First Experience with the 22 Gauge EchoTip ProCore® EBUS Needle in Cases with Suspected Lymphoma

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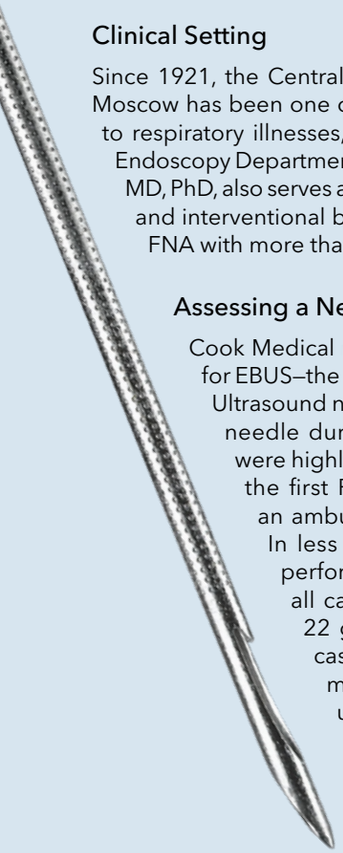
Background

Mediastinal lesions almost always require biopsy to confirm a diagnosis. For decades, surgery was the procedure of choice in such patients, but now there is an alternative: endoscopic ultrasound-guided biopsies, performed either through esophagus or bronchial tree. Unfortunately, all instruments for biopsy in EBUS-TBNA were definitely dedicated to cytology. The need for pure histology specimens in primary diagnostics of mediastinal lesions, especially lymphomas and lung cancer staging, is obvious.

Clinical Setting

Since 1921, the Central Tuberculosis Research Institute (CTRI) in Moscow has been one of the leading centers in Russia dedicated to respiratory illnesses, both for diagnostics and treatment. The Endoscopy Department of CTRI, headed by Prof. Olga Lovacheva, MD, PhD, also serves as a national training center for conventional and interventional bronchoscopy, including EBUS/EUS-TBNA/FNA with more than 200 procedures performed annually.



Assessing a New EBUS Needle

Cook Medical recently launched a new histology needle for EBUS—the 22 gauge EchoTip ProCore Endobronchial Ultrasound needle. We had a chance to assess this new needle during procedures on several patients that were highly suspicious for lymphoma. In early March, the first ProCore EBUS biopsy was performed in an ambulatory setting without any complications. In less than two months, five procedures were performed using the new histology needle; in all cases the ProCore was compared with the 22 gauge EchoTip Ultra EBUS needle. In all cases, final diagnosis was established (mostly malignant), but only in two out of five cases using the conventional EchoTip EBUS needle, whereas the ProCore showed definite efficacy for all the patients. No complications or technical issues attributed to the new needle were observed. Thereafter, two clinical cases of patients with suspicion for lymphoma will be presented.

Case 1

A 32-year-old patient (non-smoker) was admitted to the outpatient department complaining of fatigue, pyrexia till 38 C, unpronounced breathlessness. During X-ray and further contrast-enhanced CT of the chest, a mass in the anterior and middle mediastinum was detected (*Figure 1*). The patient underwent EBUS-TBNA using a 22 gauge EchoTip Ultra needle without any diagnostic material retrieval. A second procedure was planned using new ProCore needle, under local anesthesia using EUS(b)-FNA approach. All biopsies were done without suction and subsequent biopsies done without stylet (*Figure 2*). Total procedure duration was approximately 10 minutes. Two samples were taken from a lesion using the 22 gauge EchoTip Ultra; three samples were taken using the EchoTip ProCore. Hodgkin's disease was confirmed by ROSE (*Figure 3*) and further reconfirmed by histology and IHC. The patient was referred to hematology clinic and started appropriate chemotherapy treatment.

Case 2

A 56-year-old patient (ex-smoker: smoking index > 35 pack-years) was referred to outpatient department without any complaints. Previously, the patient had undergone routine chest X-ray, which showed distortion and widening of mediastinum. A chest CT was performed in a clinic, confirming a bulky mass in anterior and middle mediastinum (*Figure 4*). With primary suspicion for lymphoma, the patient was planned for EBUS-TBNA under conscious sedation in an outpatient setting. The procedure was performed, revealing a huge mass (*Figure 5*). A biopsy using both the 22 gauge EchoTip ProCore and the 22 gauge EchoTip Ultra was performed (2 series of each, full suction, no stylet, total procedure duration around 15 minutes). The new ProCore needle retrieved a sufficient amount of core tissue, whereas the EchoTip Ultra could only produce a cytology. According to ROSE, small-cell lung cancer was confirmed (*Figure 6*), and further reconfirmed by histology (*Figure 7*) and IHC. The patient was referred to oncology clinic for further radiation and chemotherapy.

Conclusion

The new EchoTip ProCore EBUS needle provides an opportunity to verify diagnosis in patients with mediastinal lesions, thus saving patients from mediastinoscopy, shortening the time to diagnosis and saving medical resources. During our procedures, we experienced no patient-safety issues and no issues with the scope. ■

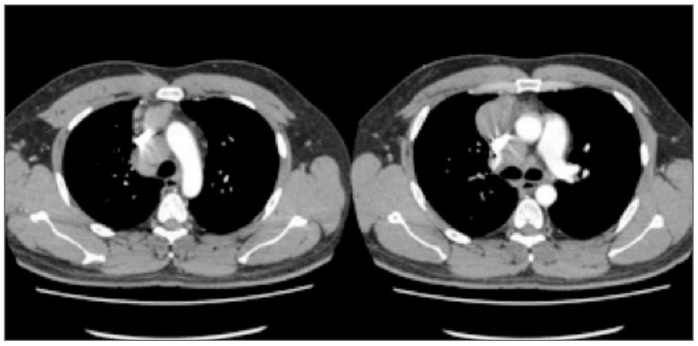


Figure 1: *Chest CT scans with contrast enhancement, showing mediastinal lymphatic node enlargement with formation of a mass in an anterior (left) and also middle mediastinum (right).*

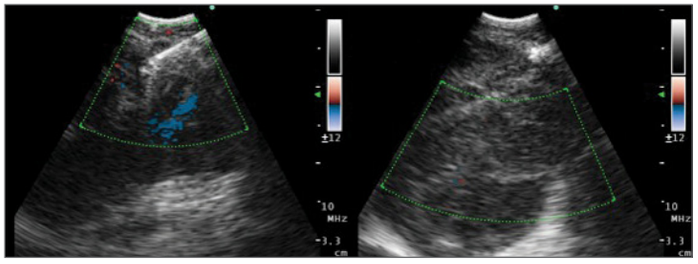


Figure 2: *EUS(b) procedure with FNB using EBUS ProCore needle. Enlarged lymphatic nodes with sharp margins and poor vascularization can be clearly seen (right). Sharp acoustic image of needle can be clearly visualized in a mass, as well as the shadow of a cut in it (left) with adjacent Doppler artifacts due to needle movement.*

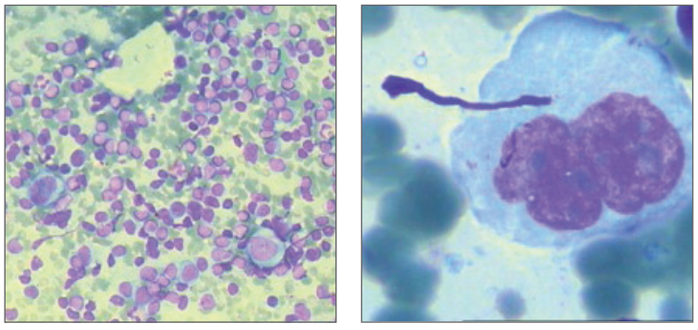


Figure 3: *Cytology of a EUS(b)-FNA biopsy. H&E staining. Magnification x200 (left) and x1000 (right). Hodgkin's disease. Images courtesy of Dr. Galina Evgushenko, MD, PhD, Head of Cytology Department, CTRI.*

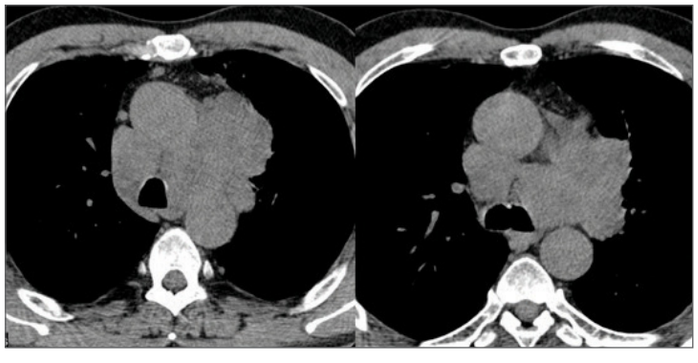


Figure 4: *CT scans without contrast enhancement, showing a bulky mass in an anterior (left) and middle mediastinum (right).*

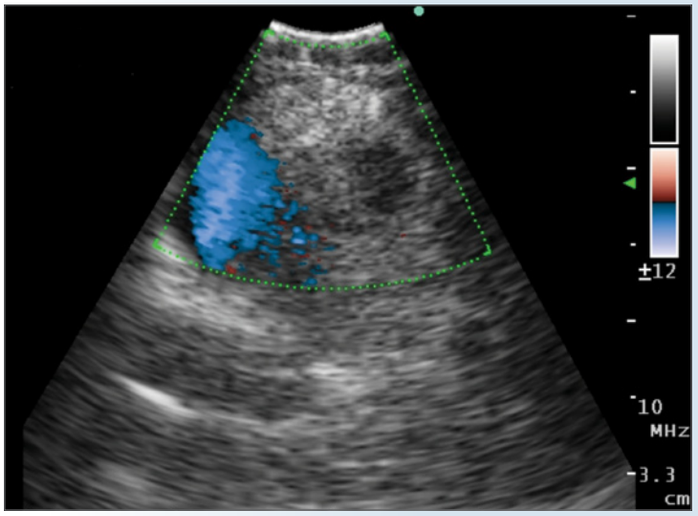


Figure 5: *EBUS-TBNA procedure using new histology needle. A mass in station 4R with sharp margins and no evident vascularization revealed. There is a hypoechoic structure (possible necrosis) on the upper part of a screen, adjacent to azygos vein, nicely detected by Doppler scanning.*

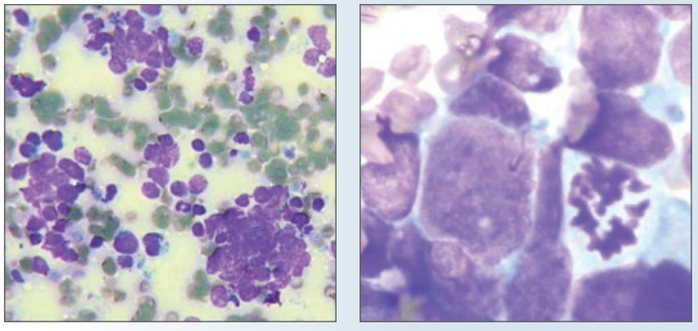


Figure 6: *Cytology of an EBUS-TBNA biopsy. H&E staining. Magnification x200 (left) and x1000 (right). Clearly seen are clusters of undifferentiated small tumor cells with typical nucleus shapes. A moment of tumor cell mitosis can be visualized in the right lower part of the slide (right). Small cell lung cancer. Images courtesy of Dr. Galina Evgushenko, MD, PhD, Head of Cytology Department, CTRI.*

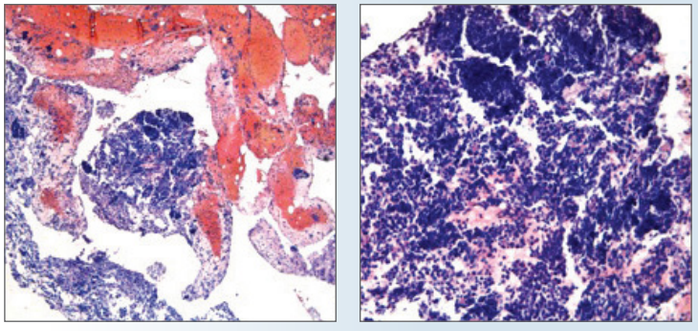


Figure 7: *Histology of an EBUS-TBNA biopsy using ProCore. H&E staining. Magnification x200 (left) and x1000 (right). Lymphatic nodes structures can be visualized, with clusters of undifferentiated small tumor cells with typical nucleus shapes. Small cell lung cancer. Images courtesy of Prof. Larisa Lepekha, PhD, Head of Pathology Department, CTRI.*