OPHTHALMIC EMERGENCIES FOR THE PRIMARY CARE PHYSICIAN

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I have no financial interests to disclose.
Legislative Update
March 12th, 5:30-6:30pm
PCI 3rd Floor Community Room

Professional Burnout And Resiliency
June 11th, 6-9pm
The Kirkwood Hotel
CASE #1

An 85-year-old female presents to your office with vision loss in the right eye. She reports having relatively normal vision until this morning when she woke up and could not see out of her right eye.

Upon further questioning, she has also been experiencing pain when brushing her hair, pain when chewing her food, and has been loosing weight for no reason.
**DDX OF SUDDEN PERSISTENT UNILATERAL COMPLETE VISION LOSS**

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<th>Acute Angle-Closure Glaucoma</th>
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<td>Vitreous Hemorrhage</td>
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**EXAM**

Visual Acuity: Count Fingers only on the right

Right afferent pupillary defect

No motility deficits

Thickened, nodular temporal artery

Pallid optic disc swelling on the right
WORK-UP

ESR (Dr. Hayreh suggests >30mm/hr in men and >35mm/hr in women)
  - A normal ESR does not rule out GCA

CRP

Platelet Count – 60% of patients with GCA have thrombocytosis

Temporal Artery Biopsy – General Surgery

Fluorescein Angiogram
GIANT CELL ARTERITIS

Fever
Fatigue
Headache
Jaw claudication
Weight loss
Flu-like symptoms
Polymyalgia Rheumatica

Brain stem strokes, dissecting aneurysm, aortic incompetence, MI
OCULAR MANIFESTATIONS OF GCA

Anterior Ischemic Optic Neuropathy (AION) – Most common
Central Retinal Artery Occlusion (CRAO)
Cilioretinal Artery Occlusion
Posterior Ischemic Optic Neuropathy (PION)
Ocular ischemia
Diplopia

20% of biopsy-proven GA may have ocular involvement only (Occult GCA)
TREATMENT OF GCA

Oral prednisone starting at 1mg/kg/day

- Higher doses required in cases of vision loss
- Ultimate goal is to prevent vision loss in fellow eye
- Slow taper after CRP and ESR normalize (2-3 weeks)
- Taper over the course of 1 year
CASE #2

A 57-year-old male presents to your office with a sudden onset of headache and a droopy right upper lid. He has diplopia when lifting his right upper lid.

He has no significant past medical history.
EXAM

Vision 20/20 on the right and the left

Right ptosis

No adduction (nasal movement), elevation, or depression of the right eye

Right pupil fixed and dilated

Efferent (Not afferent) pupil defect – No response on the right when light shined in either eye
DDX
PTOSIS W/ DIPLOPIA

Myasthenia gravis
Thyroid eye disease
Idiopathic orbital inflammatory syndrome
Orbital trauma
Third nerve palsy
- GCA
- Posterior communicating artery aneurysm
- Other compressive lesion
- Ischemic
- Ophthalmoplegic migraine
WHY DOWN AND OUT?

CN IV – Depresses the eye

CN VI – Abducts the eye
WORK-UP

Over 50 and pupil sparing
- Observe – More likely ischemic
- Observe closely for pupil involvement or aberrant regeneration

Under 50 and or pupil involved
- MRI/MRA
- CT/CTA
- Catheter angiography if imaging is negative or suspicion is high

Neurosurgical evaluation for PCOM aneurysm
CASE #3

A 23-year-old female presents to the ER with a 1-week history of diplopia. She has no eye pain or headaches. She has a strong family history of Graves disease.
EXAM

Vision 20/20 on the right and the left

Esotropia worse in right gaze

Abduction deficit of the right eye (cannot look to the right)

No other CN deficits
DDX

CN VI PALSY

Grave’s disease
Myasthenia gravis
Ischemic – Rare in younger patients
Intracranial lesion
Increased intracranial pressure - ask about minocycline use
TAKE HOME POINTS

Isolated extraocular muscle palsies in a healthy patient under 50 usually warrant an MRI (CT scan alone is not sufficient)

MRA or CTA for CNIII palsies

Myasthenia gravis and thyroid eye disease can mimic isolated extraocular muscles palsies
CASE #4

A 70-year-old female presents after waking up with right eye pain, blurred vision on the right, and nausea.

She wears glasses. She cannot see near or far without them. (Farsighted)

Her sister “had to have some laser thing done to her eyes”
EXAM

Visual acuity – 20/60 on the right
Conjunctival injection
Cloudy cornea
Very firm eye (Intraocular pressure 70 mmHg)
Mid-dilated pupil
ACUTE ANGLE CLOSURE GLAUCOMA
ACUTE ANGLE CLOSURE GLAUCOMA

Extremely high intraocular pressure can lead to permanent vision loss

More common in farsighted patients

Genetic component

Associated with age and intraocular lens changes
TREATMENT

Glaucoma drops
- Timolol
- Brimonidine
- Latanoprost
- Dorzolamide

Diamox

Laser peripheral iridotomy
Most categories of drugs with glaucoma warnings are concerned with inducing acute angle-closure glaucoma in individuals with narrow angles.

- Tricyclic antidepressants
- MAIOs
- Antihistamines
- Anti-parkinson drugs
- Antipsychotic medications
- Antispasmodic agents
- Some sulfa drugs - Topamax
CASE #5

A 32-year-old male accidentally splashed cleaning solution into his eye. He presents with severe eye pain and redness of the right eye.
CHEMICAL BURN

Acid burns
Generally less destructive than their alkali counterparts
Usually occur with exposure to a pH of less than 4
Hydrochloric acid (used to clean swimming pools)
Sulfuric acid (found in car batteries)

Alkali burns
Lipophilic and penetrate the cornea quickly
Sodium hydroxide (lye; found in drain cleaners and industrial cleaning solutions)
Ammonia (found in household cleaning solutions and fertilizers)
Calcium hydroxide (lime; found in cement and plaster).
The Hughes classification scheme, as modified by Thoft, divides chemical injuries into four categories in order of worsening severity and prognosis.\(^1\)

**Grade I.** Injuries in this category are confined to the corneal epithelium; there is no limbal ischemia, and the cornea is totally clear. These injuries carry an excellent long-term visual prognosis.

**Grade II.** These injuries are significant for mild corneal haze, which permits a good view of anterior chamber structures, and focal limbal ischemia. The prognosis is good, although the cornea may develop focal haze and neovascularization at the site of limbal stem cell loss.

**Grade III.** These injuries are characterized by significant ischemia of most of the limbus, as well as profound corneal haze that limits the view of anterior chamber structures. Due to extensive limbal stem cell loss, patients with grade III injuries have a guarded prognosis. As corneal epithelium cannot regenerate, the ocular surface must be conjunctivalized to maintain tectonic stability. This occurs at the expense of visual acuity. Improvement in vision is often not achieved without a surgical procedure.

**Grade IV.** These injuries carry the worst prognosis. In addition to total loss of limbal stem cells, there is destruction of the proximal conjunctival epithelium. The cornea is completely opaque and porcelainized, and it is extremely prone to melting in the acute or intermediate time frames after injury. Visual recovery may not be possible.
EMERGENCY MANAGEMENT

Copious irrigation with or without a Morgan lens until pH is 7.0 to 7.2.

Check with narrow range pH testing strips even after irrigation is completed.

Swab fornices for particulate matter

Antibiotic ointment TID

Prednisolone acetate QID

Cyclopentolate 1% TID

Referral to an ophthalmologist
CASE #6

A 24-year-old male presents with blunt eye trauma to the right eye. He now has significant vision loss and eye pain.
EMERGENT MANAGEMENT

Stop examination (Do not check IOP)

Place a shield over the eye (Do not patch)

CT scan to rule out orbital injury or intraocular foreign body

NPO

Tetanus update

IV Fluoroquinolone (moxifloxacin penetrates the eye well)

Repair within 24 hours to prevent endophthalmitis
CASE #7

A 68-year-old female presents with painless inferior vision loss in her left eye. She has no new floaters.
Superior retinal detachment
Superior branch retinal artery occlusion
Superior branch retinal vein occlusion
Arteritic ischemic optic neuropathy
Non-arteritic ischemic optic neuropathy
MANAGEMENT

Urgent referral, especially if symptoms just occurred

Reduction of intraocular pressure and ocular massage

Evaluation for embolic risk factors
  - Carotid ultrasound and echocardiogram

Aspirin while awaiting results
CASE #8

A 50-year-old male presents with painless inferior vision loss of his left eye. One week ago, he got a new central floater followed by some flashing lights. This morning, he started to notice a vail coming over his inferior vision.
Superior retinal detachment
Superior branch retinal artery occlusion
Superior branch retinal vein occlusion
Arteritic ischemic optic neuropathy
Non-arteritic ischemic optic neuropathy
MACULA-ON RETINAL DETACHMENT

More urgent than macula-off retinal detachment as vision may continue to worsen if central retina detaches.

Macula-on detachments are usually repaired within 24 hours.

Macula-off detachments can be repaired within 1 week with no difference in prognosis than urgent repair.

May occur after a vitreous detachment causes a tear in the retina.

May occur after trauma.
MANAGEMENT

Referral to an ophthalmologist

Determine the cause of the detachment
- Rhegmatogenous – Tear
- Exudative – Melanoma
- Tractional – Proliferative diabetic retinopathy

Once diagnosis has been made
- NPO
- Remain in a supine position
A 9-year-old female presents with a 4-day history of left nasal discharge. Her left eye is swollen and red and seems to be worsening. It is difficult to open her left eye and she has had mattering on her eyelids.
LAB RESULTS

WBC 11.6 K/mm³
Neutrophils 8050/mm³
Monocytes 880/mm³
ESR 65
CRP 4.6
TREATMENT

- Admission for IV antibiotics
- Otolaryngology consultation for sinusitis
- Careful observation for worsening orbital signs
PRESEPTAL CELLULITIS

Usually caused by a well-defined event: bug bite, stye, scratch, etc

Imaging required if no event known

Ophthalmic evaluation for motility disorder, proptosis, or vision loss, or pupillary changes
90% of cases are from extension of bacterial sinusitis, especially the ethmoid sinus

Orbital clinical findings include proptosis, ptosis, restriction of ocular motility, ocular pain, and chemosis.

Nonsurgical management is appropriate in a child who is responding to treatment

Surgical management is usually required if adults have an abscess due to their polymicrobial nature
CASE #10

A 28-year-old male presents with a rapid onset of right eye pain upon awaking this morning. His eye hurt a little yesterday and the pain worsened after taking his contact lenses out last night.
BACTERIAL KERATITIS

Typically has distinct edges with surrounding edema

Must be treated aggressively to avoid corneal scarring, perforation, or endophthalmitis
TREATMENT

For smaller (<2mm) or peripheral ulcers:

4th generation quinolone every 1 hour

Erythromycin ointment at bedtime

Next day referral
TREATMENT

For larger (>2mm) ulcers, or central involvement

Urgent referral

Avoid antibiotic prescribing if seeing ophthalmologist same day

May require cultures

May require fortified antibiotic treatment
  - Fortified Vancomycin
  - Fortified Tobramycin

Steroid treatment only after clinical response to antibiotics
There are a multitude of contact lens related complications, especially in patients who over-use their contacts or sleep in them.

These patients almost all require referral as most of them will not respond to typical conjunctivitis treatments.

Bacterial ulcers requiring 4th generation fluoroquinolones or stronger are common in the contact lens population.

Inflammatory conditions requiring steroid eye drops are common.

Complications related to a contact lens fit or sensitivity to cleaning solutions are common as well.
A NOTE ON SUBCONJUNCTIVAL HEMORRHAGES

Look worse than they are

Mostly painless, but very concerning to patients

Key to diagnosis is normal vision

I often don’t see my own patients when they call in for this

Use artificial tears from comfort

Hematologic workup if having multiple occurrences
THANK YOU
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