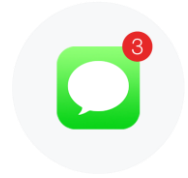


GREATEST HITS...AND GREATEST MISSES

Joseph Sowka, OD



Please text your questions!

954-298-0970

Case 1: Hit or Miss?

CASE: THE WORLD'S BEST CONJUNCTIVITIS

CC: 63 YOWF - Referred for "non-specific conjunctivitis"

- The best conjunctivitis that she ever had!

Medical Hx: Unremarkable

Conjunctivitis treated successfully by Attending & Resident:

- Concern over funny lid positioning
- "Consider MG evaluation"

Key Finding: Pictured



CASE: 63 YEAR OLD WHITE FEMALE

What questions do you want to ask?

What tests do you want to perform?

CASE: 63 YEAR OLD WHITE FEMALE

Do you ever have double vision? Yes!

- In extreme gaze up, down, right, and left

Ocular motility findings:

- Abduction, adduction, elevation, and depression deficits

Forced duction testing: Equivocal

“This is not a boating accident!”

- And it isn't myasthenia gravis either!

**Preliminary diagnosis?
What tests do you want to order?**

CASE: 63 YEAR OLD WHITE FEMALE

- **Presumptive diagnosis:**
Primary aberrant regeneration of CN III from lesion in cavernous sinus
- **Plan:**
Refer for MRI of orbits and chiasm with detail to cavernous sinus/parasellar area

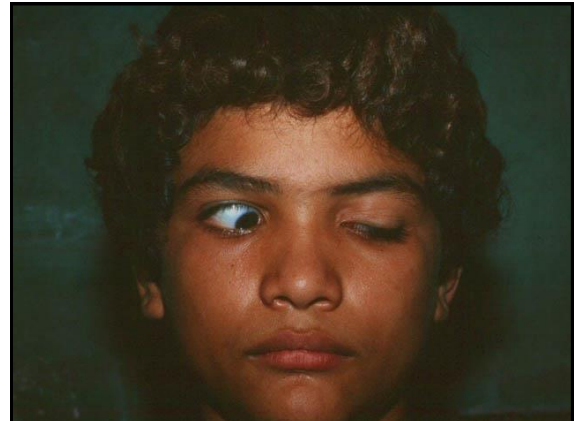
CN III PALSY: ABERRANT REGENERATION

☉ **Damage to CN III results in resprouting and miscommunication of nerves to muscles**

- Inferior rectus and medial rectus communicates with levator
- Medial rectus communicates with pupil

☉ **Clinical picture:**

- Patient looks medial: lid elevates
- Patient looks lateral: lid lowers
- Patient looks down: lid elevates (Pseudo-Von Graefe's)
- Patient looks medial: pupil constricts



CN III PALSY: ABERRANT REGENERATION

Primary: Occurs independent of antecedent CN III Palsy. Caused by aneurysm or meningioma within cavernous sinus

- Slow growing with subclinical compression and regeneration concurrently

Secondary: Occurs after an antecedent CN III palsy. Causes:

- Aneurysm, trauma, tumor, inflammation
- **NEVER DIABETES! !**
 - If cause of CN III palsy is determined to be ischemic vascular and then the eye undergoes aberrant regeneration, the initial diagnosis is wrong. You must re-examine for tumor or aneurysm within ipsilateral cavernous sinus.

CASE: 63 YEAR OLD WHITE FEMALE

- MRI results: Cavernous sinus “pristine and perfect”
- **HOWEVER**, soft tissue mass seen in orbit.
- CN III aberrant regeneration? No!
- Diagnosis: probable orbital malignancy
- Primary care evaluation: Breast carcinoma
- Orbital biopsy: Metastatic carcinoma

OCULAR/ORBITAL METASTASIS

Metastatic cancer – spread from one system to another via blood or lymphatic channels

Most common primary tumor sites:

- **Breast** > Lung > GU tract > GI tract > Skin

Most common ocular metastasis sites:

- Choroid > **Orbit** > Iris > Lids > Optic nerve
- The discovery of ocular metastasis is an exceedingly poor prognostic indicator...

MANAGEMENT OF OCULAR METASTASIS

- ⊙ Treatment is palliative
- ⊙ Modalities include:
 - Concurrent chemotherapy
 - Irradiation
 - Local excision
 - Enucleation / exenteration
- ⊙ Despite therapy, average survival is 7-9 mos.
- ⊙ Outcome of this patient?

Case 1: Hit or Miss?

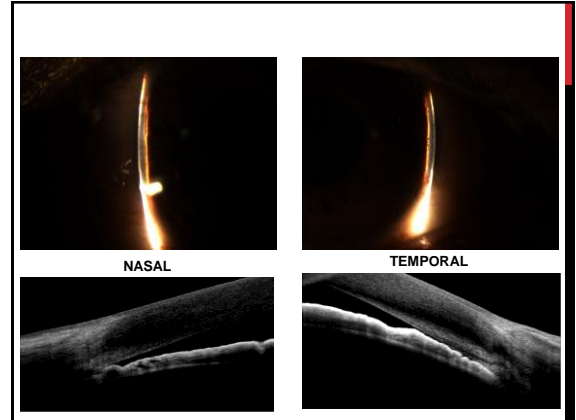
Case 2: Hit or Miss?

Case

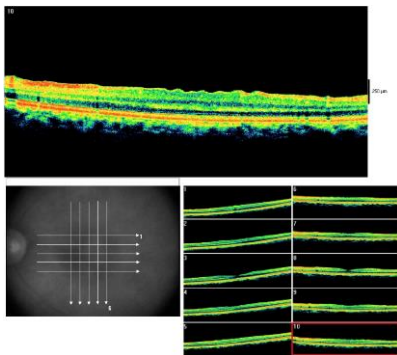
- A 37 year-old female presented with blurry vision in her left eye after being struck to the side of her left globe while playing with her 6 year-old son 2 days prior
- She denied any redness, pain or nausea.
- Her medical history was negative and she was taking no medications.
- She occasionally wore reading glasses.

- Pupils, motilities and visual fields were all unremarkable
- Uncorrected VA OD: 20/20
OS: **CF@4Ft**
- BVA OD: +0.50-0.50x170 20/20
OS: **-5.50-0.75x165 20/20**

- No ecchymosis was present
- No evidence of subconjunctival hemorrhage or corneal injury
- no cell, flare or hyphema present
- Anterior chamber was deep and quiet OD
- OS anterior chamber:



- IOP: OD: 13 mmHg
OS: 5 mmHg
- Seidel test was negative
- There was no evidence of iridodialysis, iridodonesis or phakodonesis OS.
- Dilated fundus exam:



Blunt Trauma

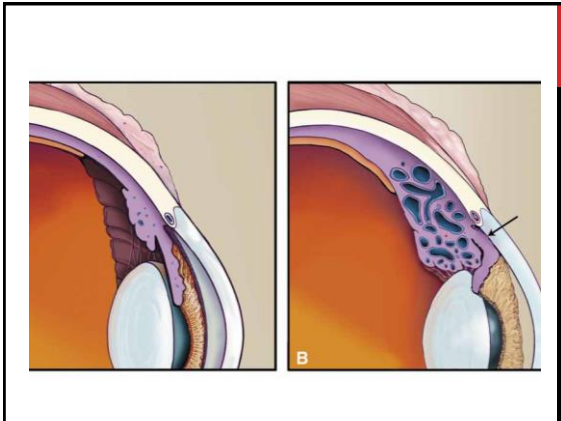
- **Common complications of Blunt Trauma to internal anterior segment**
 - Traumatic hyphema
 - Iritis
 - hypotony
 - Mydriasis
 - Iridodialysis
 - Phakodonesis
 - Lens subluxation
 - Cyclodialysis
 - Angle recession

Ciliary Effusion

- **Ciliarychoroidal effusion**
 - Abnormal collection of fluid in the subarachnoid space
 - Typically caused by Hypotony
 - May develop retinal/choroidal folds
- **Aqueous Production is reduced**
 - Perpetuates Hypotony
 - Uveal scleral outflow is enhanced
 - Prostaglandin release?
 - "A soft eye is a sick eye"

Ciliary Effusion

- **Anterior Rotation of the Ciliary Body**
 - Reduces tension on the zonules
 - Lens Thickening
 - Induces myopia
 - Iris-Lens diaphragm shifts anteriorly
 - Induces myopia by changing effectivity
 - Shallowing of Anterior Chamber
 - Potential for angle closure



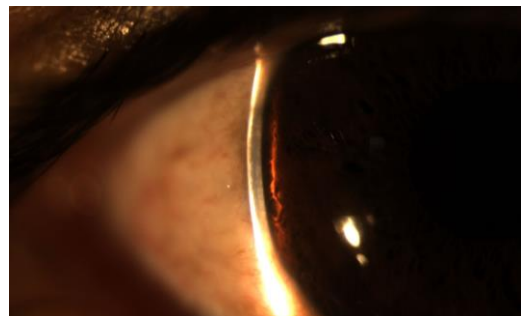
Ciliary Effusion

- **Diagnostic Management**
 - UMB Preferred
 - Anterior segment OCT
 - Clinical observation
- **Treatment**
 - Cycloplegics
 - Atropine
 - Anti-inflammatories
 - Steroids
 - Topical
 - Oral
 - NSAIDS

Case treatment

- Treated with Atropine 1% BID OS and Prednisolone Acetate 1% QID OS and was reappointed the next day.
- OS: -1.25-0.75x165
 - exhibiting a 4 diopter hyperopic shift in 1 day
 - Anterior chamber less shallow
- IOP: OS 5 mmHg

Case Day 1 Follow-up



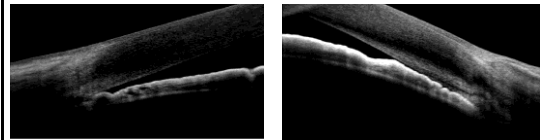
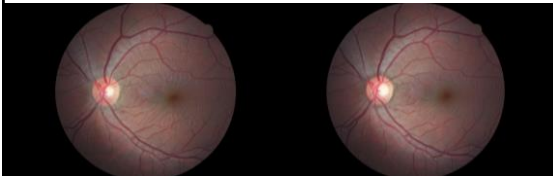
Case treatment

- Taper began at 6 weeks
- Final refraction and BVA
 - OD: +0.50-0.50x170 20/20
 - OS: +0.50-0.75x165 20/20
- IOP was 14 mmHg OU.

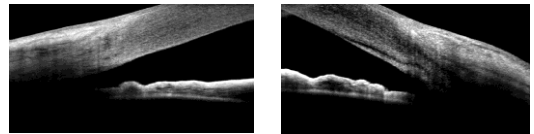
Final Follow-up



Final Follow-up



Initial Presentation



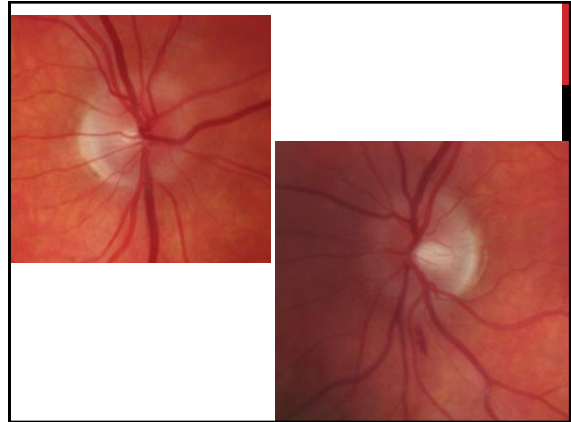
Week 8 Resolution

**Case 2:
Hit or Miss?**

**Case 3:
Hit or Miss?**

33 YOM

- Occipital HA x 4 mos
 - Visual aura with HA
 - Worsens when standing after sitting
 - Relieved by sleep
- Denies vision loss, nausea, diplopia, pain on eye movement, behavioral changes
- Neurologic exam normal
- 6/6 OD, OS with myopic correction
- Pupils, EOMS, conf fields normal OU
- Biomicroscopy normal OU
- IOP 12 mm Hg OU
- Nasally elevated obliquely inserted nerves

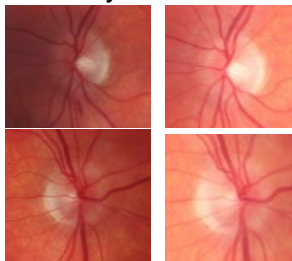


33 YOM

- Co-manage with GP
- MRI w and w/o contrast of brain and orbits
- Complete blood work blood work up including FTA-ABS/RPR ; Lyme titer; CBC w/differential
- Rule out mass lesion, infections, collagen vascular and autoimmune etiology.

33 YOM

- MRI: massive (9.5 cm) mass was identified in fronto/parietal region more toward right side
- Craniotomy and chemotherapy.



Outcome?

Case 3: Hit or Miss?

Case 4: Hit or Miss?

47 YEAR FEMALE

CC: Horizontal double vision in far left gaze

BVA: 20/20 OD, OS

Medical Hx: newly diagnosed diabetes

Left abduction deficit in far left gaze

- Negative forced duction test

Mild ocular injection OS

IOP: 14 mm Hg OD, 16 mm Hg OS

Fundus: normal OU

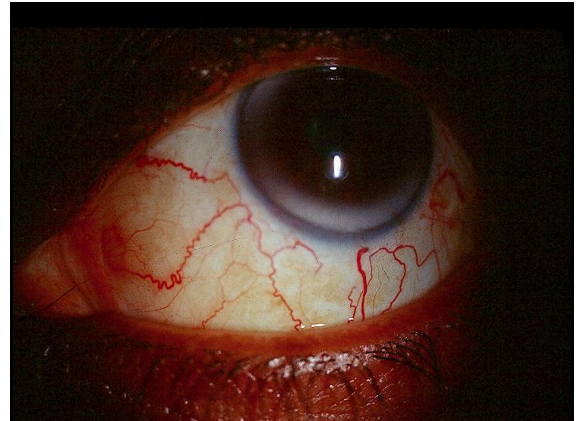
Thoughts?

47 YEAR OLD FEMALE

- Presumptive diagnosis: Left vasculogenic CN VI palsy- monitor
- Returns 1 week with marked worsening of injection, diplopia and ophthalmoplegia
- IOP: 16 mm Hg, 26 mm Hg
- Fundus disc congestion and vascular tortuosity OS

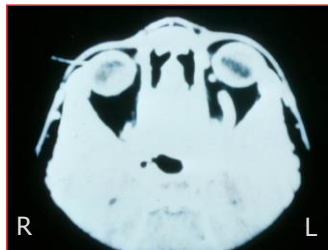
What does she look like NOW?

What do you want to do NOW?



47 YEAR OLD FEMALE

CT scan:



*What do
you think
NOW?*

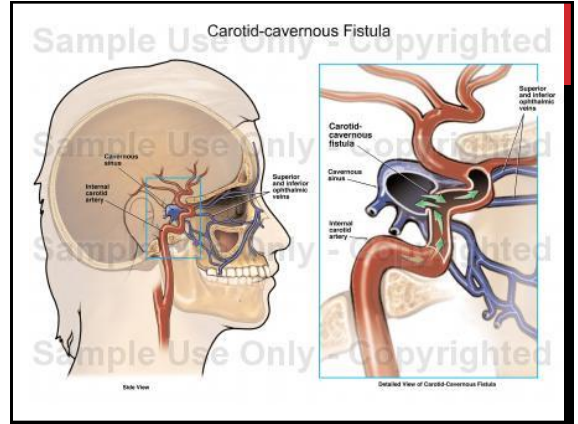
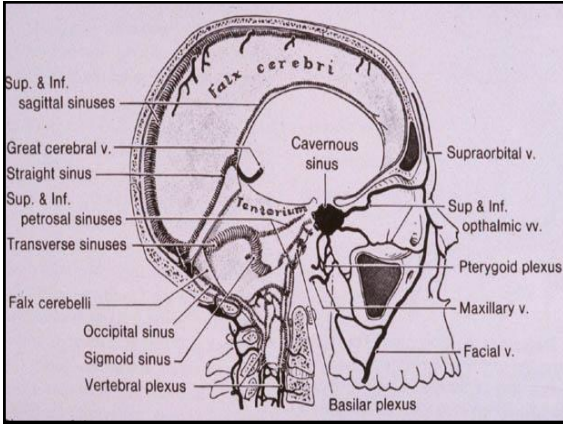
CAROTID CAVERNOUS SINUS FISTULA

Cavernous sinus. . .

- Trabeculated venous cavern
- Houses CN III, IV, VI, V1, oculosympathetics, and ICA
- Drains eye and Adnexa via inferior and superior ophthalmic veins to petrosal sinuses and jugular vein

Fistula. . .

- Rupture of ICA or meningeal branches within sinus
 - Meningeohypophyseal, McConnell's Capsular, Inferior Cavernous
- Mixing of arterial blood in venous system



CAROTID CAVERNOUS SINUS FISTULA

Hemodynamic

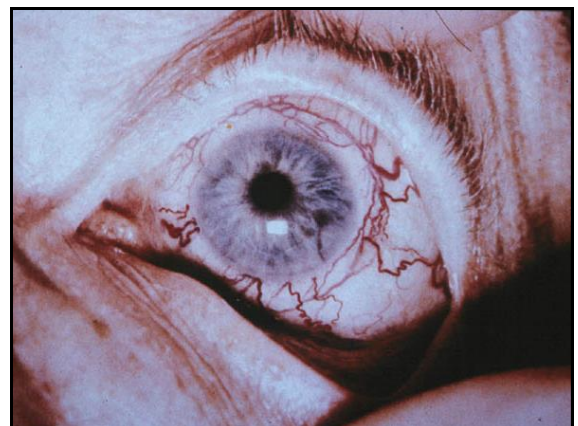
- High flow vs low flow

Angiographic

- ICA vs meningeal branches

Etiology

- spontaneous vs traumatic





CAROTID CAVERNOUS SINUS FISTULA

- ⊙ Increased venous pressure
- ⊙ Orbital congestion
- ⊙ Proptosis (pulsatile)
- ⊙ Corneal exposure
- ⊙ Arteriolization
- ⊙ Orbital bruit
- ⊙ Myopathies and cranial neuropathies with diplopia
- ⊙ Secondary glaucoma

CAROTID CAVERNOUS SINUS FISTULA

Vision threatening – not life threatening

Spontaneous etiology – spontaneous resolution

- ICA compression with contralateral hand

Traumatic – clipping and ligation

Balloon or particulate embolization

Manage glaucoma aggressively

- Prostaglandin analogs

BEWARE THE CHRONIC RED EYE

- Dilated & tortuous episcleral vessels that go to the limbus and back (omega loops) **TT**
- Intervening “clear conjunctiva”
- Red eye that doesn’t respond to any topical treatments
 - Bag-o-Med
- Other non-red eye findings: Chemosis, IOP elevation, proptosis, ophthalmoplegia, ptosis, lid edema

ODE TO A FISTULA

Beware the chronic red eye
 It isn’t infected, inflamed, or dry.
 When corkscrew vessels makes the eye red
 And the patient has bag-o-med.
 The problem is deep
 And arterial blood has begun to seep.
 Your first fistula you will always miss
 But on your second case you will never be remiss

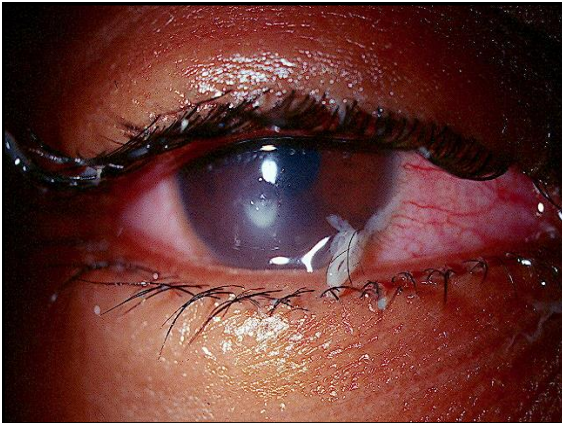
Joseph Sowka, OD

Case 4: Hit or Miss?

Case 5: Hit or Miss?

“PATCHING IN THE EMERGENCY ROOM”

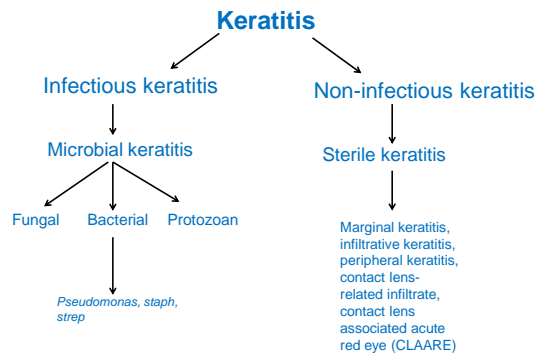
- A 19 YOBF develops a red, painful right eye while wearing contact lenses
- Goes to the emergency room where they patch her eye with gentamicin after trying to remove “white foreign body”.
- Med Hx: (-); No meds; NKDA
- Acuity: PH 20/100 OD, 20/20 OS
- Conjunctival injection OD
- Cornea: epithelial excavation with dense stromal infiltration and purulent discharge

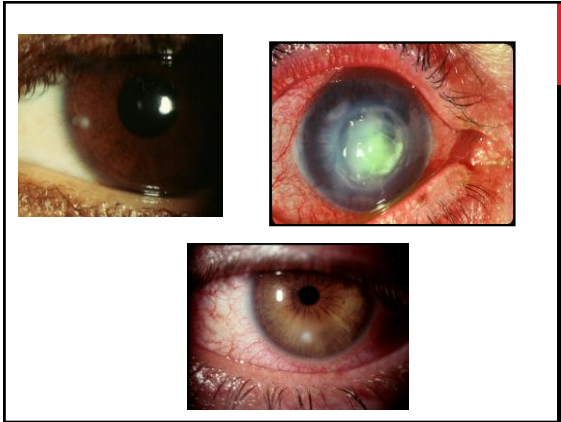


So, what do you think?

What do you want to do now?

~~Corneal
Ulcer~~





BACK TO THE CASE

- Cultures obtained
- Initiated Vigamox Q1min x 5 Min in office, then Q1H while awake
- Scopolamine in office
- F/U 24 hours



- Acuity: CF @ 3"
- Hypopyon

So, now what, smart guy?

- **Vigamox hourly**
- **Add Pred forte Q1H**
 - F/U 6 hours
 - Some improvement in comfort – no worsening of ulcer
 - Continue meds
- **F/U 24 hours**
 - Microbiology report positive for Pseudomonas
 - Susceptible to most antibiotics
 - Improvement in comfort and inflammation

- **F/U 24 hours**
- **Greatly reduced inflammation**
- **Hypopyon resolved**
- **Cornea healing**
- **Final outcome 20/25**

BACTERIAL KERATITIS: MANAGEMENT

- Cultures
- Broad spectrum antibiotics
 - Fortified aminoglycosides and cephalosporins
 - Ciprofloxacin (Ciloxan): iigt q15minx 6H; Q30
 - Ofloxacin (Ocuflox): q30min, BID at night
 - Moxifloxacin or gatifloxacin Q1H (not approved)
 - Iquix; Besafloxacin
- Cycloplegics
- Cold packs
- Corticosteroids

SHAH VM, TANDON R, SATPATHY G, ET AL. RANDOMIZED CLINICAL STUDY FOR COMPARATIVE EVALUATION OF FOURTH-GENERATION FLUOROQUINOLONES WITH THE COMBINATION OF FORTIFIED ANTIBIOTICS IN THE TREATMENT OF BACTERIAL CORNEAL ULCERS. CORNEA. 2010 JUL;29(7):751-7.



Conclusion:

The study failed to find a difference in the efficacy of monotherapy with 4th-generation fluoroquinolones in the treatment of bacterial corneal ulcers of 2–8 mm size when compared with combination therapy of fortified antibiotics.

BACTERIAL KERATITIS: USE OF CORTICOSTEROIDS

But aren't they contraindicated?

- Role of immunosuppression
- When to use?
 - after bacteria suppressed
 - culture and sensitivity report
 - clinical stabilization
 - 24-48 hours best starting point



SCUT: STEROIDS FOR CORNEAL ULCER TRIAL

- Multicenter, double-masked, placebo-controlled clinical trial
- 500 patients with culture-confirmed bacterial keratitis
 - all patients received topical moxifloxacin 0.5%
 - randomized to either topical prednisolone phosphate 1% or placebo
- Outcome measures: BCVA @ 3 months, time to complete reepithelialization, infiltrate/scar size and perforation.

Srinivasan M, Mascarenhas J, Rajaraman R. Corticosteroids for bacterial keratitis: the Steroids for Corneal Ulcers Trial (SCUT). Arch Ophthalmol. 2012 Feb;130(2):143-50

SCUT

- Conclusions: “We found no overall difference in 3-month BCVA and no safety concerns with adjunctive corticosteroid therapy for bacterial corneal ulcers.”
- Application to Clinical Practice: “Adjunctive topical corticosteroid use does not improve 3-month vision in patients with bacterial corneal ulcers.”

SHORTCOMINGS OF SCUT

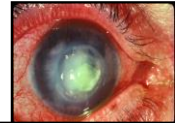
- Corticosteroid regimen was too conservative.
 - Prednisolone sodium phosphate 1% QID X 1 wk, then BID X 1 wk, then QD X 1 wk
 - Initiated 48 hours after moxifloxacin therapy

SHORTCOMINGS OF SCUT

- Considerations were not made for subjective measures such as:
 - Patient comfort & QOL
 - Functional visual recovery time
- How quickly did vision improve in the steroid group vs. the placebo group?
 - "At 3 weeks, corticosteroid treated patients had a 0.024 better logMAR acuity (approximately one-fourth of a line)..."

SHORTCOMINGS OF SCUT

- A **MINOR** footnote:
 - "Corticosteroid treatment was associated with a benefit in visual acuity compared with placebo in the subgroups with the worst visual acuity and central ulcer location at baseline. These subgroup analyses suggest that patients with severe ulcers, who have the most to gain in terms of visual acuity, may benefit from the use of corticosteroids as adjunctive therapy."

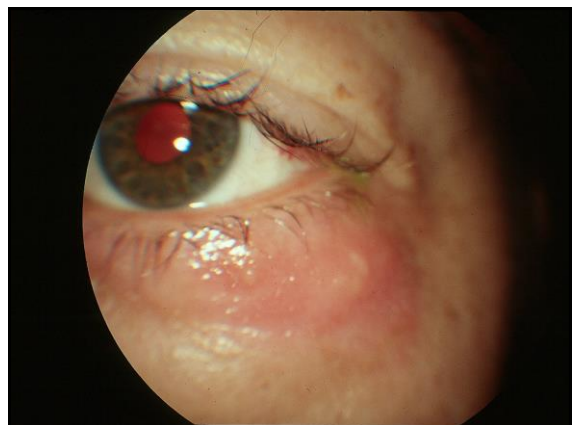


Case 5: Hit or Miss?

Case 6: Hit or Miss?

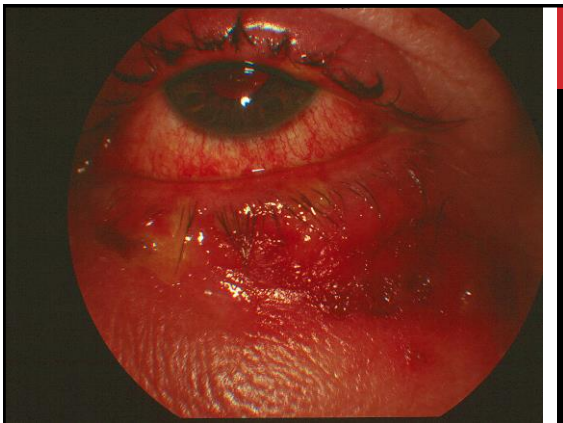
CASE

- A 45 year old female presents with a swollen eyelid and a history of "possibly being scratched by a child during play".
- She self-medicates with OTC antibiotic ointment and it gets worse.



So, what do you think?

What do you want to do now?



So, what do you think?

What do you want to do now?

HERPES SIMPLEX BLEPHARITIS

- Encountered primarily in children, may occur in adults
- Pain, tenderness
- Lacrimation
- Follicles
- Preauricular lymphadenopathy

HERPES SIMPLEX BLEPHARITIS

- **Primary ocular infection in children**
 - Blepharitis or blepharoconjunctivitis
- **Recurrence typically is dendritic keratitis**
- **Recurrent blepharitis can occur**
- **Trigger factors**
 - Fever, emotional stress, menstruation, solar exposure

HERPES SIMPLEX BLEPHARITIS

- No specific treatment: self limiting
- Drying agents
- Topical prophylactic antibiotic ointment
- Topical, oral antivirals advocated by some for severe cases. Viroptic essential if cornea involved. Prophylactic unnecessary
- Topical corticosteroids?
 - Predispose to corneal outbreak?

Case 6: Hit or Miss?

AN INTERESTING CASE...

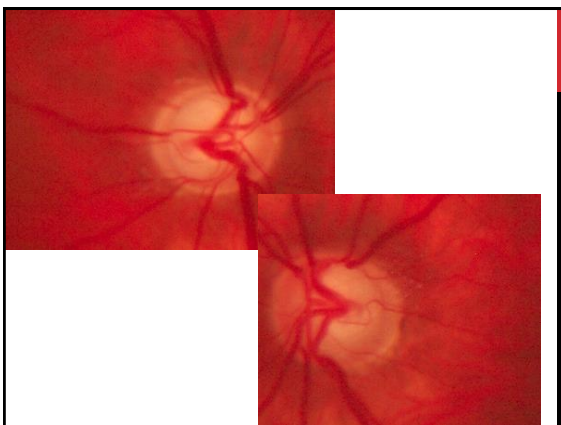
- 40 YO asymptomatic patient
- Constricted confrontation fields
- (-)17.50 – 2.50 x 30 OD; (-)18.00 – 3.00 x 150 OS.
- IOP 42 mm Hg OU
- CCT:549 μ m OD and 535 μ m OS
- Moderate depth central chamber, shallow peripherally
 - Iris bombé?

Okay, What next?

AN INTERESTING CASE...

- Gonioscopy: Anterior TM 1 quadrant OS only- remainder of angles closed
 - Iridodonesis OU

Okay, What next?



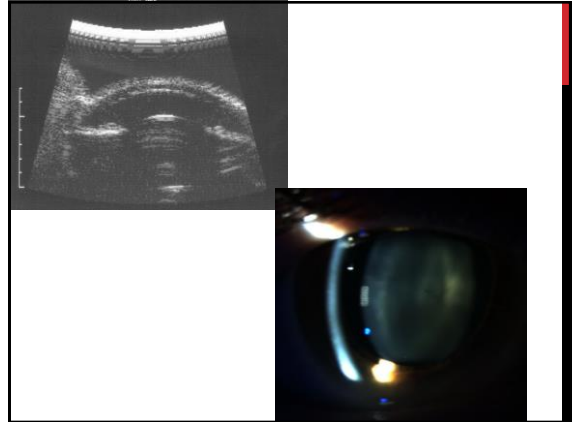
AN INTERESTING CASE...

- Scleral crescent, but no myopic disc or staphyloma
- Biomicroscopy: lens clears plane of pupil?

Diagnosis?

PHACOMORPHIC GLAUCOMA

- Phaco = lens, morph = shape
- Mature cataract causes pupil block and ACG- may be acute or chronic
- Spherophakia- round lens causes pupil block
- Confirmatory findings:
 - Round protruding lens on B scan
 - Axial length 24.12 mm OD; 23.98 mm OS
 - Kind of short for (-) 18 diopter myope, eh?



AN INTERESTING CASE...OUTCOME?

- Rx'ed Combigan and pilo 2% OU
 - IOP 17 mm Hg OU
- OS angle open to TM and SS
 - Pigment and PAS abound
- OD angle doesn't budge
- Undergoes LPI- Opens both angles
 - Residual PAS
- IOP controlled on PGA, timolol, brimonidine
- Major lifestyle change
- Complications abound

