Teaching NeuroImages:

Cerebral air embolism secondary to atrial-esophageal fistula

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Figure Premortem and autopsy images

(A) Axial noncontrast CT (1), diffusion-weighted (2), and gadolinium-enhanced T1 (3) images demonstrate areas of decreased attenuation consistent with intraparenchymal air pockets (1) and areas of increased signal by MRI suggesting acute infarcts (2, 3). (B) Postmortem cerebrum with diffuse edema, smooth cavitory lesions (1), and subacute hemorrhagic infarctions (2, 3). (C) Heart displays probe-patent opening in left atria, en bloc cross-section of the atrial-esophageal fistula (insert). (D) Histologic section of premortem biopsy displaying subacute infarct with macrophages and vascular proliferation (bar = 100 μ m).

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A 58-year-old man presented in minimally arousable state hours after experiencing right-sided paresthesias. He had a distant history of esophageal carcinoma, treated by esophagogastrrectomy, local radiotherapy, and dilations. He was admitted, and the consensus diagnosis was probable infective endocarditis with embolic cerebral infarctions. He was treated with antibiotics but continued to have multifocal infarctions over several weeks and died. At autopsy, an atrial-esophageal fistula tract (fig-

ure) was identified without recurrent carcinoma. Air, food, and bacteria were introduced through this fistula to the circulation, resulting in sepsis and embolization to the brain with multifocal infarctions. The brain was diffusely edematous with multiple, variably sized hemorrhagic infarctions and smooth spaces from air emboli. Histopathology showed subacute infarctions predominated by macrophages within rarefied neuroglial tissue and no organisms on special stains.

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