Venous Air Embolism in a Child Diagnosed with point of care ultrasonography

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Introduction

In the future, ultrasound (U/S) will serve as a bedside-method of inquiry rather than a diagnostic test or procedural adjunct. 1 Point of care (POC) ultrasonography will complete the primary exam and answer relevant questions in real time. As a unique example, we present a case of a venous air embolism (VAE) in a child diagnosed immediately in the OR by POC ultrasonography.

Case Summary

Presentation/PMHx:
A 16-month old, 7.5kg girl with developmental dislocation of the hip (DDH) presented for an open hip reduction and SPICA casting.

Anesthetic:
After standard inhalational induction, IV placement and caudal blockade, a second IV was placed and attached to a fluid warming line. Air was noted in the tubing, and the line was clamped. While the air was being purged, the patient’s HR and end-tidal CO\textsubscript{2} began to fall while BP and SpO\textsubscript{2} remained stable. Atropine was given and a code was called. Within the first few minutes of the resuscitation, an ultrasound was used to examine the heart, revealing the suspected diagnosis of VAE.

Follow-up and Findings

The patient’s hemodynamics normalized with supportive use of pressors, Trendelenburg positioning and fluid therapy. Intraoperative workup by cardiology including a 12-lead EKG and formal echocardiography was unremarkable and the patient recovered fully without neurological or cardiac sequelae.

Discussion

This case highlights the use of basic intraoperative echocardiography to diagnose hemodynamic instability of unknown origin and to guide intraoperative management. We no longer need to be blind to the underlying anatomy or make inferences about myocardial function.

Ultrasound is becoming a tool utilized by more than just cardiologists and radiologists. What is required for the appropriate, accurate, safe incorporation of POC ultrasound into practice is a body of practitioners adept with the technology and underlying anatomy, a delineation of scope of practice, a consensus for certification in basic perioperative ultrasound across specialties, availability of advanced imaging specialists for positive findings, and quality assurance measures.\textsuperscript{2}

References