

Case Report

A rare case of mucormycosis in heart transplantation

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ABSTRACT

Mucormycosis is the third most common invasive fungal infection with a high mortality rate seen in immunocompromised patients. It is an increasingly well-reported invasive fungal infection that affects recipients of solid-organ transplant. The incidence of mucormycosis in patients with heart transplants ranges from 0 to 0.6%. We reported a case of mucormycosis in a young heart transplant male recipient.

Keywords: Mucormycosis, Heart transplant, Diabetes mellitus

INTRODUCTION

Mucormycosis, also known as zygomycosis, is an opportunistic and lethal mycological infection caused by a fungus of the order Mucorales. After aspergillosis and candidiasis, mucormycosis is the third most common invasive fungal infection.¹ Cytomegalovirus infection in solid organ transplant recipients has been associated with the development of mucormycosis.^{2,3}

Among all, rhinocerebral mucormycosis (RM) is the most common form. The infection usually starts in the middle nasal meatus and spreads to the paranasal sinuses, the orbit and the intracranial structures by direct extension or through blood vessels.⁴ Mucormycosis constitutes a small proportion of invasive fungal infections in solid organ transplant recipients commonly noticed in renal and liver transplantation. The incidence of mucormycosis in heart transplantation ranges from 0-0.6%.^{5,7} We reported a rare case of mucormycosis in a young heart transplant male recipient.

CASE REPORT

A 33 year male, an alcoholic cardiomyopathy who underwent heart transplant was admitted in our department with uncontrolled hyperglycaemia. His ejection fraction

prior to the transplant was 20% and now is 60%. He was on tacrolimus, MMF and steroids.

Physical examination on admission showed that the patient was alert, oriented and afebrile and his vital signs were stable. Laboratory investigations and blood cultures were sent. He was managed with insulin infusion and other supportive measures. Later he developed facial swelling involving his right side face and restricted eye movements. Patient is suspected of invasive fungal infection so CT paranasal sinuses and brain was done.

Mucormycosis was confirmed based on the CT findings. Nasal endoscopy and ENT consultation were obtained. Patient was immediately started with liposomal amphotericin B along with insulin.

Table 1: Clinical findings- laboratory investigations.

Clinical findings	Values
Hb	10
PLT	1.2 l
TLC	7,400 (n=22%)
HbA1C	15.3%
FBS	282 mg/dl
PPBS	484 mg/dl
Blood and urine culture	No growth

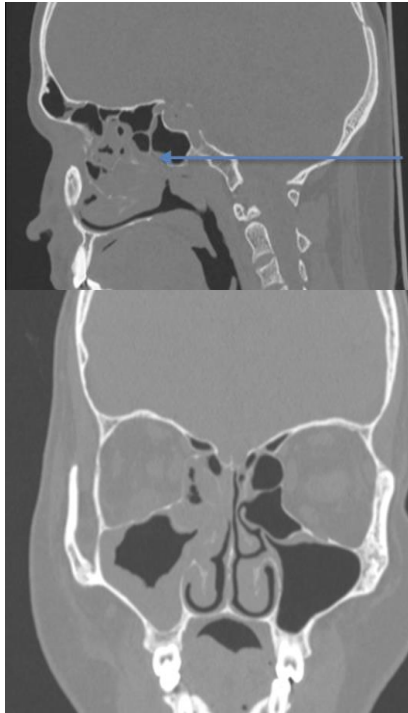


Figure 1: CT plain coronal and sagittal reformatted images of paranasal sinus showing diffuse circumferential mucosal thickening involving the right maxillary sinus with extension to the right anterior ethmoidal sinuses with obliteration of the osteo-meatal complex.



Figure 2: Right sided facial swelling with blackish discoloration around eye.

DISCUSSION

Mucormycosis is an infrequent invasive acute fungal infection in solid organ transplant recipients. Over the last 20 years, due to extensive use of immunosuppressive therapy the incidence of mucormycosis is increased.⁸ It appears most frequently in the first 6 months after transplantation due to the increased usage of immunosuppressive drugs. Diabetes mellitus is one of the predisposing factors in the development of mucormycosis.⁹ The fungus spreads quickly in a medium

of elevated glucose and acid pH and it is usually seen in uncontrolled diabetes.^{10,11}

Rhino-orbito-cerebral mucormycosis is most commonly seen in diabetic individuals. Our patient had facial swelling and restricted eye movements. These are the classical symptoms of facial palsy which is the main sign of mucormycosis.^{12,13} A nasal endoscopy and a biopsy or a culture of the infected area is essential for the definitive diagnosis. A culture gives us more information about the species of Mucorales. Based on these findings culture and CT scan of paranasal sinuses and brain was done in our patient.¹⁴

There was less than 1% of mucormycosis after solid organ transplantation, but the mortality rate of infected patients was as high as 80%. The incidence ranges from 0.4% to 16% depending on the SOT type and is 0%-0.6% in heart transplant recipients.⁷ Song et al reported that the mortality of multiple organ transplant recipients complicated by mucormycosis was much higher than that of simple renal transplant recipients (75% and 43.8%).¹⁵

Amphotericin B is the drug of choice for mucormycosis but it is limited because of its renal and systemic toxic effect. Liposomal amphotericin B is less nephrotoxic. This lipid formulation improves circulation time and concentration in the infected area of the associated amphotericin B.¹⁶ So patient was started with liposomal amphotericin B along with insulin. Patients who are immunocompromised have the lowest chance of survival. A delay in diagnosis and treatment, brain involvement, hemiparesis, bilateral sinus involvement and facial necrosis is also associated with poor survival.¹⁷

CONCLUSION

Infections with fungi from the orders Mucorales and Entomophthorales are uncommon. Mucormycosis typically affects the immune-compromised host. Early diagnosis with aggressive surgical debridement, in conjunction with an IV amphotericin B product helps in the successful prognosis. It is vital to do direct examination of the involved fluid or tissue and culture from a sterile site as the most appropriate diagnostic strategy. Clinicians should be vigilant to evaluate for invasive fungal infections such as mucormycosis in such solid organ transplant patients. It is important to monitor the toxicity of immunosuppression.

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