Endophthalmitis is a rare, but devastating outcome after intraocular surgery, trauma, systemic or local infection. It is characterized by inflammation involving the vitreous cavity and the anterior chamber of the eye. Once suspected, patients are subjected to ocular tissue biopsies, with microbial cultures, antibiotics delivered in multiple routes, and sometimes surgery to remove the vitreous gel. Often the patients present with profound and permanent vision loss.

The prevalence of endophthalmitis has been studied for several etiologies. The prevalence of endophthalmitis post-cataract surgery was found to be approximately 0.1%.[1][2][3] It was highest after secondary intraocular lens placement (0.366%) and corneal transplant surgery (0.178%) and lowest after vitrectomy (0.05%).[4] A recent study looked compared the two most common agents of endophthalmitis: Staphylococcus aureus and Streptococcus species.[5] The prevalence of Staphylococcus aureus from cutaneous infections, prevalent rates vary slightly, but for post-anti-VEGF agents and found a low and lowest after vitrectomy (0.045%).[2] A recent study found that the most common organisms isolated after cataract surgery are coagulase-negative staphylococci, up to 70%.[2][7]

Endophthalmitis can result from extension of local infection, such as a corneal ulcer, or from endogenous spread.[1] Endogenous bacterial endophthalmitis develops acutely, caused by streptococci and staphylococci.[6] Staphylococci aures from cutaneous infections, and Bacillus from IV drug use.[8][9] Fungal endophthalmitis is the most common form of endogenous endophthalmitis.

Candida is the most common cause.[8] Posttraumatic endophthalmitis is the most prevalent at 3-17%.[10][11] The most common organisms isolated are staphylococci species and Bacillus cereus.[1] The prevalence may have a wide range due to several risk factors, including contamination, retained foreign body, location/extent of laceration, time to closure, or globe rupture with extrusion of intracocular contents.

This project is intended to be part of a Chicago-area ophthalmology consortium, with the intended purpose of gathering valuable data from the large pool of patients throughout several of Chicago’s large academic and private institutions. Patients with endophthalmitis of all ages, ethnicity, and sex will be sought, and the time period will cover 10 years - from July 1st 1999 to June 30th, 2009. Exclusion criteria include any later change in the diagnosis of endophthalmitis.

Search Criteria

Patients matching the inclusion criteria are determined through a retrospective chart review search of the institution’s medical record system using diagnostic ICD-9 codes for various types of endophthalmitis.

The form details patients’ history, including inciting etiology of endophthalmitis, and symptoms - eye pain, vision changes, and exam findings. Pertinent exam findings include vision pre-op, post-op, post-op trauma vision, vision at diagnosis of endophthalmitis, vision 6 months following diagnosis. Other initial exam findings are noted.

Diagnosis and management will be recorded. Data is collected on method of diagnosis - anterior chamber and/or vitreous tap for culture or vitrectomy. Results of cultures are an important component of the data, specifically what organism grew as well as antibiotic sensitivities. Medications used to treat the patients will be documented - topical, intravitreal, intravenous, oral antibiotics and any steroid used. The goal of the form is to provide as much data about each patient’s case as possible to give depth to the data repository.

7 patients have been identified thus far. The ages ranged from 23-81, median 47, with 4 males and 3 females. Of the 3 patients that had post-cataract surgery endophthalmitis, 2 had post-surgical complications of lens capsule tear, and 1 of these underwent a vitrectomy to remove lens material the same day. Only one of these patients grew an organism: Propionibacterium acnes. All 3 had vitrectomy and all 3 retained good vision (23/200, 1/3 with 20/600) after being treated with vancomycin + ceftazidine intravitreally. 3 patients had endogenous endophthalmitis. Each were immunocompromised - 2 with leukemia, 1 post lung transplant for cystic fibrosis. All three were clinical diagnoses based on blood or lung culture. Organisms suspected were Aspergillus and Candida albicans and glabrata. All three expired (two within 1 year, the third had resided of infection with IV antifungals but subsequently expired within 1 year). We were unable to assess vision in these critically ill patients. The last patient had Streptococcus viridans endophthalmitis after an intraocular Avastin injection to treat a fluid leak from a neovascular membrane beneath the retina. She had a poor visual outcome, but not significantly different than before the onset of endophthalmitis.

From the initial Loyola Data, the most common etiologies of endophthalmitis are post-cataract surgery and endogenous. The post-cataract surgery patients retained good vision, whereas the eye findings in the immunocompromised endogenous endophthalmitis patients reflected their critical health conditions. Endogenous cases are more likely to be diagnosed clinically and from blood cultures rather than anterior chamber or vitreous tap/biopsies. Standard treatment of intravitreal vancomycin/cefazidime was initiated in the post-cataract and post-avastin injection patients, but treatment was systemic with antifungals for the cases of fungal endophthalmitis. Subsequent data will be collected from Loyola with an estimated 25 cases, and added from other Chicago-area academic and private centers.

References