Air Embolism Involving the Coronary and Pulmonary Circulation: An Unusual Cause of Sudden Cardiac Death

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A 58-year-old man with a history of cirrhosis and hepatocellular carcinoma status post liver and kidney transplantation, coronary artery disease, and ventricular arrhythmia status post ICD placement underwent an outpatient fine-needle aspiration biopsy of a pulmonary nodule under computed tomography (CT) guidance at an outside hospital (Figure 1). After the procedure, the patient was noted to have persistent altered mental status that was out of proportion to the degree of sedation administered. He subsequently had a cardiopulmonary arrest secondary to ventricular tachycardia and needed prolonged cardiopulmonary resuscitation prior to return of spontaneous circulation. He underwent a CT scan of the head that revealed evidence of massive cerebral air embolism (Figure 2). A CT of the chest revealed evidence of extensive air within the left- and right-sided chambers of the heart including the right ventricle, pulmonary artery, and aorta, as well as in the right coronary artery extending from the ostium into the posterior descending artery (Figure 3–5).

He was subsequently transferred to our facility for hyperbaric oxygen therapy. A 12-lead EKG revealed the presence of normal sinus rhythm with inferior Q waves diagnostic for an inferior myocardial infarction but no ST-segment elevation. Transthoracic echocardiography revealed mildly depressed left ventricular systolic function with regional wall motion abnormalities involving the inferior and apical walls. The patient succumbed to severe anoxic brain injury secondary to cerebral air embolism and cardiopulmonary arrest. The biopsy of the pulmonary nodule revealed metastatic transitional cell carcinoma.

Systemic air embolism is an extremely rare but devastating procedural complication related to the inadvertent introduction...
of air in the pulmonary venous system.\textsuperscript{2,3} The cause of this patient’s cardiopulmonary arrest was likely a combination of air embolism involving the right coronary artery and the pulmonary circulation. The presence of an intracardiac or intrapulmonary shunt could not be excluded in this patient.

Disclosures

None.

References

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