Drug-induced intraocular inflammation: A description of the clinical features of brimonidine-associated uveitis
Alyssa Louie
Primary Care Resident, San Francisco VA

Abstract: A description of the clinical features, diagnostic work-up, and management of acute anterior uveitis caused by brimonidine, a widely used glaucoma medication.

I. Case History
   a. Patient demographics: 74 year-old white male
   b. Chief complaint: eye pain, redness, irritation for last 2 weeks
   c. Ocular and medical history:
      i. Ocular history
         1. Primary open angle glaucoma OU, diagnosed 8 years ago
         2. Senile cataracts OU, not visually significant
         3. Type 2 Diabetes without retinopathy OU
         4. No prior history of uveitis
      ii. Medical history: Diabetes Mellitus Type 2
      iii. No known drug allergies
   d. Medications
      i. Ocular: dorzolamide BID OU (1.5 years), brimonidine BID OU (11 months), travatan QHS OU (5.5 years)
      ii. Medical: metformin 500mg tab BID PO

II. Pertinent Findings
   a. Clinical exam
      i. Visual acuities: OD 20/20-, OS 20/20-
      ii. Goldmann applanation tonometry: 13 mm Hg OD, 13 mm Hg OS
      iii. Anterior segment
         1. OU: 3+ diffuse conjunctival injection
         2. OU: central and inferior granulomatous keratic precipitates
         3. OU: Grade 1+ cell, 1+ flare
         4. OU: No synechiae or iris changes were present
      iv. Posterior segment
         1. Optic Nerve
            a. OD: Cup-to-disc ratio 0.70H/V, distinct margins
            b. OS: Cup-to-disc ratio 0.75H/V, distinct margins
         2. Posterior pole, periphery, vitreous: unremarkable OU
   b. Laboratory Studies
      i. ACE, Lysozyme, FTA-ABS, VDRL, HLA-B27, Rheumatoid Factor, ANA, PPD, Chest X-ray: all negative/unreactive

III. Differential Diagnosis
   a. Leading diagnosis: Brimonidine-induced bilateral acute anterior uveitis
   b. Differential diagnoses
      i. Fuchs’ heterochromic iridocyclitis
         1. Both can present as asymptomatic and hypertensive uveitis with diffuse stellate keratic precipitates and no synechiae
      ii. Drug-induced uveitis secondary to prostaglandin analog use

IV. Diagnosis and discussion
   a. Brimonidine is a well-known cause of ocular surface disease but is less commonly known to cause uveitis
i. Common side effects: hyperemia, burning, conjunctival follicles
ii. Adverse effects: photophobia, conjunctivitis, corneal erosions
iii. Anterior uveitis secondary to brimonidine may be an immunological extension of the ocular intolerance experienced by those patients who are predisposed to adverse effects³
b. Unique features
   i. Uveitis secondary to brimonidine usually occurs after chronic use (mean time until onset: 11-15 months), but there have been reports of it occurring as early as 7 days after initiation of brimonidine³
   ii. Can occur concurrently with or be preceded by allergic or follicular conjunctivitis⁴
      1. Cessation of treatment after a patient develops allergic conjunctivitis may mean that many patients stop using brimonidine before anterior uveitis would normally occur³
   iii. Uveitis secondary to brimonidine has been shown to cause an increase in intraocular pressure
   iv. Typically, anterior chamber reaction tends to be 1-2+ with diffuse keratic precipitates
   v. Does not appear to be dose-dependent, and has occurred with different preservatives and also in fixed combination drops ⁵
V. Treatment and management
   a. Our patient: prednisolone acetate 1% QID OU, cyclopentolate 1% BID OU, discontinue 0.2% brimonidine OU
      i. Follow-up 2 weeks later: uveitis resolved OU
      ii. Re-challenge 4 weeks later: 0.2% brimonidine BID OD
      iii. Follow-up 3 weeks later: patient returned with recurrence of anterior uveitis OD
   b. Discontinuing the use of brimonidine is the primary treatment¹
   c. Although the condition often resolves without treatment after discontinuation of brimonidine, treatment with topical corticosteroids may be initiated in eyes with severe symptoms
   d. After discontinuing brimonidine, intraocular pressure may still be too high and may require additional hypotensive therapy
VI. Conclusion
   a. In the presence of expected clinical features, withdrawal of brimonidine should be considered before starting an extensive investigation of uveitis¹
   b. In the presence of ocular surface disease secondary to brimonidine allergy, clinicians should monitor closely for signs of uveitis
   c. Even though it is rare, brimonidine associated uveitis can be potentially sight threatening and therefore should be recognized early

References