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# EUS-guided alcohol ablation of left adrenal metastasis from non-small-cell lung carcinoma

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**Background:** EUS presents an alternative access to the left adrenal, making it possible to perform echo-guided needle biopsies.

**Objectives:** We present a case of EUS-guided therapy as alcohol ablation of left adrenal metastases.

**Design and Patient:** A 52-year-old man was admitted to the hospital complaining of abdominal pain. CT scan revealed an invasive process in the left upper lobe of the lung and a mass in the left adrenal area that was considered highly suspicious for left adrenal metastases from the patient's lung carcinoma. Cytopathologic examination of EUS-guided FNA confirmed the diagnosis of left adrenal metastasis. Because the patient's main clinical symptom was disabling abdominal pain, we considered the possibility of injection of alcohol into the left adrenal metastases under EUS guidance to ablate the metastatic lesion and potentially relieve the abdominal pain. EUS-guided alcohol ablation was performed successfully.

**Results and Main Outcome Measurement:** On follow-up 3 days after EUS-guided left adrenal ablation, the patient had no abdominal pain. He remained without abdominal pain after 30 and 60 days of follow-up.

**Limitation:** New technique with limited data.

**Conclusion:** EUS-guided alcohol ablation of left adrenal metastases in patients with non-small-cell lung cancer may provide palliation of cancer-related abdominal pain. There may be potential for combining this (minimally invasive and easily performed EUS-guided therapeutic) technique for ablation of solitary adrenal metastasis in patients with lung cancer with other modalities (e.g., surgery, radiation, or chemotherapy) directed toward the primary pulmonary malignancy and adjacent mediastinal disease.

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The adrenal gland is a common site of metastasis from primary lung cancer. EUS presents an alternative access to the left adrenal (LA) gland, making it possible to perform echo-guided needle biopsies. We here present a case of EUS-guided therapy as alcohol ablation of LA metastases (LAM).

## PATIENT AND METHOD

A 52-year-old man had had abdominal pain for 45 days, fatigue, and weight loss. Chest x-ray examination revealed a consolidated area in the left upper lobe (LUL) of the lung. CT scan revealed a mass in the LUL (Fig. 1) and mediastinal lymphadenopathy. CT-guided needle biopsy of the lung mass confirmed the diagnosis of large cell carcinoma (Fig. 2). Abdominal CT scan revealed a mass in the

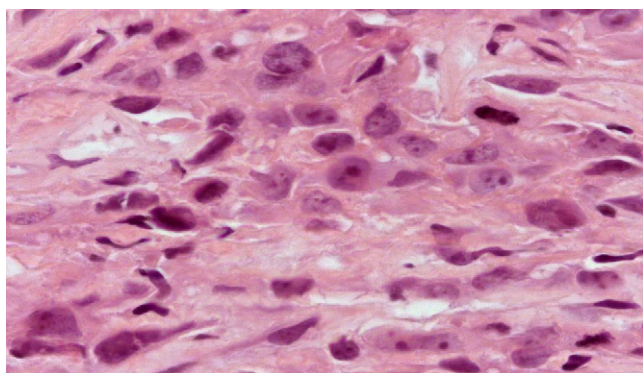
LA area that was considered highly suspicious for LAM (Fig. 3). An EUS revealed a 5-cm heterogenous lesion in the LA region along with mediastinal lymph nodes. Cytopathologic examination of a transgastric 22-gauge EUS-guided FNA (Fig. 4) confirmed the diagnosis of a LAM from the large cell lung carcinoma (Fig. 5). The patient had cardiac disease and was not considered for surgery given his increased risk and confirmed metastatic disease. Because the patient's lung carcinoma with LAM was considered unresectable and because the patient's main clinical symptom was disabling abdominal pain, we considered the possibility of injection of alcohol into the LAM under EUS guidance to ablate the metastatic lesion and potentially relieve the abdominal pain. Informed consent was obtained from the patient. The procedure was performed after institutional review board approval of the technique as the first patient under an institutional review board-approved protocol with a plan in the future to recruit more patients for this indication. EUS-guided alcohol ablation was performed (Fig. 6) as described below. A 30-day follow up EUS of the LA area demonstrated a hyperechoic nodule between the pancreas and the left kidney, most likely corresponding to fibrosis after alcohol ablation

*Abbreviations:* LA, left adrenal; LAM, left adrenal metastases; LUL, left upper lobe; NSCLC, non-small-cell lung cancer.

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0016-5107/\$32.00  
doi:10.1016/j.gie.2007.05.051



**Figure 1.** CT revealed an invasive process in the left upper lobe of the lung.



**Figure 2.** Histologic examination showing a large cell carcinoma of lung (from CT-guided biopsy of the lung mass [H&E, orig. mag.  $\times 100$ ]).

in the LA region (Fig. 7). The patient received chemotherapy with paclitaxel and carboplatin with simultaneous supportive treatment. The patient did not have any significant abdominal pain after chemotherapy and EUS-guided LA ablation. On follow-up 3 days after EUS-guided LA ablation the patient had no abdominal pain. He remained pain free at 30 and 60 days of follow-up, but the patient had a respiratory failure after 83 days because of his underlying cancer and died.

### Technique

EUS was performed with the linear electronic array echoendoscope (UCT-160, Olympus America, Melville, NY) with moderate sedation. EUS-guided FNA was performed with a 22-gauge needle. Transgastric imaging with the linear scanning echoendoscope permitted sagittal imaging of the LA region localized between the pancreas body and the left kidney (Fig. 8). For LAM ablation, the needle was advanced into the LAM under direct EUS visualization (Figs. 9 and 10). After the tip of the needle was positioned in the core of the lesion, 15 mL of

### Capsule Summary

#### What is already known on this topic

- EUS-guided injection of alcohol into solid lesions for ablation is increasingly popular, with reports of its use in insulinoma, GI stromal tumor, and hepatic metastases.

#### What this study adds to our knowledge

- EUS-guided alcohol ablation of the left adrenal gland was performed successfully to relieve severe abdominal pain in a man with non-small-cell lung cancer.

dehydrated 98% absolute alcohol was slowly injected and an echogenic cloud was identified ultrasonically (Fig. 6). The needle was then withdrawn from the lesion into the echoendoscope. The patient was given 500 mL of normal saline solution intravenously. The time required to perform the procedure was around 16 minutes. After the procedure the patient was checked for orthostasis and other complications before discharge.

### DISCUSSION

The adrenal gland is not an uncommon site of metastasis from lung, breast, and liver cancers. We here present a new technique of ablating LAM. Although the value of such a technique may be considered only for palliation of pain, potentially this technique could have therapeutic/survival benefits in combination with other treatments in lung cancer. This concept as described below is supported by published data and reports of surgical and percutaneous techniques for resecting or ablating adrenal metastases from lung and other primary sites.

Resection of solitary brain metastases in lung cancer may be beneficial in selected patients.<sup>1</sup> Similarly, surgery or other local ablative treatment may have some potential for treatment of localized adrenal metastases in non-small-cell lung cancer (NSCLC). Pfannschmidt et al<sup>2</sup> attempted to look at the survival of patients after the resection of solitary metastases to the adrenal gland in 11 patients who underwent potentially curative resection for metastatic NSCLC to the adrenal with complete resection of the primary lung lesion. The median survival was 12.6 months. This was not an option for our patient because he was considered a poor surgical candidate because of his comorbidities and increased surgical risk. Sebag et al<sup>3</sup> studied the role of laparoscopic adrenalectomy of isolated adrenal metastases in 16 patients with more than 50% of patients having a lung primary. Median overall calculated survival was 23 months and overall 5-year survival was 33%.

Other techniques for ablating adrenal tumors include percutaneous image-guided radiofrequency ablation as

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