

## Background

Ocular emergencies include central retinal artery occlusion, acute angle closure glaucoma, retinal detachment, penetrating globe injuries, chemical burns and as highlighted by our case endophthalmitis.

Endophthalmitis is defined as intraocular infection of the coats of the eyeball associated with diffuse vitreous inflammation. Endophthalmitis can be from an exogenous or an endogenous source. Exogenous sources of endophthalmitis can include trauma, secondary to keratitis, or post surgery. Endogenous endophthalmitis, also known as metastatic endophthalmitis, occurs from hematogenous spread of microorganisms secondary to underlying systemic disease like immunosuppression, diabetes, renal pathology, etc.

Our case demonstrates an interesting presentation of persistent MSSA bacteremia causing bilateral endogenous endophthalmitis in a patient with multiple comorbidities and a unique potential source of initial infection, his dental cavities

## Case Presentation

A 74-year-old male with a significant past medical history of diabetes mellitus type 2, CKD stage III, chronic diastolic CHF, hypertension, psoriasis, and hyperlipidemia presented to an outlying hospital for acute respiratory failure, secondary to acute on chronic diastolic CHF and sepsis. At that time, patient met SIRS criteria with tachypnea, leukocytosis of 27.2, and lactic acidosis of 2.6. Subsequent blood cultures were positive for MSSA. Patient also presented with acute kidney injury on CKD stage III, NSTEMI type 2, and chronic microcytic anemia. After several days, he began to experience worsening bilateral central vision loss, more prevalent in the right eye, that was accompanied with flashers, pain, and significant photophobia. Stroke workup with MRI angiogram and MRI of globes did not reveal a cause of his ocular symptoms. Patient was then transferred to Kettering Health Dayton for urgent ophthalmology evaluation. Ophthalmology evaluation revealed bilateral conjunctival injection and right eye hypopyon, vitreous haze, and corneal edema, all of which are suggestive of bilateral endogenous endophthalmitis. Infectious disease was consulted, who recommended intravenous nafcillin and source control. Transesophageal echocardiogram was performed, which showed no evidence of valvular vegetation. Patient did have a history of psoriasis but no fissures, cracks, or open sores apparent over where he typically gets a rash. No evidence of cellulitis or phlebitis was seen. Of note, our patient had evidence of poor dentition with several missing teeth and widened gaps between teeth, suggestive of progressive tooth decay. This became a likely presumed source of the patient's MSSA infection. He was transferred to a tertiary center, where his endophthalmitis was treated with vitreous antibiotic injection, eye drops, and IV antibiotics. His MSSA bacteremia was successfully treated with nafcillin and patient was discharged from the tertiary care center with vision intact.

## Images

Figure A

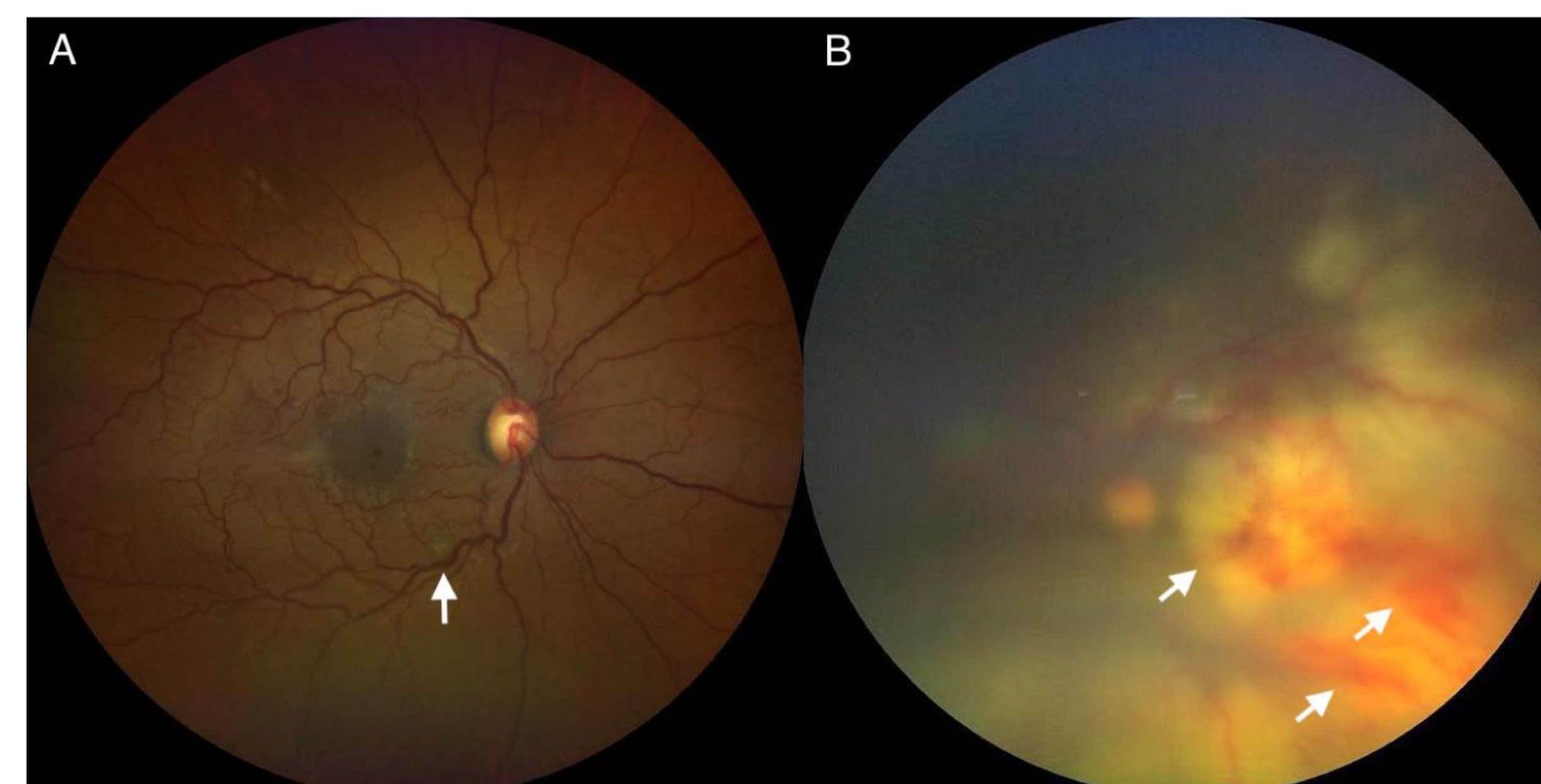


Figure B

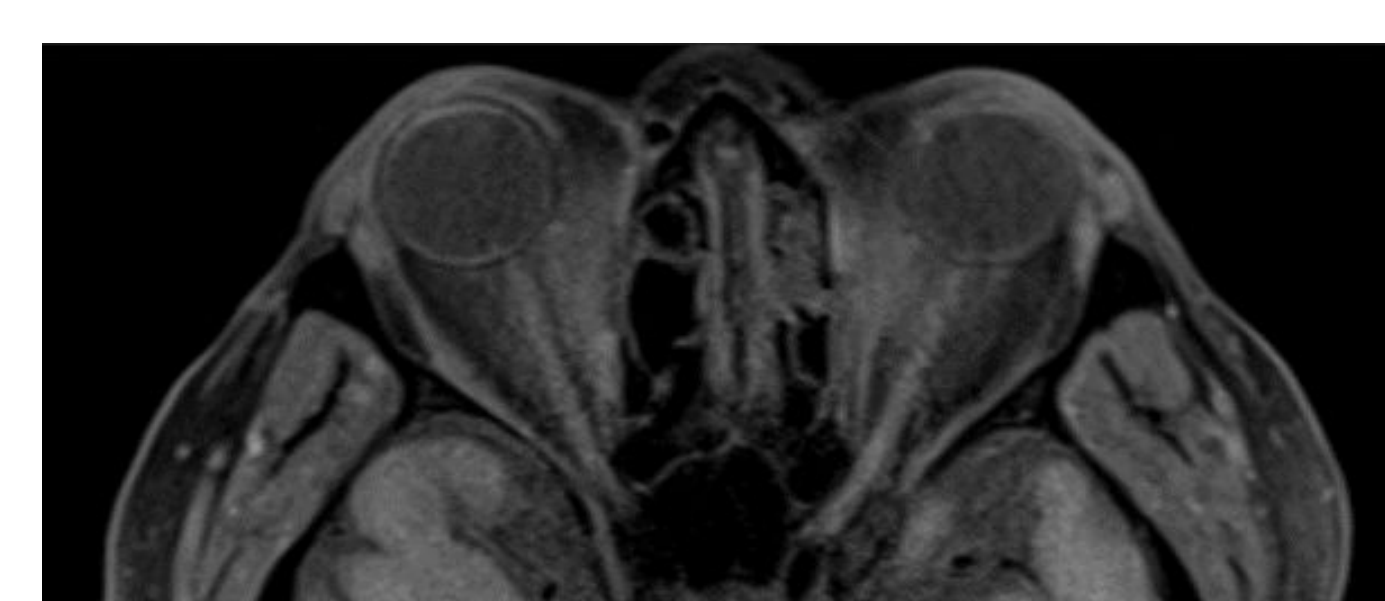
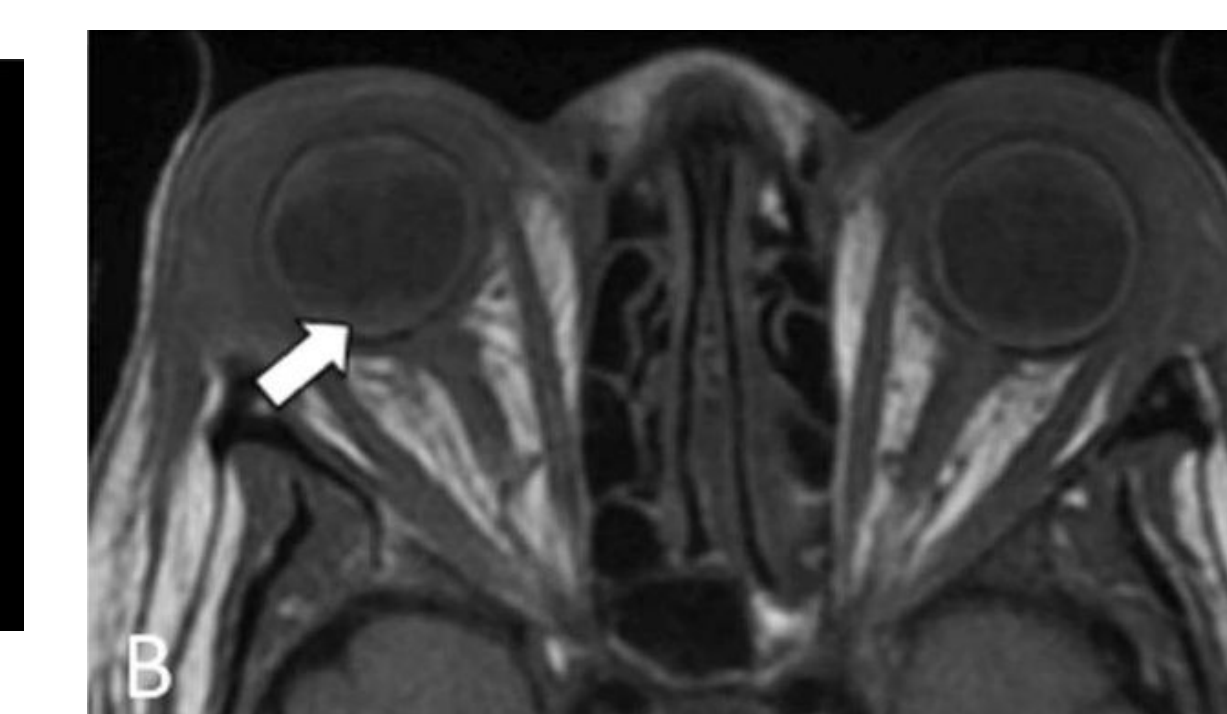


Figure C



## Images Interpretation

Figure A: Clarus color fundus photography from “Endogenous Endophthalmitis.” from University of Iowa: A - Right Eye Clear media with slightly tortuous vessels. B - Left eye hazy media, temporal and inferior white subretinal lesions with overlying retinal hemorrhages suggestive of endophthalmitis.

Figure B: MRI of our patient displaying unremarkable globes/orbits with generalized atrophy and chronic small vessel ischemic disease.

Figure C: Image from Neuroradiology Journal, “MRI image findings of endophthalmitis”. Shows subtle hypersensitivity layering posteriorly within the vitreous chamber.

## Discussion

Our case illustrates a unique presentation of bilateral endogenous endophthalmitis. Our patient did have multiple comorbidities as noted on the case description, as well as an interesting potential source of initial bacteremia - his dental cavities. Given how rare the endogenous endophthalmitis is, most of the cases in literature describe endophthalmitis in patients with immunosuppression, malignancy, bacteremia, etc. There are few cases reported after dental work including dental cleaning or dental implants. There are also cases reported secondary to dental abscess and secondary to mild dental infection.

The most common causes of bacterial endogenous endophthalmitis is gram positive streptococcus and staphylococcus. Septic emboli that migrate to the posterior segment vessels are the primary nidus for the infection and resulting inflammation. Given the anatomy of the vasculature right sided endophthalmitis does occur more frequently and may present first.

Symptoms of endogenous endophthalmitis vary from pain, redness, irritation, swelling, photophobia, defective vision, floaters, and flashes. Clinical signs range from periorbital edema, scleral inflammation, chemosis, conjunctival congestion, corneal infiltrate, endothelial exudates, corneal edema, etc. Clinical suspicion warrants further investigation by imaging modalities and lab work. Imaging modalities and lab work include B scan Ultrasound, optical coherence tomography, anterior chamber and vitreous tap, PCR, and blood cultures. Treatment is determined by etiology but overall consists of multimodal treatment teams that usually include infectious disease, radiology, and ophthalmology.

## Conclusions and Learning Points

The learning points of this case is to always consider endophthalmitis in patients who have vision loss, eye pain, conjunctival injection, edema, floaters, and photophobia and remember to check dentition in these patients as well, especially if a clearer source of infection has not already presented itself. Because of timely intervention, our patient was able to receive the appropriate care and keep his vision.