Background

• With the increased use of immunotherapy in treatment of advanced malignancies, there is increased recognition and incidence of immunologic toxicities affecting the cardiovascular system.
• Immune checkpoint inhibitor (ICI) myocarditis is a rare, potentially fatal complication that requires a high degree of clinical suspicion for early diagnosis and treatment.

Case

• 60-year-old female with colon cancer status post hemicolecctomy, XELOX chemotherapy and 3 months of nivolumab immunotherapy and recently diagnosed nonischemic cardiomyopathy.
• Presented to the hospital for weakness and nausea.
• ECG demonstrated an alternating fascicular tachycardia with diffuse ST segment elevation (Figure 1A).
• Troponin and BNP were elevated (Figure 1D).
• Echocardiogram showed LVEF of 10% (prior LVEF of 30%).
• Right heart catheterization demonstrated normal filling pressures and cardiac index of 0.74 L/min/m².

Decision-Making

• Patient was taken to the catheterization lab for consideration of mechanical circulatory support and endomyocardial biopsy (EMB).
• Impella CP was placed for hemodynamic support.
• Patient was medically treated with vasodilator and inotropic support.
• Treatment was initiated for presumed ICI myocarditis with high dose steroids, anti-thymocyte globulin (ATG), and eventually plasmapheresis.
• Despite initial improvement, the patient developed worsening right heart failure and refractory hypotension requiring vasopressor support.
• Diagnosis of ICI myocarditis can be challenging and requires an interdisciplinary approach.
• Myocardial delayed enhancement on cardiac MRI can be useful in determining the etiology of cardiomyopathy.

Main Findings

1. Immune checkpoint inhibitor myocarditis is a rare, but lethal complication of immunotherapy that can present as fulminant myocarditis with cardiogenic shock.
2. Early diagnosis and aggressive treatment with immunosuppression is critical.
3. Advanced mechanical circulatory support, including Impella and VA-ECMO, can be considered as a bridge to recovery.

Discussion

• The presentation of ICI myocarditis can range from isolated biomarker abnormalities to acute heart failure, arrhythmia and cardiogenic shock.
• Diagnosis of ICI myocarditis can be challenging and requires an interdisciplinary approach.
• Although these patients are generally not considered heart transplant candidates due to underlying malignancy, advanced mechanical support, such as Impella and/or ECMO, can be considered as a bridge to recovery.

Conclusions

• Early diagnosis and aggressive treatment of ICI myocarditis with immunosuppression is critical.
• In fulminant cases with cardiogenic shock, combined short-term mechanical circulatory support such as ECPella can be utilized as a bridge to recovery.

Disclosures

• The authors have no disclosures.

References