Title: Acanthamoeba keratitis with sporadic soft contact lens wear in a 17-year-old female

Abstract: Acanthamoeba keratitis is a rare, vision and globe threatening infection with a difficult clinical diagnosis. The following case involves the diagnosis and treatment of Acanthamoeba keratitis in a soft contact lens wearer.

I. Case History
a. 18 year old Caucasian female
b. Chief compliant: light sensitivity and redness for 2 weeks
c. Ocular history:
   i. Sporadic contact lens wear (special occasions) no wear for one month
   ii. Treatment by OD for AC reaction and corneal abrasion with Durezol TID, ketotifen fumarate BID, and ofloxacin QID in the left eye with no improvement
   iii. Patient presented with light sensitivity, redness, and decreased VA OS (20/150) and over the course of 3 weeks improved to 20/25 with no discomfort and mild corneal haze. She was treated with Valtrex 500mg TID, ofloxacin QID OS, Durezol TID OS, and artificial tears PRN.
d. Medical History: unremarkable,
e. Systemic Medications: none and NKDA

II. Pertinent Findings
a. Clinical
   i. BCVA: 20/20 OD, HM OS and no improvement with pinhole
   ii. Pupils: PERRLA with (-) RAPD
   iii. EOM: Full range of motion
   iv. IOP: 14mmHg OD, 20 mmHg OS
   v. SLE: OD WNL, OS 3-4+ conjunctival injection worse perlimbal, corneal ring infiltrate with ulceration 270 degrees, severe central edema,
   vi. Gross Observation: lid edema OS
b. Laboratory Studies: performed next day with corneal specialist
   i. Corneal scrape: cultures negative for Acanthamoeba – re-check with corneal biopsy
      1. OPMP Multiplex PCR for HSV – negative
      2. Fungal culture (Inhibitory Mould agar) – negative
      3. Acid fast culture (Lowenstein-Jensen slant) – negative
      4. Acanthamoeba Culture (BCYE) - negative
   ii. Corneal Biopsy and culture – positive for Acanthamoeba
      1. Aerobic Culture (blood agar)
2. Acanthamoeba Culture (BCYE) – positive
3. Biopsy – microbiology studies positive for Acanthamoeba cysts

III. Differential Diagnosis
a. Primary: Acanthamoeba Keratitis
b. Epithelial Herpes Simplex keratitis - abnormal
c. Healing corneal abrasion
d. Bacterial keratitis
e. Fungal keratitis

IV. Diagnosis and Discussion
a. Acanthamoeba Keratitis
b. Symptoms
   i. Varied degrees with stage of infection, slow onset
   ii. Blurred vision, pain, light sensitivity
c. Signs – vary with stage of infection
   i. Pseudodendritic or punctate corneal epithelial lesions
   ii. Recurrent epithelial erosions
   iii. Epithelial to deep stromal ulcer with pale infiltration

V. Treatment, management
a. Treatment specific to this patient
   i. Vigamox Solution 0.5%
   ii. Polytrim Ophthalmic Solution
   iii. Voriconazole-PF Solution 1%
   iv. Propamide isothionate Compound Solution 0.1%
   v. Chlorhexidine
b. General Treatment
   i. Anti-infective treatment: cationic antiseptic, anti-parasitic, and anti-fungal agents
   ii. Pain management: topical cycloplegic agents and topical NSAIDS, if necessary oral pain medication
   iii. Preserve/regain vision: penetrating keratoplasty (after resolution of infection)
c. Treatment Goals
   i. Primary: Rid the cornea of infection – including cysts
   ii. Preserve vision

VI. Conclusion
a. The patient responded well to medication therapy, a ring infiltrate is still present but there is no ulceration and there is mild corneal neovascularization. The need for a penetrating keratoplasty has been discussed with the patient; however, studies show waiting a minimum of 3 months after finishing treatment improves penetrating keratoplasty success rates.

b. Clinical Pearls
   i. Steroids can mask symptoms without treating the underlying cause
      1. The patient's initial symptoms resolved with the use of Durezol; this did not treat the infection, and possibly increased its severity upon presentation
   ii. Hallmark signs may only appear in end-stage disease
1. A ring ulcer while a sign of Acanthamoeba keratitis only presents in late stage infection. Early diagnosis of this disease is important for best visual outcome and minimal patient discomfort.

VII. References