Nonthrombotic pulmonary embolism secondary to cyanoacrylate embolization of gastric varices

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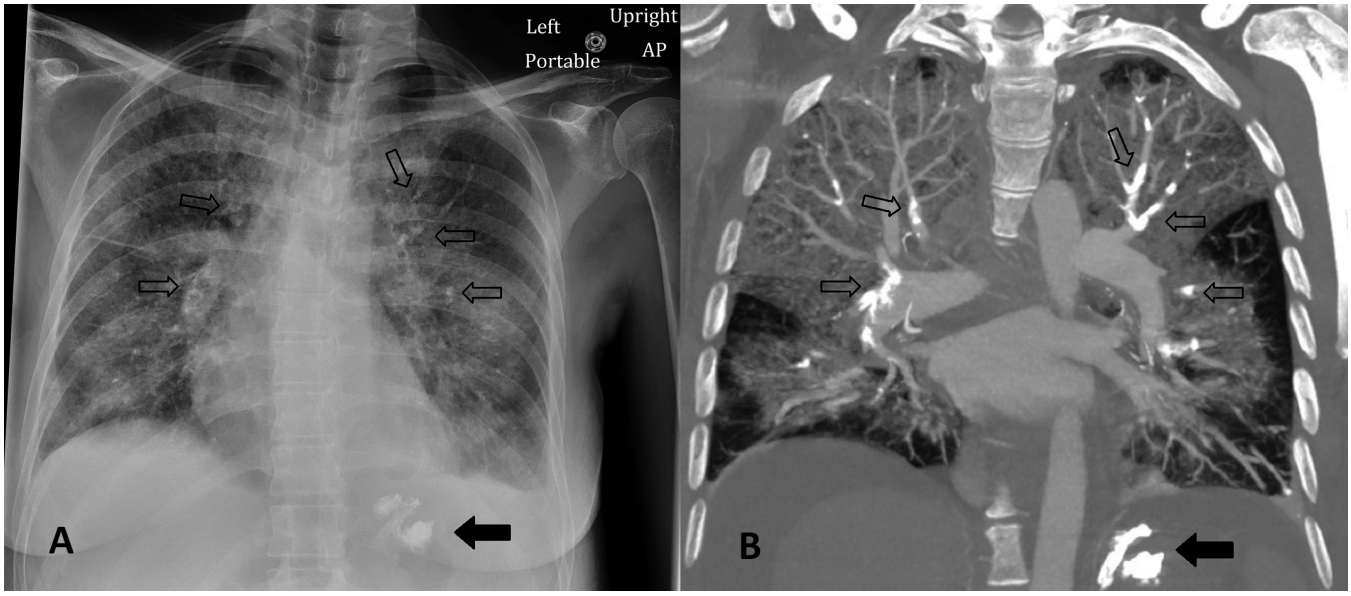

Figure 1: Chest imaging of a 51-year-old woman with bilateral nonthrombotic pulmonary embolism, performed 4 days after variceal obliteration. A) A chest radiograph shows increased interstitial markings and parenchymal opacities. B) A coronal slice from a chest computed tomography (CT) pulmonary angiogram shows multiple high-attenuation filling defects of the pulmonary arteries, compatible with nonthrombotic emboli of iodinated glue. (hollow arrows, also seen on radiograph). High-attenuation material in the left upper abdomen shows the iodinated glue and coil embolization of a gastric varix (solid arrows). Extensive ground glass attenuation on the CT is compatible with lipiodol-related pneumonitis.

A 51-year-old woman with esophageal varices secondary to decompensated cirrhosis presented to the emergency department with hematemesis. Her heart rate was 123 beats/min and her blood pressure was 86/43 mm Hg. Her initial hemoglobin was 33 (normal 120–160) g/L, her platelet count was 245 (normal 150–400) × 10^9/L and her international normalized ratio was 1.5 (normal 0.9–1.1). We treated the patient with intravenous crystalloid, 3 units of blood, pantoprazole, octreotide and ceftriaxone. Emergent esophagogastroduodenoscopy showed new gastric varices. We performed interventional endoscopic ultrasonography with coil embolization, immediately followed by an injection of cyanoacrylate and lipiodol, and achieved variceal obliteration. One day after the procedure, the patient developed severe hypoxemia, with a respiratory rate of 20–34 breaths/min and oxygen saturation of 77%–81% on room air. Chest radiograph showed bilateral infiltrates. We initiated treatment with piperacillin–tazobactam for presumed aspiration pneumonitis. When she did not improve, a computed tomography pulmonary angiogram showed acute nonthrombotic pulmonary emboli and lipiodol pneumonitis (Figure 1). We treated her with intravenous steroids for 4 days. She improved rapidly and was discharged home without oxygen support.

Nonthrombotic pulmonary embolism (NTPE) is an uncommon, life-threatening complication of cyanoacrylate glue sclerotherapy, with an incidence of 0.5% to 4.3%.[1] Endoscopic ultrasound–guided techniques with combined coil and cyanoacrylate are more efficacious than cyanoacrylate or coil alone, with low rates of NTPE (0.7%).[2,3] Cyanoacrylate injected into gastric and esophageal varices can cause NTPE via portosystemic shunting between the varices and the gastro–spleno–renal collaterals, left renal vein, inferior vena cava, right heart and pulmonary arteries.[4]

Radiographic findings of cyanoacrylate NTPE are seen as radiopaque material outlining the pulmonary arteries. Lipiodol, an iodized oil used as a cyanoacrylate diluent, prevents premature polymerization inside the injection device. Lipiodol emboli present as consolidation, parenchymal infiltrates and high-attenuation material in the lungs.[5] Lipiodol is postulated to cause pneumonitis from decomposition into free fatty acids that elicit an inflammatory injury, with capillary leakage and pulmonary edema.[6]

Supportive management is the preferred treatment. Despite minimal evidence, steroids can be considered to treat lipiodol pneumonitis. Anticoagulation is not indicated, as the pathophysiology of NTPE is mechanical obstruction by the glue, not thrombosis.

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