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

**Competing interests:** None

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**Fig. 4** Cell block from endoscopic ultrasound-guided fine-needle aspiration specimen, pulmonary artery mass. All images were acquired at ×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.

**Video 1**

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Fig. 5 Cell block from endoscopic ultrasound-guided fine-needle aspiration specimen, pancreatic mass. All images were acquired at ×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.