

**Title:** Rhino-Orbital-Cerebral Mucormycosis in the Setting of Cardiogenic Shock

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**Introduction:** Rhino-orbital-cerebral mucormycosis is a rare disease that commonly presents in the patients with uncontrolled diabetes or immunosuppression as chemosis, sinusitis, proptosis, and ophthalmoplegia. Mortality rate is 54%; with early surgical debridement and antifungal therapy as primary intervention.

**Case report:** A 51-year-old male with past medical history of pre-diabetes and coronary artery disease was admitted for myocardial infarction. After coronary bypass surgery, the patient went into cardiac arrest, cardiogenic shock, and developed multi-organ failure. Ophthalmology was consulted for evaluation of “eye swelling” and vision loss. Preliminary ophthalmic examination revealed proptosis, limited extra ocular movements, and central retinal artery occlusion. CT with contrast showed extensive intraorbital inflammation and severe left sinusitis. Amphotericin B was started for high suspicion of fungal infection. ENT performed maxillary biopsy, which showed angioinvasive mucormycosis. Patient underwent combined orbital exenteration and maxillectomy. Three weeks post-operatively, the patient fully decompensated, went into cardiac arrest, and was pronounced deceased

**Discussion:** Mucormycosis most commonly infects patients with diabetic ketoacidosis or immunosuppression. Though our patient had pre-existing prediabetes on admission, his A1c was 6.2%, and his blood glucose throughout his hospital course was well controlled. He had been in cardiogenic shock for 7 weeks prior to presentation, and developed multi-organ failure. Prolonged cardiogenic shock causes systemic inflammation and subsequent immunosuppression, along with systemic hypoperfusion, leading to multiorgan failure, as was the case in our patient. Mucormycosis has been found to flourish in pro-inflammatory, immunosuppressed, and hypoxic environments. In the absence of other etiologies of immunosuppression, it is therefore likely that mucormycosis infection developed as a result of prolonged cardiogenic shock. To our knowledge, this has only been reported once in the literature, in a case series on mucormycosis development in intensive care patients.

**Conclusion:** Rhino-orbital-cerebral mucormycosis has a high mortality rate, and should be considered on the differential for critical care patients with developed proptosis and severe sinusitis.