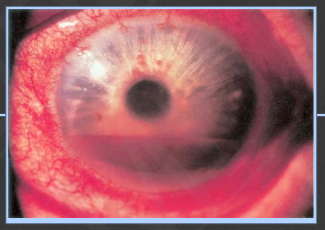
Traumatic Hyphema

Case Description
15-year-old male was struck in the eye with a paint ball

Image Description

anterior segment photo shows hyphema

Differential Diagnosis
- traumatic hyphema
- recent ocular surgery
- iris neovascularization
  - diabetes
- iris microhemangiomatosis
- iris tumors (melanoma)
- Fuchs heterochromic iridocyclitis

Data acquistion
History
- medical history
  - sickle cell disease
  - bleeding tendency
  - diabetes
  - medication use
    - ASA
    - NSAID
    - warfarin
- trauma
  - time of onset of visual loss relative to trauma
  - mechanism
    - type of object
    - force/velocity
  - protective eyewear

Physical Exam
- BCVA
- APD
  - r/o traumatic optic neuropathy
- IOP
  - if intact globe
- ocular motility
- orbital palpation
  - orbital fracture
- signs of ruptured globe
- measure hyphema height
- avoid gonioscopy
  - unless intractable high IOP
- dilated fundus exam
  - avoid scleral depression
  - open globe/globe rupture
  - IOFB
  - retinal tear/dialysis
  - vitreous base avulsion
  - commotio
  - retinal hemorrhage
  - vitreous hemorrhage
  - RD

Additional Testing
- B-scan
  - if poor fundus view with intact globe
- CT scan
  - indications
    - orbital fracture
    - IOFB
    - loss of consciousness
  - 1-mm sections
- ± UBM
- screen for SS disease/trait
  - Sickledex screen

Assessment
- traumatic hyphema

Treatment
Medical
- bed rest
  - or limited activity
- elevate head of bed
- eye shield
  - avoid eye patch
- cycloplegia
- topical steroid
  - indications
    - deep pain
    - photophobia
    - ciliary flush
    - protein in AC
    - WBC in AC
    - lens capsular rupture
  - taper quickly
- tylenol for pain
  - avoid sedatives/narcotics
  - avoid aspirin/NSAID
    - do not abruptly stop ASA without consulting patient's PCP
- glaucoma medication
  - if IOP>30 mm Hg
    - start with beta-blockers
    - add
      - topical CAI
      - alpha-agonists
        - not < age 2 years
        - oral acetazolamide
        - IV mannitol
  - no SS
  - if IOP>24 mm Hg
    - only beta blockers are safe
    - avoid systemic diuretics
      - methazolamide safer than acetazolamide
  - SS
  - avoid CAI if
    - SS disease
    - african-american
    - mediterranean
    - sulfa allergy
- do not use
  - increase inflammation
  - PG analogs
  - miotics
    - decrease uveoscleral outflow
    - avoid miotics for angle recession glaucoma

Surgical
- AC washout
  - optic nerve damage
  - uncontrolled high IOP
  - IOP>60 x ≥48 hours
  - SS disease with IOP≥24 x ≥ 24 hours or ≥30
  - corneal blood staining
  - total hyphema with IOP≥25 x ≥5 days
- risk of PAS
  - >50% hyphema by day 8
- children at risk of amblyopia

indications for hospitalization
- child abuse
- children <7-10 years
- non-compliant patient
- SS disease
- bleeding tendency
- severe high IOP
- severe orbital/ocular injury

Patient Education
- General
  - explain eyedrop regimen
- Dos
  - bed rest
  - eye protection
- Don'ts
  - avoid strenuous activity x ≥1 week
- Prognosis & Complications
  - rebleeding
  - glaucoma
  - amblyopia in children
  - corneal blood staining
  - RD
- Follow-up
  - return immediately if
    - decreased vision
    - increased eye pain
  - daily x 5 days
  - 4-week fu
    - gonioscopy
    - scleral depression
  - annual exam for angle recession glaucoma

Ophthalmology Mind Maps/Arman Mashayekhi, MD