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Point-of-care Ultrasound Detection of Intraoperative Venous Air Embolism

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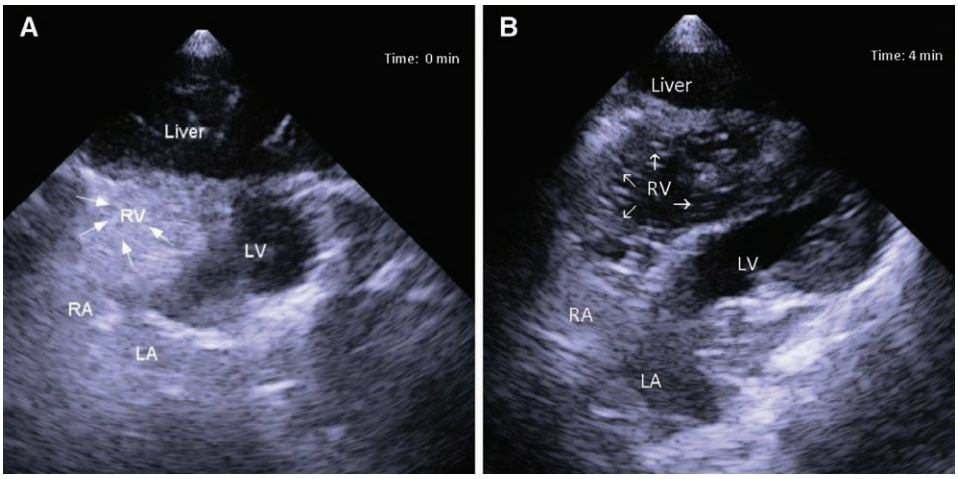

POINT-OF-CARE ultrasound is used widely in emergency medicine departments and intensive care units to reduce diagnostic delay and guide medical decision-making in real time.[1,2] We present ultrasound images of a basic perioperative transthoracic echocardiogram examination performed during the resuscitation of a 16-month-old girl who presented for an open hip reduction and experienced an acute decrease in her end-tidal carbon dioxide, heart rate, and blood pressure shortly after standard induction, intubation, and caudal block. The images are a subcostal, four-chamber view of the heart obtained shortly after the initiation of resuscitation. There are copious air bubbles giving a snowstorm appearance to the right ventricle (RV) (panel A). The mitral valve, left atrium (LA), and right atrium (RA) are obscured by acoustic shadowing.

The use of transthoracic echocardiography during this event allowed us to narrow the differential diagnosis and promptly initiate therapy for an air embolism discovered to be caused by an unprimed IV line. The ultrasound provided real-time diagnostics, monitoring, and confirmation of resolution. Panel B shows the resolution of air over time with subsequent improvements in left ventricle (LV) function.

As ultrasound competency becomes routine in anesthesia training, expanding its indications to include intraoperative monitoring and assessment is the next necessary step.[3] However, care must be taken to develop systematic credentialing processes ensuring that our interpretations are accurate and within our scope of practice. Here, we provide an example of how point-of-care ultrasound was used intraoperatively to efficiently diagnose and treat acute onset of hemodynamic instability.

Competing Interests

The authors declare no competing interests.

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 Anesthesiology 2017; 127:711

<zdoi;10.1097/ALN.0000000000001711>