Endoscopic ultrasound-guided fine-needle aspiration of a pulmonary artery malignant thrombus

Transesophageal endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) has become a standard technique for sampling mediastinal disease. The need for transvascular sampling or sampling within major mediastinal vessels seldom arises [1]. Herein, we report a case of EUS-FNA of a pulmonary artery thrombus in a patient with pancreatic carcinoma that demonstrates the impact of EUS.

A 71-year-old woman with a history of tobacco use presented with epigastric pain of 3 weeks' duration. Abdominal computed tomography revealed a 2.5-cm mass in the pancreatic head. A tissue diagnosis was obtained by EUS-FNA that was consistent with adenocarcinoma. Initial staging by abdominal and thoracic computed tomography and fluorodeoxyglucose (FDG) positron emission tomography-computed tomography (PET-CT) demonstrated locoregional disease, in addition to a mass-like region with considerably increased FDG activity in the left mediastinum and small lung nodules bilaterally (● Fig. 1).

Because it was uncertain whether the site of primary disease was pancreatic or pulmonary, and in order to discuss the therapeutic strategy, the patient was referred to a tertiary center for EUS-FNA of the mediastinal mass. EUS was performed with a curvilinear echoendoscope (GF-UCT180; Olympus, Center Valley, Pennsylvania, USA). A pulmonary artery thrombus and a perivascular malignant-appearing process were identified (● Fig. 2), and eight FNA passes were performed with a 22-gauge needle (Wilson-Cook Medical, Winston-Salem, North Carolina, USA) (● Fig. 3, ● Video 1) via a transesophageal approach. No immediate or late adverse events were observed following EUS-FNA. The results of a preliminary on-site cytologic examination were suspicious for

Fig. 1 Computed tomography showing a left hilar mass (T) with involvement of the pulmonary artery (A) in a 71-year-old woman with a history of tobacco use.

Fig. 2 Color Doppler-mode endoscopic ultrasound showing the pulmonary artery (PA) thrombus (T) and left hilar mass.

Fig. 3 Endoscopic ultrasound-guided fine-needle aspiration of a malignant pulmonary artery (PA) thrombus (T).

Fig. 4 Cell block from endoscopic ultrasound-guided fine-needle aspiration specimen, pulmonary artery mass. All images were acquired at $\times 400$ magnification. **a** Rare fragments of adenocarcinoma in a background of fibrin clot (hematoxylin and eosin [H&E] stain). Results of tumor cell immunohistochemistry: **b** positivity for thyroid transcription factor 1 (TTF-1); **c** positivity for napsin; **d** positivity for cytokeratin 7 (CK7); **e** weak positivity for CK20; **f** negativity for CDX2. These findings support a diagnosis of pulmonary adenocarcinoma.

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adenocarcinoma, and the final diagnosis by immunohistochemistry (IHC) was lung adenocarcinoma (Fig. 4). IHC of the pancreatic tumor FNA cell block confirmed a primary pancreatic adenocarcinoma (Fig. 5). This experience further demonstrates the impact of EUS and the feasibility and potential safety of transvascular or intravas-

cular EUS-FNA of major mediastinal vessels, avoiding more invasive measures and directing clinical care in carefully selected patients.

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Competing interests: None

Fig. 5 Cell block from endoscopic ultrasound-guided fine-needle aspiration specimen, pancreatic mass. All images were acquired at $\times 400$ magnification. **a** Rare adenocarcinoma cells in a background of red blood cells and lymphocytes (hematoxylin and eosin stain [H&E] stain). **b** Rare adenocarcinoma cells present on smear (Papanicolau [PAP] stain). Results of tumor cell immunohistochemistry: **c** negativity for thyroid transcription factor 1 (TTF-1); **d** negativity for napsin; **e** positivity for cytokeratin (CK7); **f** weak positivity for CK20. These findings support a diagnosis of pancreatic adenocarcinoma.

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