



Case report

Sampling pleural nodules with an EBUS scope: A novel application

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A B S T R A C T

Convex endobronchial ultrasound transbronchial needle aspiration (C-EBUS-TBNA) has become an essential modality for diagnosis and staging of hilar, mediastinal, and central pulmonary lesions. A Trans-thoracic pleural biopsy is the accepted practice for diagnosing pleural nodules. However, the diagnostic yield of a pleural biopsy is limited and surgical procedures pose a greater risk. We report a unique case of using a C-EBUS scope for the diagnosis of pleural nodules and mediastinal lymph node metastasis in a man with metastatic renal cell carcinoma.

1. Introduction

Sampling pulmonary and pleural lesions is challenging and may necessitate complex procedures. Pleural biopsy is the accepted practice for diagnosing pleural nodules. However, the diagnostic yield of a pleural biopsy is limited, favoring thoracoscopy as the preferred method for tissue sampling although surgical procedures may pose greater risk, and are contraindicated given a patient's comorbidities [1].

Convex endobronchial ultrasound –guided transbronchial needle aspiration (C-EBUS-TBNA) is an effective tool that allows the clinician to obtain both diagnosis and staging of diseases involving the lung and mediastinum, with relatively low complication risk [2].

EBUS can be utilized both for tracheal approach or an esophageal approach [3].

Lesions in the mediastinum, lungs, adrenals, and other sites, which can be accessed via the trachea or esophagus, can be sampled with C-EBUS.

Successful sampling of pleural lesions via EBUS is described only for central pleural lesions with close proximity to the mediastinum and central air ways, and not for peripheral lesions [4–6].

To our knowledge, this is the first report of the evaluation of multiple peripheral pleural nodules and mediastinal lymphadenopathy diagnosed by EUS-B-FNA (Transesophageal Bronchoscopic Ultrasound Guided Fine Needle Aspiration).

2. Case report

A 60-year-old male with a 20 pack year smoking history and diabetes mellitus type 2, with no known asbestos exposure, underwent a chest and abdominal X-ray due to chest and abdominal pain complain which was significant for bilateral pleural effusions. Chest computed tomography (CT) revealed multiple bilateral pleural masses and mediastinal lymphadenopathy (Fig. 1A1B).

A pleurocentesis and close pleural biopsy was performed but the results were non-diagnostic.

An EBUS-TBNA and EUS-B-FNA was therefore performed using a conventional C-EBUS (Olympus). Under EBUS guidance, a pleural mass adjacent to the lower segment of the esophagus was identified (Fig. 2). EUS-B-FNA was performed of the pleural mass using a 21-gauge needle. Subsequently, mediastinal lymph nodes 4R and 7 were sampled with C-EBUS-TBNA with no immediate complication and no ultrasonographic signs of vascular damage. The patient was observed for one hour in the recovery room then for the following 12 hours without evidence of complications.

The specimens were examined cytologically, histologically and immunohistochemically (Fig. 3). The morphologic and immunostaining findings were consistent with clear cell carcinoma.

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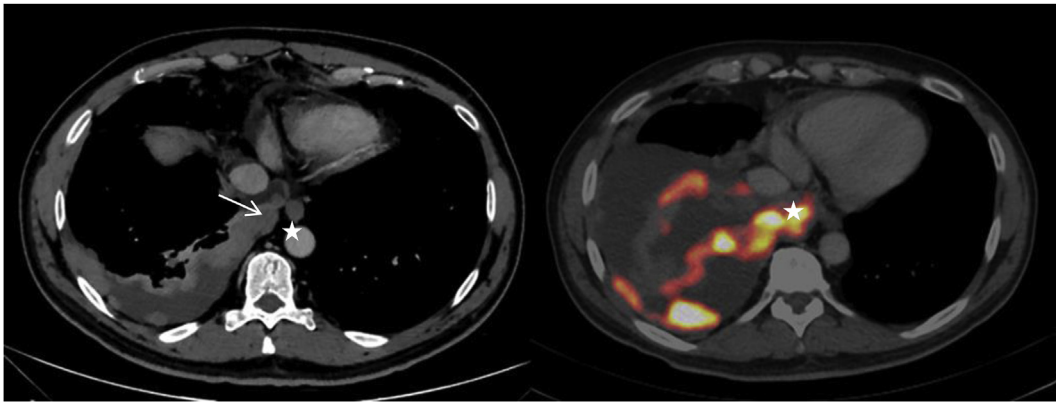


Fig. 1. A. Chest CT (soft tissue window) at level of T9. Note the vicinity of the pleural mass (marked with arrow) to the esophagus (marked as *); B. PET-CT taken month later. Note the high FDG uptake (marked as *); C. US imaging of mediastinal pleural mass adjacent to the lower segment of the esophagus was identified with EBUS scope (marked as *).



Fig. 2. US imaging of mediastinal pleural mass adjacent to the lower segment of the esophagus was identified with EBUS scope (marked as *).

3. Discussion

Renal cell carcinoma (RCC) accounts for approximately 2% of all cancers.

Within this group, clear cell renal cell carcinoma (CCRCC), is the most common histologic variant, accounting for 75–88% of cases in current surgical series. A notable feature of RCC is its tendency to metastasize to the lungs or mediastinum, which is present in more than one third of patients with RCC at the time of diagnosis [7]. Pleural involvement is less common, and, when present, almost always accompanies pulmonary metastases [8].

In our case the pulmonary manifestation of metastatic RCC disease included both mediastinal lymphadenopathy and pleural-based masses. To insure that the highest yield was obtained, biopsies of both sites were performed with one endoscopic procedure.

Endoscopic US was used to guide pleural biopsy and pleurocentesis via the esophagus. [9,10], EUS-B-FNA provides particular advantages that it may be associated with less procedure related cough and can be used to perform mediastinal sampling in case the tracheal route is difficult or not possible like very small children [11]. To our knowledge, this is the first report of adequate pleural transesophageal biopsy taken with a C-EBUS scope during the same procedure in which mediastinal lymph nodes were sampled as well.

Over the last decade EBUS-TBNA has emerged as an effective tool

for the diagnosis and staging of chest tumors. Reports that describing the diagnosis of RCC in the lung with C-EBUS-TBNA all involved indirect sampling via transbronchial aspiration of enlarged mediastinal lymph nodes, rather than the pleural mass itself [12,13].

There are very few case reports of direct sampling of pleural lesions with trans-bronchial C-EBUS. This is due to the thickness of the C-EBUS scope which precludes its' ability to reach the lung periphery. As such, only the pleura in the vicinity of the large airways are accessible [5,6,12,14].

This case emphasizes the ability of C-EBUS to sample the lower pleura adjacent to the esophagus in addition to the higher pleural surface which is in closer proximity to the large airways. This is especially important since most pleural lesions are distal. The interventional bronchoscopist should recognize the utility of the EBUS-TBNA in these instances, and potentially use it as an additional option in the armamentarium to obtain pathological samples in a minimally invasive manner, rather than more invasive and risky surgical procedures. This case emphasizes the ability of EBUS to sample the peripheral pleura adjacent to the esophagus.

Disclosure

Michael Kassirer, Jonathan Wiesen, Karine Atlan, Avital Avriel report no conflicts of interest in this work.

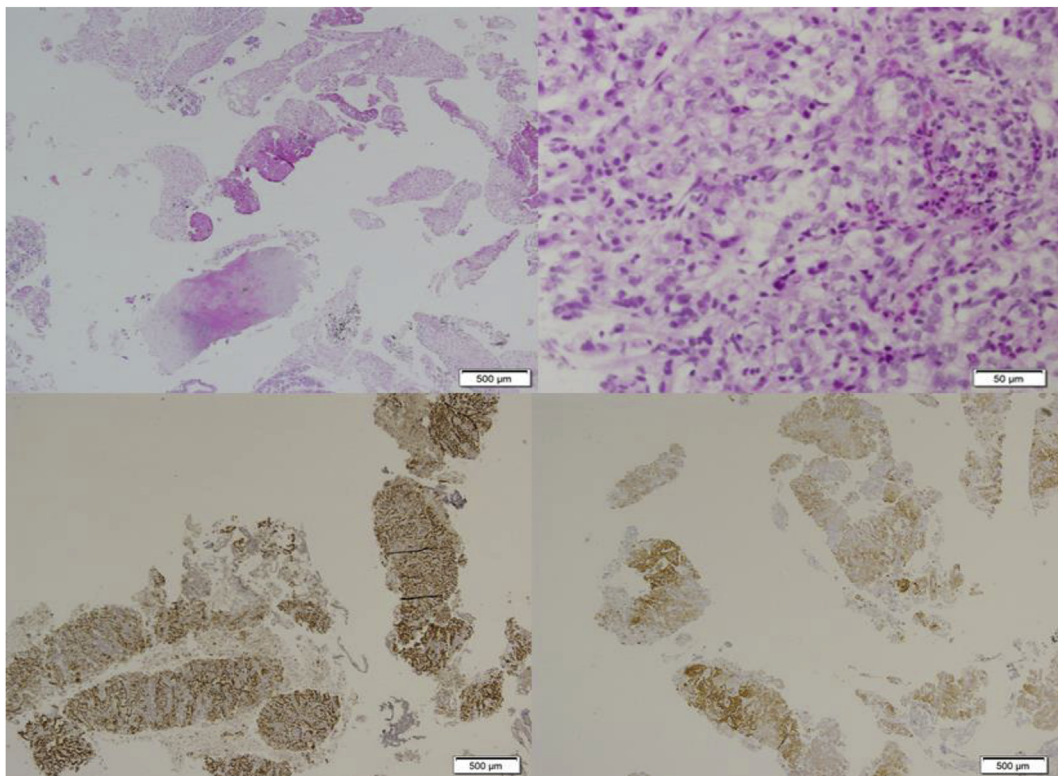


Fig. 3. Pathology results: A. EBUS, lymph node, station 4R: Fragments of carcinoma with a background of benign respiratory epithelium, cartilage and lymphoid tissue (Hematoxyllin & Eosin, magnification $\times 40$); B. Pleural mass, EUS: Fragments of carcinoma with morphological features suggesting clear cell carcinoma (H&E, $\times 400$); C. The immunostain results and histological features favor the diagnosis of metastatic clear cell renal cell carcinoma: C1. Immunohistochemical stain, PAX-8, $\times 40$, positive; C2. Immunohistochemical stain, CA-IX, $\times 40$, membranous positive staining.

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