Ocular Emergencies 101

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This lecture is graphic!
What is an Ocular Emergency?

Get help from the audience
The US Department of Defense defines "triage" as follows:

The evaluation and classification of casualties for purposes of treatment and evacuation. It consists of the immediate sorting of patients according to type and seriousness of injury, and likelihood of survival, and the establishment of priority for treatment and evacuation to assure medical care of the greatest benefit to the largest number."
Questions

- How many of your still patch?
- How many of you have engaged in an emergency?
- How many of you are afraid of emergencies in your office?
An ocular emergency is a condition that can cause a sudden loss of, or decrease in a person's vision that could lead to a permanent condition.
Triage is defined as:

- The process of sorting people based on their need for immediate medical treatment as compared to their chance of benefiting from such.
Ocular Presentations can be Sorted into 4 Classifications

- Emergency – Right now
- Urgent – Today
- Priority – This week
- Routine – Next Available
What to do?

- Don’t make a diagnosis?
- If no doctor is available, check office policy/use an ER
- This is a certifiable walk-in
- Do not delay if it is a true emergency
- Liability is on the person giving instructions on the phone
- If the patient is unable to see have them wait for an ambulance...get the info from the patient
Ocular Signs/Symptoms

**Emergencies**
- Sudden increase in ocular pain
- Sudden blurred or loss of vision
- Bleeding in/around the eye
- Trauma
- Flashes/Floaters

**Urgency**
- Photophobia
- Pain
- Foreign Body
  - Organic
  - Non-organic
- Redness
- Abrasions
Three True Emergencies

- Close angle glaucoma attack
- Alkali chemical burn
- Central retinal vein occlusion
- Globe penetrating trauma
Patient Treatment Procedures

- Inform provider immediately
- Case History...complete Hx
- Visual acuity is critical...must be attempted
- Pressures are critical (projectile FB or possible aqueous leak needs extreme caution)
- In case a provider is not present...see office policy manual
- Know all office protocols for emergency and urgent care...
Technician Procedures

- Never attempt any procedure in which you are not trained, proficient, and approved by your doctor.
- When you identify an emergency...communicate with other staff members what is going on and to be ready to assist if necessary.
- Don’t be a hero, whom ever is most experienced and capable should be there to provide over sight (doctor).
- Alert the nearest ER (irrigate if needed) when necessary.
Pick a Scenarios

- The exploding bottle of hair dye
- The curling iron burn
- The paper cut from a grocery bag
- The pilot on a bike
Immediate Classification

A. Sudden Loss of Vision
B. Flashes of Light
C. Sudden Spots in Front of Eyes
D. Double Vision
E. Blood in Eye
F. Blunt Trauma
G. Penetrating Injury
H. Chemical Burn
A. Sudden Loss of Vision (Painless)

- Central Retinal Artery Occlusion
- Central Retinal Vein Occlusion
- Vitreous Hemorrhage
A. Sudden Loss of Vision (Painless)

- Ischemic Optic Neuropathy
- Retinal Detachment
A. Sudden Loss of Vision (Painful)

- Acute Angle Closure Glaucoma
- Optic Neuritis
B. Flashes of Light

- Retinal break or detachment
- Posterior Vitreous Detachment
C. Spots in Front of Eyes

- Transient spots
  - Migraine syndromes

- Long-standing spots
  - Posterior vitreous detachment
  - Vitreous hemorrhage
  - Floaters (syneresis)
E. Blood in the Eye

- Hyphema
- Subconjunctival hemorrhage
F. Blunt Trauma

- Blowout or orbital floor rupture
  - Must rule out retinal detachment or choroidal rupture
  - Must also rule out traumatic optic neuropathy
G. Penetrating Injury

- Typically a high speed or sharp object
- Must intervene quickly to prevent endophthalmitis esp. if organic matter
- Seidel sign
H. Chemical Burn

- Irrigate all chemical burns with sterile saline immediately and extensively
- Must try to:
  - Identify substance (acid vs base)
  - Timeline of chemical exposure

How long do we irrigate?
Urgent Classification

A. Red Eye
B. Lid Lumps and Bumps
C. Protrusion of Eye
D. Contact Lens Pain
A. Red Eye

- Identify exposure or likely FB incident
- PAIN is first indication
- Followed by:
  - Decreased VA
  - Discharge
  - Excessive tearing
  - Contact lens wearer?
  - Itching
  - Sensitivity to light
B. Lid Lumps and Bumps

- Again, PAIN is the #1 indication
- Must determine how long has it been there and if there are any recent changes to appearance
- Hordeolum/Chalazion vs BCC/SCC/sebaceous carcinoma
C. Protrusion of Eye

- Can be associated with double vision
  - DIPLOPIA MUST BE RULED OUT
  - Unilateral vs Bilateral
- Lid retraction vs Proptosis
- Can be related to thyroid, tumors, pseudotumor
D. Contact Lens Pain

- Urgent condition if:
  - PAIN
  - Discharge
  - Decreased VA
  - Significant redness
  - Light sensitivity

- Questions to ask:
  - What type of lenses?
  - Solutions / drop use
  - How old are lenses?
  - Painful for how long?
  - How often slept in?
Priority Classification

A. Contact Lens Adaptation

B. Slow, progressive Visual Acuity Decrease

C. Lost or Broken Eyewear
A. Contact Lens Adaptation

- Typically new soft contact lens or RGP wearers
  - Symptoms include intermittent blurring, tearing, excessive blinking
B. Slow, Progressive VA Decrease

- Likely related to refractive error changes, cataracts, age-related macular degeneration, or large total number of birthdays celebrated (age)
C. Lost or Broken Eyewear

- Other patient concerns that fall into this classification are:
  - Chronic eye burning, tearing
  - Headaches that have not changed recently
  - Long-standing ptosis that has not changed recently
Routine Classification

A. EVERYTHING ELSE
Questions to Ask Every Potential Immediate Patient

- When did this begin? How long has the eye been bothering you?
- On a pain scale 0-10, where are you?
- Any decreased visual acuity (any change in vision)?
- Are you a contact lens wearer?

Accurate documentation is always critical!
Mandatory Screening Tests

- Monocular aided visual acuity
  - Use pinhole technique if VA <20/40
- Non-contact tonometry
- Confrontational visual fields or FDT screening, if possible
- Exophthalmometry...speak to your doctor first
- Red cap desaturation or Color vision
Case Example #1

- 23 YOF with bilateral red eyes
- Began yesterday morning and it’s worse today.
- Pain 5 out of 10
- Vision doesn’t seem any worse.
- Wears disposable SCL. Unsure of age of lenses.
Case Example #2

- 55 YOM with decreased vision in OD
- Woke up this AM and couldn’t focus out of right eye
- No pain associated, just cannot see
- dVAsc: 20/400 OD, 20/25- OS
- LEE: 2 yrs ago / Pt reports unremarkable
Case Example #3

- 35 YOF with lump within UL of OS
- Bump has been there for months and sometimes it becomes red and painful
- Pain is 3 out of 10
- No changes today but when lump swells, she reports slightly blurry vision
- Wears colored SCL when she goes out
  - Last worn 2 weeks ago / SCL 1 month old
First aid for eyes

- Do not try to remove any “foreign body” except by flushing or sweeping, because of the risk of causing more damage to the surface of the eye.

- Do not touch, press, or rub the eye, and do whatever you can to keep children from touching it (a baby can be swaddled as a preventive measure).

- Flush from medial to lateral to prevent cross contamination.

- Gently pour a steady stream of lukewarm water from a pitcher (do not heat the water) across the eye...why is this warm?

- If a foreign body is not dislodged by flushing, it will probably be necessary for a trained medical practitioner to remove the FB.
Irrigation

- Irrigate from medial to lateral
- If chemicals are involved use litmus paper to verify neutrality of chemicals

How long do we irrigate?
Irrigation

- Morgan Lens
- Solutions...saline, Dacriose, water
- Litmus pH paper test
- Normal pH reading 7.3 – 7.7
- Irrigate for 30 minutes
Call it
Call it

Both are Hyphemas
Call it
Call it

Retinal detachment

Chemical burn
Call it
Call it

Branch retinal vein occlusion

Subconjunctival Hemorrhage
Call it
Call it

Positive Sidel

PVD
Call it
Call it

Corneal abrasion

RD
Call It
Call It

Herpetic dendrite

Skin cancer
Call it
Call it

Proptosis

Retinoblastoma
Suspected Global Penetration

- Protruding object
- Positive Sidel
- Organic Object

Positive Sidel
Conditions Discussed

- Hordeolum
  - Internal
  - External
- Chalazion
- Foreign Bodies
  - Non-Penetrating
  - Penetrating (intraocular)
Pinquecula

- Elevated “bump” or nodule (fatty plaque), usually in nasal bulbar conjunctiva
- **Symptoms**: occasional irritation/redness, allergies can cause flare-up
- **Treatment**: Lubricants (artificial tears) PRN, cool compresses with allergies
Acute Glaucoma (closed angle)

- **Sudden onset** of high Intraocular pressure (IOP) ... caused by blockage of aqueous drainage

- **Symptoms:** Pain, blurred vision, colored lights around lights, frontal headache, nausea and vomiting

- **Signs:** High IOP, clouded/misty cornea, red eye, fixed or mid-dilated pupil

- **Treatment:** Preceptor/EVAC
Conjunctivitis

- The “infamous” pink-eye
- Numerous causes:
  - Bacteria
  - Viruses
  - Allergies
  - Injury (abrasions, foreign bodies, blunt trauma)
  - Toxic Reactions (chemicals)
  - Often difficult to diagnose exact etiology

**Tips for Diagnosis:** “Take detailed history”
Summary

A. 4 Classifications for Clinical Management

B. Examples of Symptoms Within Each Classification

C. Probable Diagnosis and Appearance

D. Most Important Questions to Ask Every Potential Patient
Preseptal Cellulitis

- **Symptoms**: eyelid tender and red, mild fever, irritability
- **Signs**: no proptosis, no restriction of EOMs, no pain with eye movement (unlike orbital cellulitis)
- **Etiology**: puncture wound, laceration, retained foreign body
  - Usually Staphlococcus aureus and streptococci
- **Treatment**: Preceptor - Usually warm compresses and oral antibiotics (if severe). May EVAC is progresses.
- **Note**: differential diagnosis: Orbital Cellulitis
Orbital Cellulitis

- First and foremost a medical emergency
- Extension from a sinus infection (ethmoiditis), orbital trauma, orbital fracture, dental infection
- **Symptoms**: Red eye, pain, pain with eye movements, blurred vision, headache, double vision
- **Critical signs**: eyelid edema, warmth, tenderness, lid swelling, conjunctival chemosis, proptosis, and restricted ocular motility with pain (helps differentiate from preseptal)
- **Treatment**: Preceptor/EVAC (will be hospitalized with IV antibiotics usually), CT Scan, MRI and X rays
Conditions Discussed (cont.)

- Cellulitis
  - Preseptal
  - Orbital
- Pinguecula
- Pterygium
- Acute Glaucoma (Closed Angle)
Conditions Discussed (cont.)

- Corneal Abrasions
- Hyphema
- Detached Retina
- Central Retinal Artery Occlusion (CRAO)
- Conjunctivitis
  - Allergic
  - Bacterial
  - Viral
Central Retinal Artery Occlusion

- Unilateral, painless, acute vision loss (counting fingers to light perception in 94%), pale retina, secondary to emboli, can have pupil defect
- Can have macular sparing (thus good central VA), but pale retina outside macula... marginal symptoms (peripheral loss)
- **Treatment:** Evac STAT, retina can degenerate within 30-60 minutes, may give supportive care (oxygen)
Hyphema

- Typically from “blunt” trauma
- **Symptoms:** Pain, blurred vision
- **Signs:** Blood in anterior chamber (AC)
- **Treatment:** VA, evaluate globe for rupture, patch both eyes and immediate transfer
Corneal Abrasions

- Typically from “trauma”
- **Symptoms**: Sharp pain, photophobia, FB sensation, tearing, history of scratching the eye
- **Signs**: Injected conjunctiva, swollen lid
- **Treatment**: Stain eye (fluorescein)...
  - If Small: Erythromycin ointment q 2-4 hrs / F/U 24 hrs
  - If Larger: Pressure patch/Erythromycin ointment/Cycloplegic agent (1% cyclopentolate)... F/U 24 hrs, monitor for infection
  - If Severe: Bilateral Patch and Refer
Foreign Bodies

- Non-Penetrating (cont.)
  - Numb Eye with one gtt 0.5% Ophthaine or Paracaine
  - Use moistened cotton-tipped swab to gently remove FB
  - Erythromycin or Bacitracin ointment
  - F/U every 24hrs until symptoms resolve
  - May consider cycloplegic agent (1% Cyclopentolate)
  - Watch for Corneal Ulcers/Infections (discharge) = significant increase in pain/symptoms… “worsening”
  - If can’t remove or symptoms don’t resolve quickly (1-3 days)... bandage both eyes and refer
Foreign Bodies

- **Non-Penetrating** (not entering globe)
  - metal chips/sand/saw dust/plant material/etc.
  - take “careful” history (i.e. high speed?, falling objects?)
- **Symptoms:** FB sensation, tearing, history of a trauma
- **Treatment:**
  - Visual Acuity
  - Stain to visualize object or injury site (vital clues)
  - Irrigate with saline rinse
  - May check under upper lid (often site of small FBs)
  - **If fails:** Contact receptor
Chalazion

- Chronic, granulomatous enlargement of a Meibomian Gland
  - From blockage of its duct.
  - Can be secondary to past Internal Hordeolum
- Signs/Symptoms: “painless bump”, mobile, conjunctiva on inside of lid may be red/elevated, may feel bump with eye movements (large chalazion).
- Treatment: Visual Acuity, Warm Compresses 15 minutes q.i.d. x 2 weeks then check again. Erythromycin ung bid (no effect usually), F/U in 6 weeks. If no resolution-- refer.
- Diff Dx: Hordeolum, cancer (if nodule is immobile)
Hordeolum (cont.)

- **Internal:**
  - Deep inside lid / Meibomian Gland
  - **Symptoms:** Pain, swelling (edema and redness)

- **Treatment:** Same as External Hordeolum. Watch more closely for Preseptal Cellulitis.

- Refer if worsens or no resolution in 1 week.
Diabetic Retinopathy

- Breakage in the blood vessels in the fundus
- Macula bleeding is more significant
- Ensure your patient has a take home Amsler Grid
Allergic Conjunctivitis

- **Symptoms:** Usually both eyes, intense *itching*, recent exposure to known allergen, often past history of similar condition
- **Signs:** Chemosis, red and edematous eyelids
- **Treatment:** eliminate inciting agent, cool compresses, artificial tears PRN, vasoconstrictive agents (i.e. Visine, Naphcon-A PRN)
Corneal Foreign Body
Pterygium

- Fleshy tissue that encroaches onto the cornea from the bulbar conjunctiva… usually nasal aspect
- Some association with long-term exposure to UV/dry/dusty regions (i.e. living in the southern climates)
- **Symptoms:** Irritation, FB sensation, occasional flare-ups of symptoms and injection
- **Treatment:** Excision if growth threatens to interfere with central VA, may also cause astigmatism bend to cornea
Iritis (Anterior Uveitis)

- Typically “acute” or associated with recent trauma, can also be smoldering/chronic/recurrent
- **Symptoms:** “Unilateral” Pain, red eye, photophobia, mild VA drop, tearing.
- **Treatment:** VA, warm compresses 15 minutes tid, contact preceptor/EVAC
  - Be careful in using dilation meds, made close angle (needs advanced clinical evaluation prior to dilating iritis cases)
Detached Retina

- **Traumatic or spontaneous**
- **History of blunt trauma, rapid deceleration, high myopia, over 50 yrs old**
- **Symptoms**: painless flashes of light, curtain/shadow moving over field of view, peripheral or central loss or both, new floaters
- **Signs**: Elevation of the retina, vitreal hemorrhage
- **Treatment**: Refer/Transport supine
Iris Foreign Body
Iris Bombe - Acute Glaucoma
Uveitis - Inflammation in Anterior Chamber
Questions

What is always the first treatment step on a walk-in patient?

a. Check pressures
b. Set-up referral
c. Check visual acuity
d. Wait for instructions from office manager

Do you know where your emergency protocols are?
Questions

- Which is not urgent?
  a. Recent onset of flashes and floaters
  b. Sudden loss of vision
  c. Foreign body from grinding machine
  d. Gradual decreased in vision for 90 days

- Iris Bombe involves what main structures?
  a. Iris, corneal, crystalline lens
  b. Retina, crystalline lens
  c. Corneal, retina
  d. Sclera, cornea

- Which is not normally associated with a Hyphema
  a. Blood in anterior chamber
  b. Irregular pupil
  c. Normal vision
  d. Pain
Questions

- Which is the least urgent
  a. Penetrating wound to globe
  b. Overdue contact Rx
  c. Sudden pain/blurred vision post trauma
  d. Chemosis

- Hyphema’s normally are associated with trauma?
  a. True
  b. False

- Which is not normally associated with a acute glaucoma?
  a. Blood in anterior chamber
  b. Irregular pupil
  c. Steamy cornea
  d. Pain
Questions

- Hordoleum is an emergency?
  a. True
  b. False

- Which is not normally urgent?
  a. Sty
  b. CRVO
  c. Alkali burn
  d. Acute glaucoma

- Which is not normally associated with a sty?
  a. Bump on lid
  b. Irregular pupil
  c. Normal vision
  d. Pain
Review Questions

- How long would you irrigate after an unknown chemical was splashed in the eye?
  a. 5-10 min
  b. 10-15 min
  c. 15-20 min
  d. 20-30 min

- If a patient has received severe facial burns, what can you do to the eyes?
  a. apply a moist, sterile dressing for comfort
  b. apply a heavy ointment for protection
  c. apply protective safety glasses
  d. apply a dry, sterile dressing for comfort
Review Questions

- Where is the tape placed when patching?
  a. forehead to chin
  b. cheek to chin
  c. forehead to cheek
  d. chin to cheek

- What question do you ask the patient after you have finished patching?
  a. how do you feel
  b. can you open your eye
  c. do you feel pressure
  d. does it still hurt
Review Questions

• A retinal detachment will normally be described by the patient as __________?
  a. redness in vision
  b. floaters
  c. blood in the vision
  d. part of the vision missing

• Which of the following questions IS NOT important to ask a patient experiencing floaters?
  a. what time was your last floater
  b. is the floaters transparent
  c. is the floater stationary
  d. how much does the floater weigh
Review Questions

- Which of the following is the least urgent condition?
  
  a. sudden severe pain  
  b. sudden loss of decrease in vision  
  c. change in prescription  
  d. blood in the anterior chamber

- What is a hyphema?
  
  a. a wild animal  
  b. blood in the anterior chamber  
  c. blood in the posterior chamber  
  d. blood under the conjunctiva