The rare condition of acute zonular maculopathy is the leading differential in this middle-aged female with a history of a preceding viral illness who presents with cotton wool spots and photoreceptor disruption.

Case History
- Patient demographics
  - 43 year old white female
- Chief complaint
  - Central blur in both eyes (OD>OS) of recent, sudden onset
- Ocular, medical history
  - Recently diagnosed with hypertension
  - Recent history of a febrile, upper respiratory infection with otitis and sinusitis
- Medications
  - Clindamycin
  - Hydrochlorothiazide
- Other salient information
  - Most recent blood pressure (taken in the ER)
    - 160/100 mmHg

II. Pertinent findings
- Clinical
  - Distance BCVA 20/30 OD, 20/25-1 OS
  - Additional entrance tests: unremarkable
  - SLEX: unremarkable
  - Amsler grid: Paracentral areas of metamorphopsia
    - OD>OS
  - DFE:
    - Retina: cotton wool spots present in the papillomacular bundle OD >OS
      - Macula: Triangular-shaped areas which appeared darker than the rest of the fundus
      - OCT: Patchy disruption of photoreceptor integrity line OD,OS
- Physical
  - Patient is still suffering ear pain from otitis but physical exam is otherwise unremarkable
- Laboratory studies
  - Patient refused all additional serology because she was uninsured
    - Records were obtained from ER and no notable findings were present
  - Patient did complete a home HIV screening test which was negative
- Radiology studies
  - Chest X-ray in ER was negative

III. Differential diagnosis
- Primary/leading
  - Acute macular neuroretinopathy (Outer retinal pathology)
  - Infectious (Inner retinal pathology)
- Others
o Inner retinal pathology -> Hypertensive retinopathy, diabetic retinopathy, systemic lupus erythematosus, infectious, neoplastic, emboli, trauma
o Outer retinal pathology -> Central serous chorioretinopathy, choroidal neovascular membrane, histoplasmosis, foveomacular dystrophy, multiple evanescent white dot syndrome

IV. Diagnosis and discussion
• Acute macular neuroretinopathy
  o Typically affects healthy females (in their second to fourth decade) following a viral illness
  o Slow resolution, but ultimately can return to normal acuity levels
  o Central abnormalities on Amsler grid and c/o reduced central vision especially at near
  o Disruption of photoreceptors
• Expound on unique features
  o This is a very rare condition in which the evidence is limited to case reports.

V. Treatment, management
• Treatment and response to treatment
  o No ocular treatment was needed except monitoring, and within six weeks the patient’s symptoms had totally resolved
• Research
  o Limited evidence exists due to rarity of the condition. In case reports, typically the vision does return to near normal levels after weeks or months but anatomical irregularities persist.
• Bibliography

VI. Conclusion
• Clinical pearls
  o Initially rule out the worst case scenario
  o Treat the treatable
    ▪ The simplest solution may be the best
  o When all else fails, follow-up
Tattoo Related Panuveitis

1. Patient profile and initial history
2. Differential diagnosis of bilateral uveitis
   a. Infectious causes
   b. Autoimmune causes
   c. Masqueraders
3. Review of blood work
4. Durezol vs Pred Forte and Steroid Response
5. Posterior Pole involvement
   a. OCT, Retinal Fluorescein Angiography
   b. Instituting oral prednisone
6. Differential Diagnosis of Panuveitis
   a. Infectious causes
   b. Autoimmune causes
   c. Masqueraders
7. Tattoo Related Panuveitis
   a. Review of the literature
   b. Proposed pathophysiology
   c. Treatment
Red Eye with a Buzz: Carotid Cavernous Sinus Fistula
Case Report for Ellerbrook Grand Rounds; Academy Anaheim 2016
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Abstract: A 52 year-old Latina’s initial diagnosis is dry eye, sixth nerve palsy with a sinusitis secondary to a tooth infection. She returns today for consultation for CT imaging to confirm a carotid cavernous sinus fistula.

I. Case History

- 52 year-old Latina Housekeeper
- Chief complaint of pain in and around the right eye for about one month and an associated headache. The severity was mild and had not changed. Near vision blurred reported. Diagnoses with dry eye, possible sinusitis and presbyopia. Artificial tears and readers were prescribed and patient was referred to her PCP. She returned on March 16, 2015 for follow-up from her PCP who prescribed medication for her headaches. She reports redness of the right eye and it feels smaller than the left. Photosensitivity reported. Dry eye diagnosed with directions to use Systane Balance QID. April 16, 2015 patient returns with a red eye that has now progressed to dilated blood vessels; she reports double vision when looking right. Patient associates double vision with acetaminophen and amoxicillin. She also states that she has a ticking sound in the right ear.
- Ocular history: Pterygium of the right eye about 25 years ago. Last Comprehensive Examination: 2013
- Medical history: Rheumatoid Arthritis, Migraines, Right side headache which she attributes to a toothache which she has been prescribed amoxicillin and acetaminophen. A ticking or whooshing sound is reported that wakes her up at night.
- Medications and Allergies: Acetaminophen, Motrin and Amoxicillin. NKMA

II. Pertinent Findings

Clinical Testing:
- Best corrected visual acuities at the time of the examination were found to be 20/20- in the right eye (OD) and 20/20 in the left eye (OS), all measured at 6m. Uncorrected Near visual acuities were found to be 20/60 for both right and left eyes. Near Visual acuities were corrected to 20/20 with a moderate add.
- Pupils were equal round reactive to light and near point stimuli. No APD was noted
- Ocular motilities:
  - O.D.: Limited Abduction & Diplopia reported on dextroversion
  - O.S.: Full
- Cover Test:
  - Dist: 8 PD Intermittent ET
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- Near: 4 PD Intermittent ET
- Confrontation VF were to finger counting
- Biomicroscopy revealed the following:
  - Cornea: Arcus
  - Conjunctiva:
    - O.D.: 4+ Dilated vessels inferior-temporal radiating posteriorly
    - 1+ injection nasally with a small pinguecula
    - O.S.: Nasal and Temporal pinguecula
- IOP were O.D.: 19 mmHg and O.S.: 16 mmHg (GAT).
- BP: 118/80
- Retina Vasculature: O.D.: Tortuosity of Veins
  - O.S.: Normal
- CBC with Differential:
  - Normal
- CT Imaging and MRI
  - Right Orbit Enlarged Superior Ophthalmic Vein

III. Differential Diagnosis

Differential diagnoses considered include:

1. Carotid Cavernous Sinus Fistula
2. Metastatic Tumor
3. Thyroid Ophthalmopathy
4. Other Arteriovenous Malformations

1. Carotid Cavernous Sinus Fistula (CCF)¹
   A. Enlarged Superior Ophthalmic Vein on CT or MRI
   B. Unilateral Proptosis & Redness
   C. Asymmetric IOP
   D. Diplopia
   E. Cranial or Orbital Bruit

2. Metastatic Tumor³
   A. Pain variable
   B. Mild Proptosis
   C. Signs and symptoms include monocular blurred vision, diplopia, ptosis and some redness.
   D. History of primary cancer

3. Thyroid Ophthalmopathy (Graves’ Ophthalmopathy)
   A. Bilateral
   B. Hyperthyroidism
C. Symptoms include dry and gritty ocular sensation, photophobia, excessive tearing, double vision, and a pressure sensation behind the eyes.
D. The most common clinical features of are upper eyelid retraction, edema, and erythema of the periorbital tissues and conjunctivae, and proptosis pain, brow ache, pressure, poor vision with haze and redness.
E. Women 16:100,000 versus Men 3:100,000

4. Other Arteriovenous Malformations
   A. Congenital lesions
   B. Quite Rare
   C. Central Nidus
   D. Orbit Bruit
   E. Can occur in other areas of the brain

IV. Diagnosis and Discussion

• The initial diagnosis of dry eyes was correct, but not complete based on the information ascertained from the case history. The Ticking/Whooshing sound described in the case history is a tell-tale sign of CCF.

• CT & MRI Studies confirm an enlargement of the Superior Ophthalmic Vein confirm the diagnosis of Carotid Cavernous Sinus Fistula.

• The diagnosis is based on clinical manifestations and radiological evaluations.

• Carotid Cavernous Sinus Fistula has classifications depending on the etiology and vasculature involved.

V. Carotid Cavernous Sinus Fistula
   Clinical Signs and Symptoms

• Red eye
• Diplopia
• Bruit (buzzing or swishing sounds)
• Decreased vision
• Asymmetric IOP
• Proptosis
• Facial pain in the distribution of the first (and rarely the second) division of the trigeminal nerve
• CT or MRI are beneficial in confirming the diagnosis.
VI. Treatment and Management

- The patient was further evaluated with a catheter angiogram for confirmation of the CCF and location ICA, ECA, or Meningeal branches.

- Once the ICA was identified as the site of the AVM, endovascular coil embolization was performed. The patient signs and symptoms have been alleviated and the patient is doing well.

VII. Take Home

- Diagnosis of Carotid Cavernous Sinus Fistulas can be challenging depending on the type and the time of presentation of the patient.

- With a comprehensive history, examination findings, and ancillary testing, CCFs can be differentiated from other common disease processes.

- The signs and symptoms of indirect, low-flow CCFs are often mistaken for conjunctivitis, dry eyes and the astute clinician should understand that further testing and questioning is indicated.

- Patient education is important. This can be a fatal disease if the proper testing and diagnosis are not realized

- The classic signs are a history of Head Trauma, Proptosis, Orbit or Cranial Bruit and Conjunctival Congestion.

- A dural CCF should be considered when presented with a spontaneous red eye, chemosis of the conjunctiva, unilateral elevated IOP, abducent nerve paresis, or mild orbital congestion with proptosis.\(^{16}\)

- The goal of CCF treatment is to completely occlude the fistula while preserving the normal flow of blood through the ICA.\(^{4}\)

- Transarterial or Transvenous Coil Embolization is the first treatment modality for most CCFs.

- Conservative management, consists of external manual compression of the ipsilateral cervical carotid artery several times a day for 4-6 weeks, may be effective in the treatment of indirect low-flow CCFs.\(^{5}\)