Air in the Heart: A Reason to Panic?

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CASE

A 37-year-old-man presented with abdominal pain. Examination was benign and laboratory studies were unremarkable. Intravenous access was established with difficulty after several attempts. Abdominal computed tomography (CT) scan revealed no acute abnormality; however, chest images revealed air in the right atrium, right ventricle and pulmonary artery (Figs. 1 and 2, 2). The patient denied chest discomfort or respiratory distress. He was positioned in the left lateral, Trendelenburg position overnight and high-flow oxygen was administered. Abdominal pain resolved with conservative management and was attributed to gastroesophageal reflux.

Air embolism is a potentially catastrophic event associated with trauma, surgery, diving, mechanical ventilation and seemingly benign vascular interventions such as in our patient.¹ It is suspected when patients with the above risk factors present with respiratory distress or circulatory failure (dyspnea, wheezing, chest pain, shock) or develop end-organ damage (arterial embolism). Diagnosis is made when air is detected in the circulation on CT/magnetic resonance imaging (MRI) scans of the chest/abdomen. Echocardiography and transcranial doppler may detect air in the heart and brain, respectively. Nonsignificant cases of venous air embolism are usually clinically silent and self-resolving with diffusion into the alveolar space, but larger ones can be fatal. Diffusion can be aided by high flow oxygen,² and positioning the patient can prevent embolism migration.³

Figures 1 and 2. Computed tomography scan of the chest demonstrating air (white arrows) in the right ventricle and pulmonary artery (Figs. 1 and 2) and the right atrium (Fig. 2)

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