss
**PMH:** Hypertension, single seizure several years ago

**Meds:** Dilantin, hypertensive meds

**ROS:** Headache for four weeks
Ophthalmic Exam

Vision: NLP OD, 20/40 OS

Right afferent pupillary defect: Marcus-Gunn pupil

Fundus:
Swollen Optic Nerve Head
Review of Symptoms

- **Headache** over temples
- **Tenderness** over parotid gland, **pain** with chewing
- 25 lb **weight loss**, loss of appetite
- **Extreme fatigue**
Differential Diagnosis

Ischemic optic neuropathy
- Arteritic
- Non-arteritic

Compressive optic nerve lesion

Collagen vascular disorder with vasculitis
Work-Up/Treatment

Sedimentation Rate, CRP

Immediate IV Solumedrol 250 q 6

Temporal artery biopsy
  • Within 5 days of steroid treatment
  • Bilateral biopsies if suspicion is high
Clinical Course

Vision loss begins in left eye with optic nerve edema

Solumedrol stabilizes vision: NLP OD, 20/40 OS

Temporal artery biopsy is POSITIVE

ESR is 105

Placed on oral Prednisone 60mg

Discharged
Temporal (Giant Cell) Arteritis: Presenting Symptoms

- Polymyalgia Rheumatica. Shoulder pain / stiffness, depression, weight loss, bilateral tenderness in upper arms, ESR>40mm/h, age>65yrs
- Headache, usually over temporal fossa
- Scalp tenderness
- Jaw claudication
- Temporal artery swelling and tenderness
- Vision loss
Temporal Arteritis: Ophthalmic Manifestations

- Ischemic optic neuropathy, frequently bilateral blindness without treatment
- Central or branch retinal artery occlusions
- Cranial neuropathies including oculomotor palsies with double vision
- Cotton-wool spots from retinal ischemia
Oculomotor Palsy
Temporal Arteritis!

- Elevated ESR (Normal ESR is unusual but not rare)
- Elevated CRP (>2.45 mg/dL)
- Temporal Artery Biopsy (> 2cm, skip areas)
  - If high index of suspicion → Bilateral biopsies
  - Intense inflammation of artery, giant cells
Temporal Arteritis: Treatment

If vision loss, **megadose** (1000 mg/d or more methylprednisolone IV)

If no vision loss, **high-dose oral prednisone** (1.5-2.0 mg/kg/d) is started immediately

**Slow taper** to 40 mg/d over 6 weeks

**Gradual taper** over 6 to 12 months

Follow **clinical symptoms** and ESR
Acute Retinal Ischemia: A Medical Emergency

- **Acute Retinal Ischemia**
  - Transient monocular vision (TMVL)
  - BRAO, CRAO
- **Immediate Diagnosis and Treatment**
  - MRI, vascular imaging
- **Referral to stroke centers, ERs**
- **Risk of stroke greatest in first few days after TMVL**

**Management of Acute Retinal Ischemia**

*Follow the Guidelines!*

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Acute retinal arterial ischemia, including vascular transient monocular vision loss (TMVL) and branch (BRAO) and central retinal arterial occlusions (CRAO), are ocular and systemic emergencies requiring immediate diagnosis and treatment. Guidelines recommend the combination of urgent brain magnetic resonance imaging with diffusion-weighted imaging, vascular imaging, and clinical assessment to identify TMVL, BRAO, and CRAO patients at highest risk for recurrent stroke, facilitating early preventive treatments to reduce the risk of subsequent stroke and cardiovascular events. Because the risk of stroke is maximum within the first few days after the onset of visual loss, prompt diagnosis and triage are mandatory. Eye care professionals must make a rapid and accurate diagnosis and recognize the need for timely expert intervention by immediately referring patients with acute retinal arterial ischemia to specialized stroke centers without attempting to perform any further testing themselves. The development of local networks prompting collaboration among optometrists, ophthalmologists, and stroke neurologists should facilitate such evaluations, whether in a rapid-access transient ischemic attack clinic, in an emergency department–observation unit, or with hospitalization, depending on local resources. *Ophthalmology* 2018;125:1597-1607 © 2018 by the American Academy of Ophthalmology.

Supplemental material available at www.aaojournal.org.
CASE PRESENTATION #3

27-year-old female, contact lens wearer

On honeymoon in Hawaii

Develops pain in eye when removing CL’s

Seeks attention at Royal Hawaiian Emergency Room

Abrasion diagnosed and pressure patch applied
Contact lenses are frequently colonized with Pseudomonas
Patching creates perfect culture medium
NEVER patch contact lens related abrasions
Pseudomonas Ulcer
Treatment

Hospitalization required

Intensive topical antibiotic therapy

Fluoroquinolones (Ciloxan) and fortified antibiotics (Topical Vancomycin) q1 hour

After weeks of therapy, significant scar results with loss of all useful vision

Corneal transplant required
Contact-Lens Disaster
When to patch an abrasion

**NEVER** patch a CL-related abrasion
- Pseudomonas risk, Medicolegal risk

**Small abrasions** (<3mm) - Don’t patch
- Use Antibiotic ointment 4x/day (Erythro, Polysporin, Ciloxan)
- NSAID’s (Topical Voltaren or Acular)
- AVOID Topical Anesthetics

**Large abrasions** (>3mm) – Can consider patching
55-year-old woman presents with 24-hour history of sinus headache, nausea, vomiting, dehydration, blurred vision in right eye

Recently took antihistamine for sinus congestion

Admitted for IV hydration, IV antibiotic for possible sinus infection
Exam: Pt is in obvious discomfort, extremely nauseated, vomiting

Afebrile

Otherwise, normal systemic exam

After 24 hours in hospital, not improving-headache worse, vision deteriorating OD

Ophthalmology consulted
Vision: Count fingers only OD, 20/20 OS

Pupil is larger OD, nonresponsive

Hazy light reflex OD

“Steamy” cornea OD
Diagnosis?
Diagnosis: Angle Closure Glaucoma

- Markedly elevated intraocular pressure.
- Mid-dilated, fixed pupil.
- Hazy cornea, inflamed eye.
- Headache, eye pain.
- Nausea, vomiting – systemic symptoms may predominate.
- Recent anticholinergic medications, (Antihistamines, antipsychotics).
Angle Closure Glaucoma: Treatment

- Medical Emergency
- Break attack medically
  - Pilocarpine, B-blockers, CAI’s, hyperosmotics
- Surgical treatment is definitive
  - Laser Peripheral Iridotomy
  - Treat fellow eye prophylactically
- Avoid meds that are “contraindicated in glaucoma”
CASE PRESENTATION #5

34 year old male mechanic felt something hit OD while pounding metal at work

Seen in ER – no fluorescein staining, no FB

1 month later, went to family physician with spot on eye, one pupil larger than other

Told spot was “birthmark”

Sent to neurologist for pupil disparity.*CT of head done – Normal
1 year later, went to optometrist as color of right eye was changing

Exam: 20/25 OD, 20/20 OS

Right eye color is darker than left

Pupil is 1.5mm larger on right side

Immediately referred
Rusting metallic Foreign Body
Occult Intraocular Foreign Body

**Siderosis Bulbi:** Iron contamination of intraocular tissues

- **Iris:** brownish color, mid-dilated and nonreactive to light
- **Lens:** Rust-colored cataract
- **Retina:** Pigmentary degeneration with eventual complete loss of vision (ERG helpful)
- **Glaucoma**
Foreign Bodies: Not So Occult

Fishhook
Worm
Occult FB’s Detection

X-ray of skull (Waters or Caldwell view)

CT Scan (coronal and sagittal views)
CASE PRESENTATION #6

7-year-old girl developed red right eye of 3 days duration

Called Family Physician. Tx’d with Sulfacetamide 10% drops by ARNP

Not improving in 5 days. Seen by ARNP and Rx’d with Gentamicin drops

1 week later, seen by ARNP again and treated with Patanol

1 week later, worsening symptoms – seen by optometrist
Vision: OD Count fingers, OS 20/30

SLE: OD - Edematous cornea with rose bengal staining
Left eye is Normal
Diagnosis: Herpes Simplex Keratitis

Patient treated with Viroptic 1% 9x/day

Extensive scarring resulted in 20/400 vision

Corneal transplant performed 1 year later

Vision restored to 20/30
Herpes Simplex Keratitis

- Any red eye that does not respond within 3 days of treatment should be referred
- Steroids are contraindicated in HSV
- HSV is a vision-threatening disorder
- Frequently recurs
- Most common infectious cause of loss of vision in US
22-year-old Asian WSU student presents with bilateral ocular inflammation of 5 years duration. Recent exacerbation

School work is difficult due to severe itch, discomfort and declining vision

Seen by Minor Emergency Center and treated with Cortisporin
Diagnosis: Vernal Keratoconjunctivitis

Severe allergic disorder of young adults
Can be visually disabling
Treated with antihistamines, mast cell stabilizers, systemic allergy treatment
Topical steroids for exacerbations

BEWARE of Steroid Side Effects:
* Glaucoma
* Cataract
Vernal Keratoconjunctivitis

- Patient lost to follow up
- Importing steroids from Maylasia
- Returns for Follow-up 9 months later
- Exam: Vision 20/200 OD, 20/100 OS
- Severe inflammation
- IOP 37mm OD, 42mm OS
- Fundus: Severe optic nerve cupping
Visual Field Deficits
Steroid Induced Glaucoma

- Cortisporin, Blephamide, TobraDex all have steroids
- Beware of unmonitored steroid use due to:
  - Glaucoma
  - HSV
  - Cataract