

Electromagnetic Navigation Bronchoscopy Works in Tandem with EBUS and Cellvizio® to Facilitate Precise Diagnosis

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Introduction:

Electromagnetic navigation bronchoscopy's reach and navigation capabilities paired with other diagnostic tools like endobronchial ultrasound (EBUS) and Cellvizio® may deliver precise answers for patients with multiple symptoms and procedure restricting conditions.

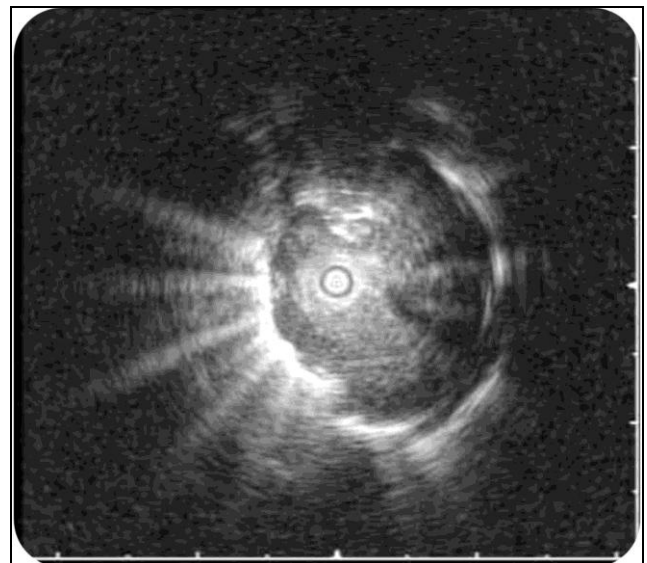
Case Report:

A 58-year-old male developed fatigue and weakness, consulted a rheumatologist, and was diagnosed with polymyalgia rheumatica (PMR.) The patient was prescribed prednisone and experienced rapid relief of his symptoms. After several months, patient began to taper off prednisone dosage, and then developed additional symptoms of profound fatigue, weakness, and clumsiness — different than presented in previous months. The patient consulted a neurologist who ordered a CT scan out of concern for a possible para-neoplastic syndrome.

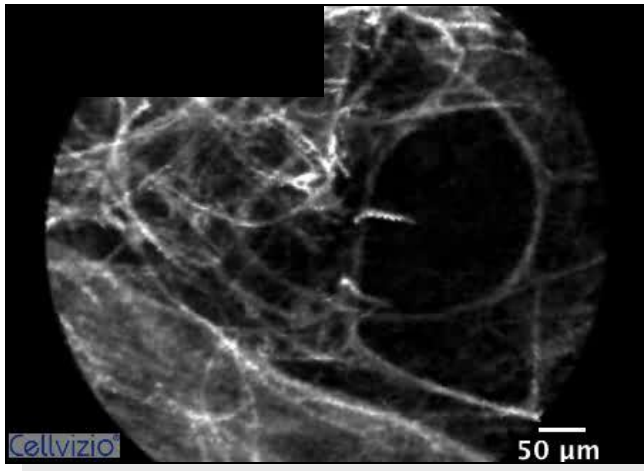
The patient's CT scan identified a lung nodule and the patient was referred to a lung center. A previous CT scan from several months earlier showed very small nodules. The new CT scan showed a left lower lobe nodule which was faintly PET positive. Combined with the declining performance status the patient was experiencing, surgeons were not anxious to take him to surgery, and the patient was referred for a biopsy. A superDimension® inReach™ electromagnetic navigation bronchoscopy (ENB) was planned.



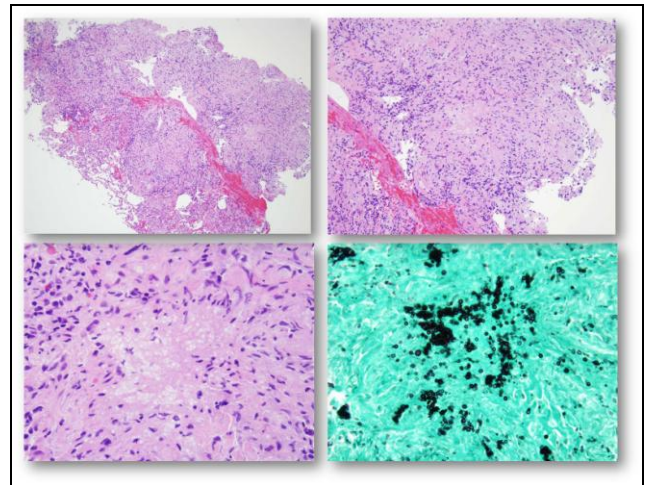
Lung nodule



Radial probe ultrasound image of a solid structure confirming the successful positioning of the locatable guide after inReach navigation.



Cellvizio® video demonstrates the architecture of the lung nodule at a microscopic level.



Biopsy showed caseating granulomas, and silver stain showed fungal organisms consistent with *Cryptococcus neoformans*.

inReach planning software clearly showed an airway to the lesion, but the size and angle of the airway was a concern for whether the extended working channel (EWC) would stay in place once situated with the locatable guide. The inReach System's high resolution image allowed for accurate planning. The middle and the back of the nodule were both marked for guidance of the EWC to the middle of the lesion. An endobronchial ultrasound (EBUS) radial probe was used to get real time confirmation of the location of the EWC, and obtain a solid biopsy sample. In addition, the lesion was viewed with Cellvizio® Confocal Fluorescence Microendoscopy. An atlas of the images is being developed to compare to the biopsy and micro-endoscopic images.

The biopsy and silver stain revealed a necrotizing granuloma with organisms suggesting infection with *Cryptococcus*. A very low dose of prednisone may have given the patient systemic *Cryptococcus*. This diagnosis permitted definitive treatment without surgery.

Discussion:

When the reach of electromagnetic navigation bronchoscopy is combined with tools, such as EBUS and Cellvizio, a powerful set of diagnostic options can be offered to our patients. This approach greatly expands options for patients who may not be surgical candidates.

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