Abstract –
We present optic neuritis in a new patient, who is taking topicals for her symptoms per an outside practitioner. She exhibits hallmark signs, requires diligent education, and is referred for an immediate ER consultation.

1. Case History
   a. 31 yo AF
   b. CC: blurry vision with eye pain x 7 days OS
   c. POHx: myopia, last eye exam 1 year ago. No previous episodes
   d. PMHx: Diabetes mellitus type 2, onset 2013, controlled with medication
   e. Social Hx: unremarkable
   f. Meds: TobraDex 4x/day OS x 2 days (prescribed by previous O.D.), Metformin
   g. Patient visiting from out of town
   h. No contact lens wear
   i. Visual field loss with hazy appearance OS
   j. No prior diagnosis of multiple sclerosis
      i. (-) Numbness
      ii. (-) Tingling
      iii. (-) Weakness or fatigue
      iv. (-) Pain
   k. No history of trauma

2. Pertinent findings
   a. VA (cc) OD: 20/20, OS: 20/100, PH: 20/60
   b. (+) APD 2+ OS
   c. (+) Pain on eye movement on left and right gaze OS
   d. (+) Red cap desaturation; 70% red cap desaturation OS
   e. (+) Reduced perception of light intensity
   f. BP: 118/74 mmHg
   g. DFE OD unremarkable
   h. DFE OS (fundus photos*)
      i. (+) Disc edema, indistinct margins
      ii. (-) Disc hemorrhage
   i. Visual field testing OS (visual field printout*)
      i. Generalized visual field loss
   m. OCT OS (OCT printout*)
      i. (+) Retinal axonal loss
      ii. (+) Disc edema
   n. Treatment:
      i. Discussed in detail condition, association with Multiple Sclerosis versus other differentials
ii. Not treated with topical medications, discontinue Tobradex
iii. Immediate referral to ER for treatment with intravenous steroids and MRI
iv. Emphasized urgency, need for treatment in order to preserve vision

3. **Differential diagnosis**
   a. Primary/Leading: Ischemic optic neuropathy
      i. Sudden, painless vision loss of moderate degree
      ii. Typically occurs in patients 40 to 60 years of age
      iii. Altitudinal or central visual field defect
   b. Other:
      i. Acute papilledema
         1. Bilaterally swollen, hyperemic discs with nerve fiber layer edema
      ii. Severe systemic hypertension
         1. Hard exudates, retinal edema, cotton-wool spots, flame-shaped hemorrhages, and optic nerve head edema
         2. May have decreased vision
      iii. Orbital tumor compressing the optic nerve
         1. Proptosis, pain, displacement of globe away from the location of the tumor
         2. Mass found with neuroimaging
         3. Optic disc edema
      iv. Intracranial mass compressing the afferent visual pathway
         1. Mass found with neuroimaging
         2. Afferent pupillary defect

4. **Diagnosis and Discussion**
   a. Optic Neuritis
      i. Incidence of optic neuritis in adults
         1. Caucasian females between ages 18-45 most commonly affected
         2. Annual incidence of 6.4 per 100,000 in the US
      ii. Complications/associated signs
         1. Permanent optic nerve damage
         2. Reduced visual acuity
      iii. Common ocular signs/symptoms
         1. Relative afferent pupillary defect in unilateral or asymmetric cases
         2. Decreased color vision
         3. Pain on eye movement
         4. Swollen disc (1/3 of patients) or normal disc (2/3 of patients)
      iv. Etiology
         1. Multiple sclerosis
            a. 50% risk of developing MS with 1 episode of optic neuritis
         2. Childhood infections or vaccinations: measles, mumps, chickenpox
         3. Viral infections
         4. Granulomatous inflammations
         5. Idiopathic
      v. Pathophysiology
         1. Inflammatory demyelination of the optic nerve
2. Perivascular cuffing, edema in the myelinated nerve sheaths, and myelin breakdown
3. Myelin loss exceeds axonal loss

b. Unique features
   i. Swollen optic nerve head is less common in adult patients
   ii. No prior diagnosis of multiple sclerosis

5. Treatment/Management
   a. Management
      i. Referral to ER in Chicago
      ii. Unable to coordinate MRI or administration of IV steroids at this visit
      iii. Patient returned to home state and being seen by ophthalmologist
      iv. Coordinating care and MRI with patient
      v. Chart note and records of testing faxed to home state ophthalmologist
      vi. Patient currently receiving IV steroids and MRI care from home state MD

b. References

6. Conclusion
   a. Optic neuritis most common in females between ages of 18-45
   b. Increased risk of optic neuritis with multiple sclerosis diagnosis
   c. Refer patient without prior diagnosis of multiple sclerosis for MRI and IV steroids
   d. Corticosteroids speed up visual recovery without affecting final visual outcome
   e. MRI important to rule out other differentials, confirm MS or future progression if lesions not currently present
   f. Need to work with ER doctor for management, MD and OD in home state for continuity of care
   g. Help determine proper timeline for follow up, especially due to travel arrangements