

Weaning Dobutamine in a Patient With Severe Cardiogenic Shock Using Hemodynamic Transesophageal Echocardiography

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Purpose:

Hemodynamic transesophageal echocardiography (hTEE) is an FDA approved technology using thin, flexible probes enabling intensivists to continuously visualize cardiac function and assess volume status for up to 72 hours per probe. This minimally invasive technique can guide the volume resuscitation of patients in shock, and assess the response of the heart to titration of vasopressors and inotropes.

Methods:

We report the case of a 35 year old man with Burkitt's lymphoma suffering from cardiogenic shock from MRSA bacteremia. He presented with febrile neutropenia following chemotherapy with blood cultures positive for MRSA. Antibiotics were initiated on admission, and source control achieved by removing his implanted venous access device. The patient was hypotensive and tachycardic despite volume resuscitation with crystalloids and blood products. It was assumed he had distributive shock based on his known sepsis. A cardiologist performed transthoracic echocardiogram (TTE) estimated the left ventricular ejection fraction (LVEF) to be 10-15%. A pulmonary artery catheter was inserted and demonstrated elevated filling pressures and an elevated systemic vascular resistance consistent with cardiogenic shock. Dobutamine was started with

improvement in his heart rate, blood pressure, and ScvO₂ noted. An hTEE probe was inserted to assess and follow changes in LVEF based on dobutamine dose. We were able to visualize changes in cardiac function more quickly than other surrogate markers of end organ perfusion such as ScvO₂, urine output, and serum creatinine. Following stabilization, repeat images were obtained as the dobutamine dose was decreased to verify that concomitant decreases in LV function were not also occurring.

Discussion:

The ability to remove and re-insert the probe in less than 60 seconds facilitated rapid image acquisition and analysis. This information enabled us to be able to confirm our resuscitation strategy as well as match the dynamic changes that the patient was experiencing and resuscitate him appropriately throughout his clinical course.

Conclusion:

We report the first case of inotrope therapy management guided by hemodynamic imaging using an hTEE probe. This new tool has been demonstrated in the literature to be easy to insert with only minor complications noted even when the probe is left in place for 72 hours.