GRAND ROUNDS
SUNY DOWNSTATE OPHTHALMOLOGY
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HISTORY

53 y/o black male presents to KCHC ED with complaints of left sided headache and “shadow in his vision” from left eye s/p trauma 2 weeks ago.

- Likely blunt trauma
- Vision mildly blurred in left eye
- No flashes, curtains or veils in either eye
- No pain with EOMs
- No double vision
HISTORY, CONT’D

• PMHx:
  • (+) HTN

• Ocular Hx:
  • Remote hx of trauma >15 yrs ago to R. “eye socket” s/p surgical repair and “pin” placement

• Gtts: none

• Surgical Hx: none
• Family Hx: (-) glaucoma, blindness
• Social Hx: (-) x 3
• Meds: none
• All: NKDA
EXAM: EXTERNAL
CRANIAL NERVE EXAM

CN II: anisocoria with (+) rAPD OS
CN III: EOMs full, no ptosis
CN IV: full OU
CN V: (+) hypesthesia in v1, v2 distribution
CN VI: full OU
CN VII: decreased left forehead crease, flattened left nasolabial fold
CN VIII: hearing intact by gross exam b/l
CN IX – XII: full and intact OU, no abnormality of tongue movements, uvula symmetrically elevated
EXAM

- nVAcc (+2.50): OD 20/20, OS 20/30
- CVF: full OU
- EOMs: full OU, no pain or diplopia
- Pupils: OD – 4-2 and brisk; OS – sluggish with trace rAPD
- Tpen: 9/7 @ 7:30pm
PORTABLE SLIT LAMP EXAM

• LLL: mild MGD OU
• C/S: white/quiet OU, no subconj. Hemorrhage, no conj. Fluorescein uptake
• K: clear OU
• A/C: deep/quiet OU
• I/P: RR OD, **dilated and sluggish with trace rAPD OS**
• L: 1+ NS OU
DILATED FUNDOSCOPIC EXAM

OD

OS
NEXT STEP/MANAGEMENT?

- Laser photocoagulation?
- Cryo?
- Surgical Options?
  - Pneumatic retinopexy
  - Pars Plana Vitrectomy
  - Scleral Buckle
  - PPV + scleral buckling
GIANT RETINAL TEARS

- Break in neurosensory retina extending 3 clock hours or greater in the presence of a posterior vitreous detachment
- Most frequently found posterior to ora (82%)
  - At the equator (15%)
  - Posterior to the equator (3%)
- Classify by location (Scott) or etiology (Schepens)
  - Idiopathic
  - Traumatic
  - Lattice-related
  - Iatrogenic
GIANT RETINAL TEARS: EPIDEMIOLOGY

- British Giant Retinal Tear Epidemiology Study:
  - Annual incidence of GRT 0.094 – 0.114 per 100,000
  - Mean age 42
- Scottish RD Study:
  - Annual GRT incidence of 0.15 per 100,000
  - 1,202 RRD over 2 years – GRT were 1.5% of RRD with PVDs
- Tends to occur more commonly in males
- Right eyes more frequently affected
- Bilateral non-traumatic GRTs at presentation 0-13%
- Most commonly idiopathic (55-65%)
RISK FACTORS

• Trauma
  • 16.1% of GRT cases in BGEES (32% of pediatric cases)
  • Blunt (most common) vs. penetrating vs. globe rupture
  • Unclear pathophysiology:
    • Blunt Trauma:
      • Hemorrhagic necrosis and retinal fragmentation → atrophic changes → retinal break
      • Often delayed until weeks after initial trauma
      • Most commonly inferotemporal and superonasal
    • Open Globe:
      • Due to vitreous traction
      • Almost always superior

• Surgery
  • Cataract surgery
  • Vitrectomy
  • Refractive surgery (less common overall; usually in high myopes)

• Myopia:
  • 9.7% in BGEES had >6D myopia

• Hereditary Vitreoretinopathy
• Others: lens coloboma, buphthalmos, microspherophakia
SYMPTOMS

• Decreased Visual acuity:
  • Varies, depending on presence of RD (mac-on vs off)
  • BGEES: presenting VA 20/40+ in 40%, 20/200- in 16%
• Floaters
• Photophsias
EXAM

- Tear of 3 clock hours or more IN THE PRESENCE OF A PVD
- Partial or complete inversion of tear, creating a posterior flap
- +/- RD
- Tobacco dust in vitreous
- +/- vitreous hemorrhage
WHY IS GRT SO BAD?

• HIGH association with RD
  • 44-92% with fovea-off RD at presentation

• Proliferative Vitreous Retinopathy (PVR):
  • Exposed RPE cells come into contact with vitreous cytokines
  • RPE cells proliferate, migrate onto vitreous scaffold
  • Fibrotic membranes extend from vitreous scaffolding and create significant traction on retina → retinal detachment

• Risk of retinal slippage during surgical repair
  • Posterior displacement of fluid underneath retina
  • More exposed RPE → higher risk PVR
  • Difficulty unfolding GRT

• VERY DIFFICULT TO FIX
MANAGEMENT: NON-SURGICAL

- Laser Photocoagulation:
  - Usually only in cases where tear is < 1 clock hour OR if no RD is present
  - Requires close monitoring of patient
**MANAGEMENT: SURGICAL**

- **Scleral buckle:**
  - Buckle placed around sclera to force wall of the eye closer to torn or detached retina
  - Allows RPE to pump subretinal fluid out and retina to re-attach
  - Series of 156 rhegmatogenous RDs treated solely with scleral buckling: 3 GRTs, NONE with successful repair
Retrospective Review:

- Consecutive cases of vitrectomy alone for GRT detachment at U of M from 1992-2012
- Primary outcome: re-attachment rate at 3 months
- 41 eyes from 40 patients:
  - Single surgery re-attachment rate was 83% at 3 months
  - No difference between phakic and non-phakic eyes
PPV: OIL VS. GAS?

• Silicone oil: primary retinal attachment rate between 74% and 96%
  • Traumatic GRTs with higher success rates
• Al-Khairi, et al:
  • Rate of recurrent RD in eyes s/p gas tamponade was HIGHER (32.1%) compared to eyes s/p silicone oil tamponade (12.5%)
• Batman, et al:
  • 47 eyes with GRTs receiving either C3F8 gas or silicone oil for tamponade after PPV without buckling
  • Both groups with similar baseline characteristics
  • No statistically significant different in final posterior reattachment!
TO BUCKLE OR NOT TO BUCKLE?

- Controversial
- Goezinne, et al:
  - Retrospective study of 30 patients
  - Absence of scleral buckle = statistically significant risk factor for retinal re-detachment
- Al-Khairi, et al:
  - Larger retrospective series of 117 patients
  - Placing encircling buckle was NOT predictive of re-detachment
- Conclusion:
  - Unclear if there is benefit with scleral buckle in addition to PPV
WHAT ABOUT PHAKIC PATIENTS?

- What to do if you have RD + GRT in phakic patient?
- PPV with removal of vitreous base difficult without traumatizing lens
- Post-op complications often cause cataract
- Lensectomy often performed in TRAUMATIC GRTs
WHAT ABOUT THE FELLOW EYE?

Freeman:
- 16 year observation of fellow eyes of 226 nontraumatic GRTs
- 3.7 year follow up
- 14 (11.3%) of 124 untreated fellow eyes without GRT on initial presentation developed GRT
- Risk of RD unrelated to GRT in fellow eye

Prophylaxis:
- 360deg laser or cryo
- 360deg scleral buckle if RD develops
BACK TO OUR PATIENT
REFLECTIVE PRACTICE

• This case demonstrated the importance of a thorough fundoscopic exam in cases of trauma
• This case allowed me to learn more about a rare disease entity and its presentation, treatment modalities, and complications
• This case allowed me to review the literature for management of this disease entity, while keeping in mind the prognosis and expectations of my patient
CORE COMPETENCIES

• Patient care: The case involved thorough patient care and careful attention to the patient’s presenting history. Once diagnosed the patient received proper management and follow up care.

• Medical Knowledge: This presentation allowed me to review the presentation, differential diagnosis, proper evaluation, workup and treatment options for Giant Retinal Tears

• Practice-based Learning and Improvement: this presentation included a literature search of current studies in the clinical presentation of Giant Retinal Tears

• Interpersonal and Communication Skills: the patient was treated with respect and every effort was made to communicate with the patient in a timely manner.

• Professionalism: The patient was diagnosed in a timely manner. She was informed of her diagnosis and explained current treatment options.
REFERENCES

- Abu el-Asrar AM. Giant retinal tears after pars plana vitrectomy. Eye. 1997;11(Pt 3):325e7
- Batman C, Cekic O. Vitrectomy with silicone oil or long-acting gas in eyes with giant retinal tears: long-term follow-up of a randomized clinical trial. Retina. 1999;19:188e92
- Freeman HM. Fellow eyes of giant retinal breaks. Mod Probl Ophthalmol. 1979;20:267e74
THANK YOU!

To our patient
Dr. Silverman
Dr. Temnogorod
Dr. Dua
Dr. Kotlyar

Dr. Elmalem
Dr. Tseng