

Case Report: Successful Diagnosis of Source of Unknown Hypotension in the ICU Using a New Hemodynamic Transesophageal Echocardiographic (hTEE) Management System

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Objective

To assess the source of hypotension in a drug overdose patient in the ICU and to monitor the response to therapeutic interventions.

Background

A 32-year-old male patient is admitted to a combined medical/surgical ICU following a crack cocaine overdose complicated by rhabdomyolysis, acute renal failure, and presumed sepsis. The patient was supported with mechanical ventilation and dialysis. Two liters of intravenous fluid were empirically administered and Levophed was initiated to support the patient's systemic blood pressure. The patient was persistently hypotensive (systemic BP 79/56 mmHg), despite increasing doses of Levophed.

Method

The attending ICU physician ordered a bedside hemodynamic transesophageal echo (hTEE™) exam using the ClariTEE® probe (ImaCor, Inc., Garden City, NY). The patient was significantly hypotensive and the procedure was performed without sedation.

Results

The miniaturized hTEE probe was placed without difficulty and a transgastric short-axis view (TGS AV) of the left ventricle (LV) was rapidly obtained. Qualitative and quantitative assessment of left ventricular size and function indicated that the patient was hypovolemic. Additionally, the interventricular septum was observed to be hypokinetic. Given the young age, lack of cardiac history, and known recent cocaine usage, the wall motion abnormality was presumed to represent previously unrecognized ischemia. More aggressive volume resuscitation with intravenous fluids was instituted and the Levophed was titrated. Intravenous nitroglycerin was initiated to support vital organ perfusion. The ClariTEE probe was left indwelling overnight. Using hTEE monitoring as a guide to fluid administration, Levophed was subsequently discontinued completely. Upon re-examination on rounds the next morning, the patient's blood pressure was normal (145/70 mm Hg) and intravascular volume status was normalized (as evidenced by normal LV size).

Conclusion

This case demonstrates the potential of hTEE in facilitating effective assessment and guiding fluid management of hemodynamically unstable patients over a period of time as well as evaluating the effects of therapeutic interventions.