

Case Report:

Aspergillus Endocarditis in a prosthetic Valve following COVID-19 Infection

Sai Manogna Vegiraju MBBS

*NRI Medical College, Vijayawada,
Andhra Pradesh, India*

Abstract:

Endocarditis of a prosthetic valve is a known but rare occurrence. Fungal endocarditis is extremely rare. However, in the COVID-19 pandemic there has been increasing recognition of fungal or yeast related infections often due to the combination of immunoparesis, concurrent use of corticosteroids or underlying chronic conditions such as diabetes or neoplasms.

We present a patient with fulminating, invasive aspergillosis of a prosthetic aortic valve who presented with catastrophic cardiovascular failure needing intensive care management. Early recognition and prompt therapy is the cornerstone of success in such presentations which carry a high mortality.

Key words

COVID-19, Fungal endocarditis, aspergillus endocarditis

Introduction:

Endocarditis is a rare but serious infection that affects the heart's inner lining and valves. It is caused by microorganisms that enter the bloodstream and attach to the heart, causing inflammation and damage to the heart tissue. Majority of patients with endocarditis have bacterial infections but around 1 in 10 are due to fungal organisms with the most common being aspergillus and candida (yeast) species. [1,2] *Aspergillus* endocarditis (AE) has been reported in immunocompromised and immunocompetent patients with a history of open-heart surgery, valve replacement, or intravenous drug use. The high mortality rate among survivors is due to the risk of relapsing infection.[3] Extracardiac manifestations, mistaken/delayed AE diagnosis, and long duration of symptoms before going to the hospital may contribute to wrong management in patients then causing a delay in the treatment and conclusive poor outcomes. [4]

Correspondence to:

manogna.vegiraju1188@gmail.com

Cite as: Vegiraju, S.M. (2023) Case report - Aspergillus endocarditis in a prosthetic valve following COVID-19 infection. *The Physician* vol 8; Issue 1: 1-4 DOI [10.38192/1.8.1.6](https://doi.org/10.38192/1.8.1.6)

Article Information

Submitted 2 Mar 23

Revised 8 May 23

Published 10 May 23



scienceOPEN.com
research+publishing network

Post-COVID patients are at an increased risk of developing secondary infections,[5]. As many as 19% of patients with COVID-19 have co-infections and 24% have superinfections. The presence of either co-infection or superinfection was associated with poor outcomes, including increased mortality, [6] especially those who have been treated with corticosteroids, have received prolonged intensive care, or have undergone invasive procedures. There is increase in invasiveness of *Candida*, prevalence of aspergillosis in COVID-19 damaged lung and outbreak of mucormycosis in COVID-19 patients.[7] This is because the use of corticosteroids and other immunosuppressive drugs can weaken the immune system and make individuals more vulnerable to fungal infections.

Case Presentation

Our patient was a 55-year-old female who presented with fever which was sudden in onset, persistent along with headache, nonproductive cough and myalgia since the past 2 weeks, relieved intermittently with acetaminophen. Along with this she also had shortness of breath (New York Heart Association class 3) and generalised weakness which started about three weeks ago.

Upon arrival, owing to her severe hemodynamical instability she was intubated and ventilated and was started on organ support including inotropes.

Her past medical history included a prosthetic valve placement 8 years ago owing to aortic regurgitation and was on anticoagulant and regular follow ups ever since. She contracted COVID-19, 6 months ago and was treated with corticosteroids, Remdesivir, low molecular weight heparin along with regular antipyretics, antibiotics and vitamin supplements.

She tested negative on the rapid COVID-19 antigen test and her CT chest was suggestive of post-covid sequelae with multiple pleural parenchymal bands with surrounding haziness in the right middle lobe, inferior lingular segments

and left basal segments with subtle diffuse ground glass attenuation and reticular opacities in the right lower lobe and posterior segment of right upper lobe with mild right and minimal left pleural effusion with pleural atelectatic changes on right side.

Her focus of infection was not apparent even after testing her blood and urine for microorganisms. Her ultrasound abdomen showed mild hepatosplenomegaly with no evidence of ascites. A 2D echocardiogram which showed a 1.7 * 0.6 mm vegetation attached to aortic valve (NCC) with severe aortic regurgitation (AR), aortic annulus 1.9 cm, moderate Mitral regurgitation (MR) (eccentric jet), mitral annulus 3.3cm, dilated Left atrium, mild Tricuspid Regurgitation and Pulmonary arterial hypertension (PAH) with a left ventricular ejection fraction of 62%.

She was further tested for both black and white fungus as her post COVID condition put her at high risk for fungal infections. The results were negative. She tested positive for Aspergillus Antigen by Galactomannan Assay, (1.2) although Polymerase chain reaction for aspergillus species of whole blood was negative.

Table with blood/ serum values on admission

Nt-BNP : 5116-1533 (<100 pg/ml)	
Rheumatoid factor : 40 IU/ml (0-20)	
Troponin I : 107ng/l (0-0.14)	d-
dimer : 0.85 mcg/ml (0.22-0.46)	
Hb :7.4 g/dl (13-17)	CRP :
103.63 mg/dl (0.3-1.0)	
LDH : 300 IU/L (105-333)	
Fibrinogen : 697mg/dl (200-400)	
Serum Total Iron :15 mcg/dl (60-170)	Serum
ferritin : 295.8 ng/ml (12-150)	
Peripheral smear – dimorphic anaemia with neutrophilic predominance and mild shift to left with thrombocytopenia	

She was diagnosis with fungal prosthetic valve endocarditis with severe congestive heart failure. She was started on antifungals (liposomal amphotericin b) as she was unfit for surgery to repair her damaged valve due to her current condition

After a 25 day stay in Intensive Care Unit receiving treatment with anti-fungals , anti-hypertensives and cardiac protectives , she was finally weaned off inotropes and ventilator support. She was sent home with advise on follow up to the cardiology department for surgical intervention when she recovers from the acute deterioration of health.

Discussion

COVID-19 has proven to be a unique challenge to health care workers initially because of its rapid onset of severe life threatening symptoms followed by its effect on immunity, when combined with pre-existing conditions (i.e. neoplasms, diabetes or immune-deficiency) and almost universal use of corticosteroids, essentially making patients prone to widespread or invasive fungal infections like Mucormycosis, aspergillosis and candidiasis. Patients with prosthetic valve are generally at increased risk of developing bacterial infections, but viral or fungal infections are extremely rare.

It is usual practice to provide prophylaxis for procedures and other infective states. However, COVID-19 as a pandemic has increased this risk generally and also for patients with immune vulnerability. But our diagnosis of aspergillus infection was rarer still, and posed added difficulty in initial diagnosis as it a rare fungal infection.[8] There is a need for early recognition of fungal endocarditis to avail the benefits of early management.

Physicians need to have a high index of suspicion in patients with prosthetic valves presenting with systemic features of infection and any that suggest valve dysfunction, which can be catastrophic. A strategy with vigilance and surveillance of patients with prosthetic valves is recommended in order to prevent the development of aspergillus prosthetic valve endocarditis.[8]

References

- 1 Najafi N, Moslemi A, Ghafari R, et al. Post-COVID-19 fatal Aspergillus endocarditis: A case report. *Journal of Clinical Laboratory Analysis* 2023;**37**:e24816. doi:10.1002/jcla.24816
- 2 Jalalian R, Shokohi T, Mirzakhani R, et al. Fatal Prosthetic Valve Endocarditis Due to Aspergillus flavus in a Diabetic Patient. *IDR* 2020;**Volume 13**:2245–50. doi:10.2147/IDR.S258637
- 3 Born T, Aruanno M, Kampouri E, et al. Aspergillus tubingensis Endocarditis: A Case Report and Review of the Literature. *Mycopathologia* 2022;**187**:249–58. doi:10.1007/s11046-022-00621-0
- 4 Meshaal MS, Labib D, Said K, et al. Aspergillus endocarditis: Diagnostic criteria and predictors of outcome, A retrospective cohort study. *PLoS One* 2018;**13**:e0201459. doi:10.1371/journal.pone.0201459
- 5 Zhang H, Zhang Y, Wu J, et al. Risks and features of secondary infections in severe and critical ill COVID-19 patients. *Emerg Microbes Infect* 2020;**9**:1958–64. doi:10.1080/22221751.2020.1812437

- 6 Musuuza JS, Watson L, Parmasad V, *et al.* Prevalence and outcomes of co-infection and superinfection with SARS-CoV-2 and other pathogens: A systematic review and meta-analysis. *PLoS One* 2021;**16**:e0251170. doi:10.1371/journal.pone.0251170
- 7 Kundu R, Singla N. COVID-19 and Plethora of Fungal Infections. *Curr Fungal Infect Rep* 2022;**16**:47–54. doi:10.1007/s12281-022-00432-2
- 8 Kalokhe AS, Roupheal N, El Chami MF, *et al.* Aspergillus endocarditis: a review of the literature. *International Journal of Infectious Diseases* 2010;**14**:e1040–7. doi:10.1016/j.ijid.2010.08.005

Author declares no conflict of interest and assures of patient consent.