

Bacterial Keratitis

Infectious keratitis is potentially blinding disease of cornea caused by variety of infections including bacteria virus or fungi. Infectious keratitis can rapidly progress and cause total corneal destruction and melting within 24-48 hours if it is caused by more virulent pathogens. Bacterial keratitis is a very common form of infectious keratitis in the world. Corneal ulceration, stromal infiltration with surrounding corneal edema and anterior segment inflammation are characteristics of bacterial keratitis. Bacterial keratitis remains one of the most important potential complications of contact lens use. Contact lens related keratitis is the leading cause of bacterial keratitis in the US. Considering the devastating nature of bacterial keratitis, early diagnosis and treatment are key to minimizing any visual-threatening sequelae.

Corneal bacterial infections usually starts with an Interruption of the intact corneal epithelium that permits entrance and invasion of microorganisms into the corneal stroma. After penetration they start proliferation and releasing enzymes to facilitate their penetration; a process that causes destruction and melting of the cornea.

Patients with bacterial keratitis usually complain of light sensitivity and decreased vision usually associated with

rapid onset of eye pain and redness. A complete review of systemic and ocular history is essential in patients with bacterial keratitis to identify any potential risk factors that would have made them susceptible to develop corneal ulcer. Contact lens wear, contaminated contact lens solutions, trauma, dry eye, recent corneal diseases or surgeries are some of the most common underlying risk factors. Decreased local immunologic defenses secondary to chronic steroid use, alcoholism, malnutrition, and diabetes is another underlying etiology. The most common cause of corneal epithelial breakdown and the main risk factor for bacterial keratitis is the use of contact lenses, particularly extended-wear contact lenses (picture 1). Of patients with bacterial keratitis, 19-42% are contact lens wearers.

Picture (1) shows an extensive contact lens-related corneal ulceration caused by pseudomonas aeruginosa.

Picture (2) shows the same patient after corneal transplant as medical treatment was not effective because of progressive nature of the ulcer.

Corneal culture, should be obtained by scarping using a sterile spatula or blade, and they should be plated in

different types of culture media. Treatment should be initiated with broad-spectrum antibiotics using the following: tobramycin (14 mg/mL) 1 drop every hour alternating with fortified cefazolin (50 mg/mL) or vancomycin (25-50 mg/mL) 1 drop every hour. In small corneal ulcers or when they are located peripherally and no impending perforation or significant thinning is present, intensive monotherapy with fluoroquinolones is an alternative treatment. Surgical intervention will be required if the infection spreads to sclera or significant melting or perforation happens. In these cases corneal full thickness graft (picture 2) or corneal patch graft may be required.

By: Hossein Asghari, MD



Picture (1) – Advanced contact lens-related corneal ulcer caused by pseudomonas aeruginosa



Picture (2) – Same patient as picture 1 after corneal transplant to control the infection

To schedule an appointment at the Kentucky Lions Eye Center, please call 502-588-0550

Office Locations:

Kentucky Lions Eye Center
University of Louisville
301 E. Muhammad Ali Blvd.
Louisville, KY 40202
Adult Clinic (502) 588-0651
Pediatric Clinic (502) 588-0551

The Springs Medical Center
6400 Dutchmans Parkway, Suite 310
Louisville, KY 40206
Adult and Pediatric
(502) 742-2848

Old Brownsboro Crossing
Medical Plaza II
(Pediatric Only)
9880 Angles Way, Suite 330
Louisville, KY 40241
Pediatric Only (502) 588-2552

Meet the Doctors



JUDITH MOHAY, MD

Glaucoma/Cataract



HENRY KAPLAN, MD, FACS

*Retina, Vitreous
and Uveitis*



KARL GOLNIK, MD

Neuro-Ophthalmology



HARRY STEPHENSON, MD

*Comprehensive
Ophthalmology*



JOERN SOLTAU, MD

Glaucoma/Cataract



PATRICK SCOTT, OD, FSO

Optometry



HOSSIEN ASGHARI, MD

*Cornea & Refractive
Surgery*



DOUGLAS SIGFERD, MD

Retina & Vitreous



CHRISTOPHER COMPTON, MD

*Oculofacial Plastic
& Orbital Surgery*



ANDREA SMITH, OD

Low Vision / Optometry



APARNA RAMASUBRAMANIAN, MD

*Pediatrics / Ocular
Oncology*



RAHUL BHOLA, MD

*Pediatric Ophthalmology
& Adult Strabismus*



CHARLES BARR, MD

Retina & Vitreous



WILLIAM McNERY, MD, FACS

*Oculofacial Plastic
& Orbital Surgery*