

# Complete Cardiac Thrombosis with Heparin-induced Thrombocytopenia during Venous-Arterial Extracorporeal Membrane Oxygenation

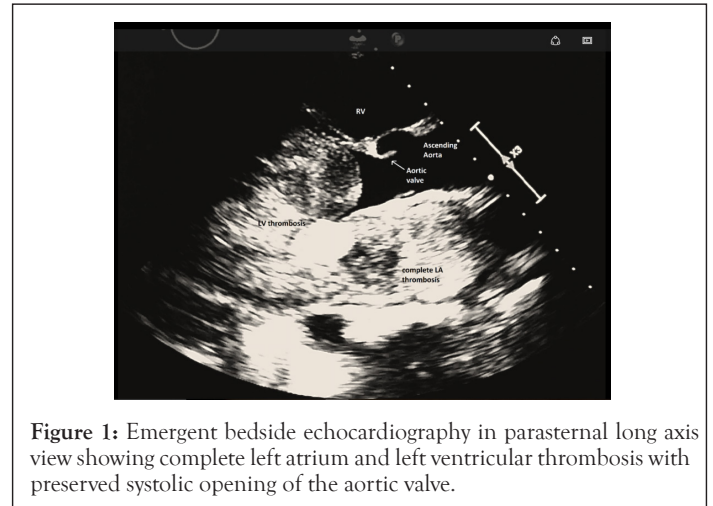
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## DESCRIPTION

A 32-year-old woman with history of postpartum cardiomyopathy and recovered Left Ventricular Ejection Fraction (LVEF) presented with shortness of breath and hypotension. Echocardiogram demonstrated severely reduced LVEF at 15%. She was subsequently intubated for acute hypoxic respiratory failure and admitted to intensive care unit. Cardiogenic shock was confirmed with Swan-Ganz catheter and the patient required Intra-Aortic Balloon Pump (IABP) placement with heparin infusion, inotrope support and high dose furosemide infusion. However, her clinical status deteriorated despite above and required central Venous-arterial Extracorporeal Membrane Oxygenation (VA-ECMO). On day 10 of admission, platelets reduced to 40,000/ul from 120,000/ul. Heparin was immediately switched to Bivalirudin infusion and PF4 antibody test was ordered. On day 11 of admission, ECMO flow rate was difficult to maintain and emergent echocardiogram was performed, a complete thrombus was found occupying the whole left heart chambers (Figure 1). PF4 antibody came back confirmatory for Heparin-Induced Thrombocytopenia (HIT). Surgical thrombectomy was considered and discussed with patient's family but thought to be futile due to very low chance of survival.

VA-ECMO with profound LV dysfunction can result in intracardiac stasis and thrombosis; we described the first case of complete left ventricular and atrial thrombosis here. The concurrent HIT likely triggered the catastrophic thrombosis despite aggressive LV unloading with afterload reduction by IABP. Early cardiac decompression and anticoagulation are essential in preventing thrombosis in these patients [1]. The preload reduction strategies have been shown superior to afterload reduction in a recent meta-analysis study [2]. Randomized prospective clinical trial comparing these two techniques in VA-ECMO is needed for better prevention of thrombotic complications in this patient population. As in this case with prolonged cardiogenic shock, a more advanced LV preload unloading strategy in combination with strict daily biomarker and focused echocardiogram surveillance should be strongly considered as the routine care for this patient population.



**Figure 1:** Emergent bedside echocardiography in parasternal long axis view showing complete left atrium and left ventricular thrombosis with preserved systolic opening of the aortic valve.

## ACKNOWLEDGMENTS

None

## CONFLICT OF INTEREST

None

## REFERENCES

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