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Case Report

Prolonged Impella Support in Cardiogenic Shock Complicating Acute Myocardial Infarction and Left Ventricular Outflow Tract Obstruction

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Abstract

The role of percutaneous hemodynamic support (Impella) in cardiogenic shock and acute coronary syndromes is being increasingly recognized as a life-saving intervention [1]. However, the efficacy of prolonged Impella support in cardiogenic shock complicating acute MI and severe left ventricular outflow tract obstruction is not well described [2].

Keywords: *Impella; Cardiogenic Shock; Acute Myocardial Infarction*

Introduction

The role of percutaneous hemodynamic support (Impella) in cardiogenic shock and acute coronary syndromes is being increasingly recognized as a life-saving intervention [1].

Case Report and Discussion

We describe the case of a 74-year-old woman who presented to our facility with acute onset dyspnea, dizziness and fatigue. Earlier that day, she had prolonged physical exertion in the heat and an initial working diagnosis of heat exhaustion and dehydration was made. She was given intravenous fluids and subsequently became hypoxemic requiring emergent intubation. Troponins were noted to be abnormal and EKG revealed dynamic anterolateral ST changes. Urgent coronary angiography revealed the culprit lesion to be a high-grade 95% late-proximal LAD lesion status post successful PCI with a drug eluting stent. The distal LAD was a small caliber vessel with a myocardial bridge and significant systolic compression. The patient was transferred to the cardiac care unit and subsequently developed progressively worsening hypotension refractory to pressor and inotropic support. Bedside echocardiogram was technically extremely difficult due to body habitus and limited image quality. A transesophageal echocardiogram severe asymmetric septal hypertrophy with systolic anterior motion of the mitral valve, severe left ventricular outflow tract obstruction (LVOT) and severely depressed left ventricular function. Inotropes were discontinued and the patient was started on phenylephrine support given marked LVOT obstruction. An Impella 3.0 was inserted for florid cardiogenic shock with stabilization of hemodynamic status. The patient subsequently developed complete heart block requiring placement of a temporary transvenous pacemaker. The patient remained Impella and pressor dependent for a prolonged period of time. The Impella device was eventually explanted on day #12. She made gradual improvement during her hospital course and serial echocardiograms revealed improvement in LV function to 50 - 55%. The patient had a prolonged hospital stay of 12 weeks, which was complicated by GI bleeding, pneumonia, placement of a PEG tube, tracheostomy and permanent pacemaker implantation. Overall, the patient made a remarkable recovery and was recently evaluated in clinic. She is tolerating beta-blocker therapy for suspected hypertro-

phic cardiomyopathy with a marked reduction of LVOT gradient. This case highlights the use of prolonged percutaneous hemodynamic support in refractory cardiogenic shock complicating acute MI and hypertrophic cardiomyopathy.

Conclusion

In conclusion, LVOT obstruction is an unusual cause of shock in critically ill patients, which is refractory to inotropic support [3]. Phenylephrine, intravenous fluids and beta-blockers are known to improve the hemodynamic status in patients with shock and left ventricular outflow tract obstruction. Cardiologists need to be aware of complications that may arise from prolonged Impella support including access site complications like bleeding and infection, device malpositioning and hemolysis [4]. This is a unique case describing the use of Impella support to bypass left ventricular outflow tract obstruction in a patient with cardiogenic shock complicating acute myocardial infarction.

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