Topic: Anterior Segment

Abstract Title:
Bilateral Acute Iris Transillumination (BAIT) and Utilization of Prosthetic Contact Lenses to Alleviate Secondary Photophobia

Abstract:
A patient presents with bilateral acute iris transillumination (BAIT). This case reviews the differential diagnoses and discusses utilization of prosthetic contact lenses to alleviate photophobia due to this rare cause of iris atrophy.

I. Case History:
• Patient demographics: 48-year-old Caucasian male
• Chief complaint: Photophobia
• Ocular history:
  • History of episode with sudden onset of severe photophobia, bilateral throbbing eye pain, and blurred vision ~20 years ago
  • Bilateral acute iris transillumination (BAIT)
  • Mild non-proliferative diabetic retinopathy OU
  • Senile cataracts OU
  • No ocular history of trauma
• Medical history:
  • Streptococcus infection
  • Venous stasis
  • Diabetes mellitus
  • Depression
  • Sleep disturbances
  • Diverticulosis
  • Barrett’s esophagus
  • Gastroesophageal reflux disease
  • Chronic obstructive pulmonary disease
  • Obesity
  • Hyperlipidemia
  • Psoriasis
• Medications
  • Atorvastatin
  • Budesonide/Formoterol inhaler
  • Furosemide
  • Hydrocodone
  • Ketoconazole 2% cream
  • Pantoprazole
  • Ranitidine
  • Tiotropium
II. Pertinent Findings:

- Clinical:
  - Best corrected visual acuity: 20/20 OD, OS with spectacles
  - Cornea: OU: clear, (-) keratic precipitates, (-) Krukenberg’s spindle
  - Iris:
    - OU: extensive transillumination defects (TIDs) with moth-eaten appearance 360 degrees
    - OD: vertical corectopia, posterior synechiae 7, 11-12 o’clock
    - OS: horizontal corectopia, posterior synechiae 8-10 o’clock
  - Pupils:
    - OU: fixed pupils without light response, unable to assess for relative afferent pupillary defect
    - OD: 4mm vertically
    - OS: 4.5mm vertically
  - Anterior chamber: OU: deep and quiet
  - Gonioscopy:
    - OD: Open to ciliary body band 360 degrees
      - Pigment in trabecular meshwork: 2+
      - No peripheral anterior synechiae/neovascularization/angle recession
    - OS: Open to scleral spur superior, nasal, temporal quadrants, open to ciliary body inferior quadrant
      - Pigment in trabecular meshwork: 2+
      - No peripheral anterior synechiae/neovascularization/angle recession
  - Intraocular pressure: OD 19mmHg, OS 21mmHg
  - Posterior segment:
    - Optic nerve head:
      - Cup-to-disc ratio: 0.1 round OU
      - Rim: pink and healthy OU
    - Macula/posterior pole/periphery: noncontributory
  - Anterior segment optical coherence tomography (OCT):
    - OD: pigment epithelium absent from inner 2/3 of iris (pupillary region) and severely thin peripheral 1/3 of iris, flat iris approach
    - OS: pigment epithelium absent from inner 2/3 of iris (pupillary region) and severely thin peripheral 1/3 of iris, flat iris approach

III. Differential Diagnosis:

- Primary: bilateral acute iris transillumination (BAIT)
- Others: pigment dispersion syndrome, acute iridocyclitis, Fuch’s uveitis syndrome, pseudoexfoliation syndrome, bilateral acute depigmentation of the iris (BADI), acute angle closure, ocular trauma

IV. Diagnosis and discussion:
Bilateral acute iris transillumination (BAIT) is a rare condition characterized by acute loss of the iris pigment epithelium causing extensive circumferential transillumination of the iris and mydriatic, irregular, nonreactive pupils due to paralysis of the sphincter muscle. Patients may also present with posterior synechiae. Multiple case reports have shown that this condition can masquerade as acute iridocyclitis due to overlapping clinical signs in the acute phase. During initial onset of BAIT, pigment
release into the anterior chamber may appear as inflammatory cells, intraocular pressure is occasionally elevated, and patients present with acute pain and photophobia. Soon after resolution of the initial ocular symptoms and anterior chamber pigment, BAIT may be difficult to differentiate from pigment dispersion syndrome (PDS). In the current case, however, the patient was examined almost more than two decades after his uveitic-like episode presenting with diffuse iris transillumination defects, mid-dilated unresponsive pupils, and severe photophobia. Although both diseases affect younger patients, those with PDS have an insidious onset, posteriorly bowed iris structure, preserved pupil function and mid-peripheral spoke-like iris transillumination without increased sensitivity to light. Other differentials are easier to rule out as pseudoexfoliation syndrome has hallmark fibrillar material, uveitis has inflammatory cells and protein in the anterior chamber with possible keratic precipitates, and bilateral depigmentation of the iris (BADI) is depigmentation of the iris stroma in the absence of transillumination defects.

Although the etiology of this condition is still debated, BAIT is highly associated with a prior viral or bacterial infection as well as with use of systemic antibiotics, predominantly moxifloxacin. This patient had a history of bacterial sepsis for which he was hospitalized and treated with unknown systemic antibiotics. A recent study does suggest a positive association between oral moxifloxacin and a uveitis-like syndrome. Tugal-Tutkun et al. concluded that the relationship between BAIT and antibiotics is coincidental. The common usage of topical moxifloxacin with cataract extraction supports this theory as there are no reported ocular adverse effects. Knapke et al. hypothesized why systemic, but not topical moxifloxacin can cause BAIT. With topical administration, there is ten times the concentration of moxifloxacin in the aqueous than the vitreous while oral administration has around the same concentration in the aqueous compared to the vitreous. This steady reservoir of moxifloxacin in the blood serum and vitreous can continuously damage the iris compared to intermittent topical therapy. However, the numerous cases reported in recent literature without any antibiotic use, suggest that there are other triggers, likely viral or bacterial, causing BAIT.

V. Treatment and management:
This patient was diagnosed with BAIT from a detailed case history, careful slit lamp examination, gonioscopy, and anterior segment OCT to rule out differentials. His chief complaint of extreme light sensitivity was addressed with prosthetic soft contact lenses. The patient reports that use of these lenses increased his comfort when outdoors. No topical treatment was indicated for this case. During the initial inflammatory stage of BAIT, topical corticosteroids may be used to relieve symptoms and antiglaucomatous medications may be used for elevated IOP. After the acute phase, IOP measures should stay within normal limits with preserved visual field and visual acuity.

VI. Conclusion:
Early diagnosis of BAIT is important due to the risk of marked increased intraocular pressure and to avoid unnecessary aggressive treatment and diagnostic laboratory testing for etiologies of uveitis. After the condition stabilizes, patients can be fit into prosthetic contact lenses to relieve secondary photophobia.

Residency Affiliation: VA Palo Alto Health Care System
Residency Name and Location: Primary Eye Care/Low Vision Rehabilitation, VA Palo Alto Health Care System

Available images:
• Anterior segment OCT
• Anterior segment photos

Authors:
• Linda Nguyen, OD
• Cheryl Conovaloff, OD
• David Yang, OD, FAAO

Bibliography: