Biopsy Samples Insufficient for Molecular Testing

Potential Action Items

- Reach out to centers with effective endobronchial ultrasound (EBUS) procedures and request to let team observe
- Improve fine-needle aspiration (FNA) biopsy results by scheduling meeting with radiologist, pulmonologist and pathologist to review literature on FNA and discuss the optimal approach
- Review how radiologists are performing CT-guided lung biopsies and identify opportunities to standardize, make improvements in techniques and increase appropriate use of core needle over FNA
- Compare adequacy rates of core needle biopsy samples vs. FNA

Ideas for Process Improvement

The majority of lung needle biopsy procedures are performed either by radiologists who use computed tomography (CT)-guidance or by pulmonologists who perform a bronchoscopy.[1] Radiologists who perform needle biopsies may be formally trained in interventional radiology or may be trained in general diagnostic radiology. Pulmonologists who perform biopsies may be formally trained in interventional pulmonology and have access to more sophisticated equipment when performing biopsies.

Needle biopsy methods generally include:[2]

- Fine-needle aspiration (FNA)—which may be performed by radiologists or pulmonologists
- Core-needle biopsy (CNB)—which are only performed by radiologists (due to needle size and flexibility)

In general, CNB yield larger segments of tissue (histology) that are better suited for molecular testing.[3] FNA yields fluid and cells (cytology) and when the sample is adequate, the pathologist can create a cell block for molecular testing analysis.[4] This often requires several samples during an FNA biopsy procedure.

Considerations for Radiologists:

Several learning lab participants found that among their radiologists, some strongly preferred using FNA over CNB because they wanted to minimize their risk for serious bleeding or pneumothorax. In these centers, radiologists were open to having further discussions to explore the clinical importance of using CNB when it is safe and appropriate. They also spent time reviewing the latest literature on the safety of CNB vs. FNA when performed by skilled operators. One cancer center worked with their radiologists and pathologists to perform an internal review and assessment of its CT-guided biopsies to compare complication rates between FNA and CNB. After they performed their analysis, they found improvements in biopsy sample adequacy with CNB and no significant differences in complication rates between FNA and CNB. This internal study helped convince and motivate their radiologists to transition towards using CNB to maximize their tissue yield for molecular testing.

Resources for Radiologists:

- CT-Guided Core Biopsy of Lung Lesions: A Primer
- Quality Improvement Guidelines for Percutaneous Needle Biopsy
- Guidelines for Establishing a Quality Improvement Program in Interventional Radiology
- Transthoracic Needle Biopsy

- Pneumothorax after transthoracic needle biopsy of lung lesions under CT guidance

Considerations for Pulmonologists and Surgeons:

Endobronchial ultrasound (EBUS) is a relatively new procedure that allows physicians to perform a technique called a transbronchial fine needle aspiration (TBNA) to obtain a biopsy from the chest.[5] In the community, a growing number of pulmonologists and surgeons are getting trained in the use of EBUS so that they can sample mediastinal lymph nodes and stage lung cancer. A lung cancer patient who is staged by EBUS may not require a traditional mediastinoscopy.

There are different EBUS training programs and fellowship programs in interventional pulmonology (IP). The Society of Thoracic Surgeons (STS) and the American Thoracic Society (ATS) offer advanced endoscopy courses for thoracic surgeons and pulmonologists.[6] The American Association for Bronchology and Interventional Pulmonology (AABIP) offers a Board Certification Exam in Interventional Pulmonology.

Resources for Pulmonologists:

- An Official American Thoracic Society/European Respiratory Society Statement: The Role of the Pulmonologist in the Diagnosis and Management of Lung Cancer
- Diagnosis and Management of Lung Cancer, 3rd ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines

For pulmonologists, the American College of Chest Physicians (ACCP) offers a Performance Improvement Module on "Performing EBUS-TBNA to Diagnose Non-Small Cell Lung Cancer."[7]

References

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[6]The Society of Thoracic Surgeons. Course 3: Advanced Endoscopy for Thoracic Surgeons. http://www.sts.org/education-meetings/sts-university/sts-u-course-3

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