

Unexpected Right to Left Shunt of Air Embolism during Cardiopulmonary Resuscitation of A Patient undergone Endoscopic Retrograde Cholangiopancreatography

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Endoscopic retrograde cholangiopancreatography (ERCP) is a specialized procedure that combines upper gastrointestinal endoscopy and x-rays to detect and treat problems of the liver, bile ducts and pancreas. Even though it is a minimally invasive procedure with an excellent safety record, the complications of hemorrhage, infection, perforation, and pancreatitis occur.[1] Venous air embolism is a very rare endoscopic complication.[2] We presented a patient who underwent an ERCP procedure for cholangitis. Patient had hemodynamic collapsed at the conclusion of the procedure. The end tidal CO2 was dropped as well as the blood pressure. Patient was quickly turned back to supine position with the initiation of the cardiopulmonary resuscitation (CPR). Patient was treated with epinephrine and vasopressin. Patient had returned of spontaneous circulation after about five minutes of CPR. However, the transesophageal echocardiography showed that the air bubble traveled from the right atrium to the left atrium during chest compression.(Fig.1) And, air bubbles were noted in all four cardiac chambers.(Fig. 2) Patient was transferred to neuointensive care unit for cooling and possible cerebral protection. The patient eventually developed severe air embolism induced acute lung injury [3] and right side holohemispheric cerebral ischemic infarct. This is the first case report demonstrating an extremely unusual cerebral air embolism resulted from the standard cardiopulmonary resuscitation (CPR) causing the venous air embolism traveled through the patent foramen ovale (PFO) to the systemic circulation.

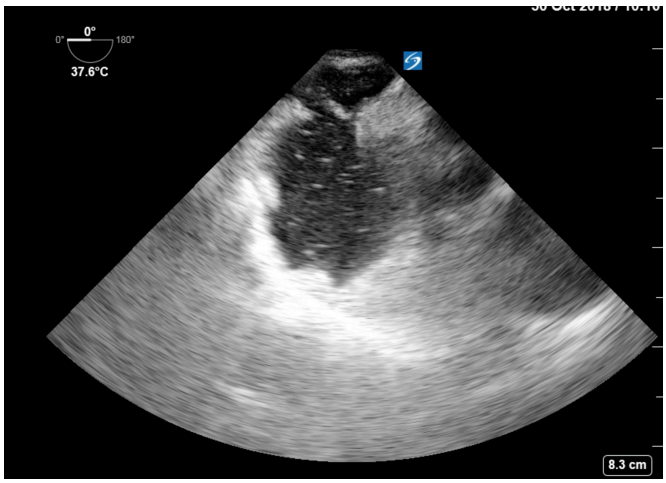


Figure 1. Air bubbles crossed the PFO during CPR.

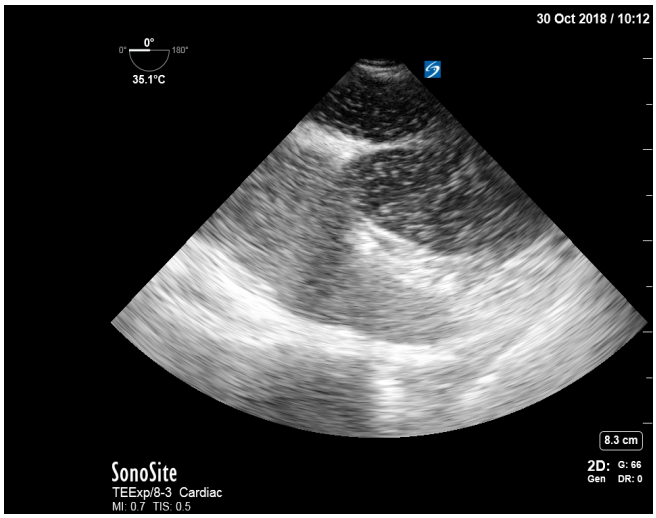


Figure 2. Air bubbles in all four cardiac chambers

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AREAS OF INTEREST

Cardiopulmonary physiology, echocardiography, transesophageal echocardiography, traumatic brain injury, critical care, respiratory care, fluid resuscitation, conscious sedation, neuromuscular problems, airway management, Acidosis, Alpha2 Agonist, Trishydroxyaminomethane(THAM), Aerosolized prostacyclin, mechanical ventilation, trauma, geriatric anesthesia, ventilator associated pneumonia, artificial breathing patterns, capnography, bronchoalveolar lavage, methicillin-resistant staphylococcus aureus, cardiac ultrasonograpgy, lung scan.