

IMAGES IN INTERVENTION

Transcatheter Tumor Biopsy Combined With Balloon Pulmonary Angioplasty in Diagnosing Intravascular Pulmonary Small Cell Carcinoma



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A 79-year-old man with rectal carcinoma presented with a productive cough. Contrast-enhanced computed tomography (CT) scan revealed an intraluminal mass in the right (A10) pulmonary artery (Figures 1A to 1D). Considerations included leiomyosarcoma, intravascular lymphomatosis, and metastatic carcinoma. A pulmonary wedge catheter was used to aspirate contents from the pulmonary artery, but cytology revealed no tumor cells. Transbronchial CT-guided needle biopsy of the intraluminal tumor was not considered due to the high risk of bleeding.

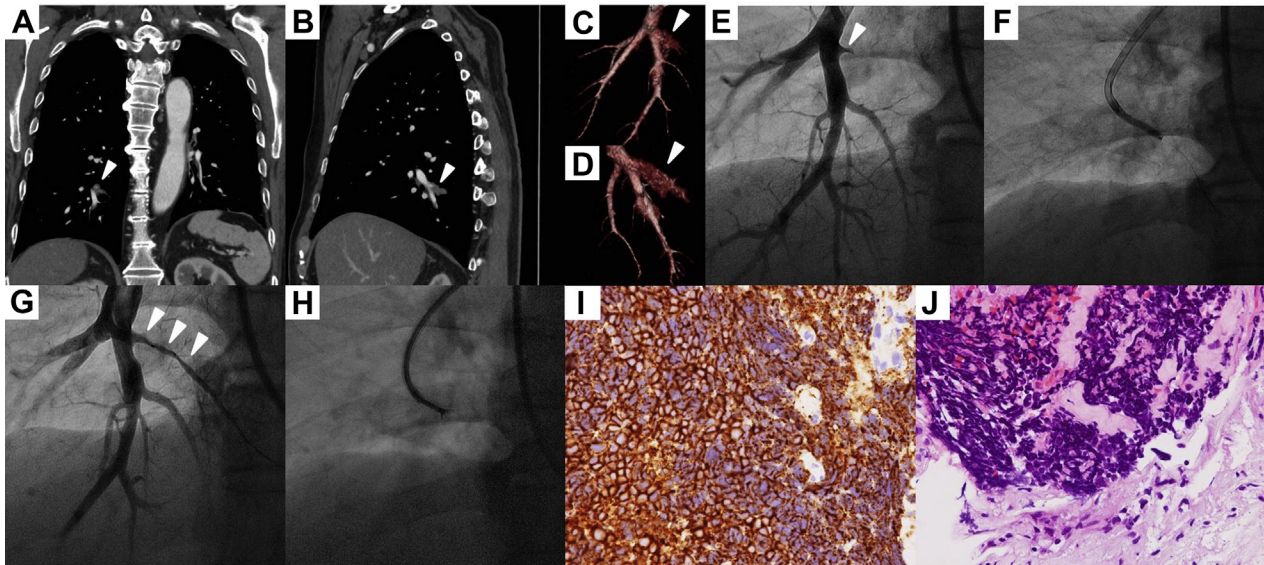
A first-in-man transcatheter approach combined with balloon pulmonary angioplasty (BPA) was therefore performed. An 8-F 65-cm sheath was inserted in the right internal jugular vein, followed by an 8-F JR40SH guiding catheter. Inserting the biopsy forceps into the A10a segment proved difficult because of the acute angle of the artery beyond its origin, and the tumor occluding the A10b

segment just after branching (Figure 1E, Online Video 1). To circumvent this, BPA was performed. First, a 0.014-inch guidewire was used to cross the occluded vessel. Intravenous ultrasound confirmed the guidewire placement and was used to measure the proximal and distal luminal diameters (5 mm and 3 mm, respectively). A 3 × 20-mm balloon catheter was then used to perform BPA (Figures 1F and 1G, Online Video 2). Thereafter, the guiding catheter was successfully advanced to engage the occluded vessel, and transcatheter tumor biopsy was performed (Figure 1H, Online Video 3). Positive tumor staining with chromogranin A, synaptophysin, and CD56 (Figure 1I) was indicative of a neuroendocrine tumor. This, together with the histological pattern (Figure 1J), diagnosed small cell lung carcinoma.

BPA made it possible to open up a distal pulmonary artery occlusion and access the difficult-to-reach tumor in this case.

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FIGURE 1 Imaging and Pathology

(A to D) The clubbed soft shadow exists in the right S10, the inner shadow has poor contrast effect. The shadow is continuous with the pulmonary artery and suggests intravascular tumor of the pulmonary artery (A and C: coronal plane) (B and D: left anterior oblique 60° view). (E to G) Right A10a (indicated by the arrowheads) was occluded (anteroposterior straight view) (Online Video 1) and inflated with the balloon catheter (Online Video 2). The occluded artery was recanalized. (H) Biopsy forceps grasp the intrapulmonary artery tumor (Online Video 3). (I) Positive CD56 staining. (J) In hematoxylin-eosin staining, the histopathological pattern demonstrates small atypical cells with darkly stained nuclei in a sheet-like solid growth formation.

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APPENDIX For supplemental videos, please see the online version of this paper.