Endobronchial Ultrasound and Esophageal Ultrasound

Just Because We Can, Does Not Necessarily Mean We Should

To the Editor:

In the excellent studies by Herth et al\(^1\) and Hwangbo et al\(^2\) and the editorial by Annema et al\(^3\) in a recent issue of CHEST (October 2010), the authors, who are leading experts and pioneers in the development of endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) and endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) showed that a combined approach yields better results in the staging of lung cancer. Because the esophagus is a long, tubular structure without clearly identifiable endoscopic landmarks, lymph nodes adjacent to it may be difficult to locate during transesophageal ultrasound needle aspiration (TENA). Fluoroscopy-guided TENA has been used to sample lymph node stations 4L, 5, 7, and 8, and when combined with conventional transbronchial needle aspiration (TBNA), reports indicate no increase in diagnostic yield.\(^4\)

Using the International Association for the Study of Lung Cancer staging system, station 8 is bordered by the right lower lobe bronchi all the way down to the diaphragm. The portion medial to the right lower lobe bronchi can be reached by TBNA. According to the International Association for the Study of Lung Cancer, 4L is lateral to the left tracheal wall starting from the upper border of the aortic arch end to the upper rim of the left pulmonary artery, and the station 5 aorta-pulmonary window node is found between the lower border of the aortic arch and upper rim of the left pulmonary artery but lateral to the ligamentum arteriosum.\(^5\) Both 4L and 5 are frequently involved together and are difficult to separate, so 4L/5 nodes are often used synonymously. Strictly the aorta-pulmonary window lymph node is the portion of the lymph node far lateral to the pulmonary ligamentum arteriosum beyond the subaortic area (station 5/6), which traditionally is not accessible by TBNA.\(^6\)

In the article by Herth et al\(^1\), only three exclusively positive cases are obtained by TENA from station 2L, 10L, and 7, which all could be sampled by TBNA. In the second article, by Hwangbo et al\(^2\), all three exclusive positive cases determined by TENA were from station 5. No station 8 or 9 nodes contributed to an increase in diagnostic yield by TENA. In the future we will likely be required to justify the cost of TBNA and to provide the best value to the patient and health-care system for procedures such as TBNA. Nothing can replace the training and the skill. The authors performed EBUS-TBNA and TENA under IV sedation, without an on-site cytologic evaluation and outside the operating room, which is a giant step. A similar study to compare standard TBNA with EBUS-TBNA by those skillful experts is encouraged.\(^7\)

As interventional pulmonologists, we must use our skills with judgment for the patient’s benefit. Both EBUS-TBNA and EUS-TENA have been promoted as a first-line procedure for the staging of lung cancer. The medical literature has shown both procedures have a yield equal to mediastinoscopy. Mediastinoscopy and EUS-FNA are complementary procedures. EBUS-TBNA and EUS-FNA are potentially competitive procedures. Each can accomplish the intended goal. EUS-FNA is a much more tolerable procedure for patients. EBUS-TBNA has the most accessibility to the mediastinum and hilar lymph nodes.

We agree that EBUS-TENNA should be used only in circumstances when the lymph node stations are difficult or are not accessible by TBNA. If these groups of lymph nodes are the only lymph nodes involved, there is no need for EBUS-TBNA, and the patient can go through EBUS-TENNA or EUS-FNA directly.

The value of these two studies is not only about combining EBUS-TBNA and TENA; they have also given us a valuable guide among the many alternative procedures for the staging of lung cancer. For that we are grateful for their contribution.

Jonathan D. Rich, MD
Sanjeev J. Shah, MD
Chicago, IL

REFERENCES


5. Both 4L and 5 are frequently involved together and are difficult to separate, so 4L/5 nodes are often used synonymously. Strictly the aorta-pulmonary window lymph node is the portion of the lymph node far lateral to the pulmonary ligamentum arteriosum beyond the subaortic area (station 5/6), which traditionally is not accessible by TBNA.

6. As interventional pulmonologists, we must use our skills with judgment for the patient’s benefit. Both EBUS-TBNA and EUS-TENA have been promoted as a first-line procedure for the staging of lung cancer. The medical literature has shown both procedures have a yield equal to mediastinoscopy. Mediastinoscopy and EUS-FNA are complementary procedures. EBUS-TBNA and EUS-FNA are potentially competitive procedures. Each can accomplish the intended goal. EUS-FNA is a much more tolerable procedure for patients. EBUS-TBNA has the most accessibility to the mediastinum and hilar lymph nodes.

7. We agree that EBUS-TENNA should be used only in circumstances when the lymph node stations are difficult or are not accessible by TBNA. If these groups of lymph nodes are the only lymph nodes involved, there is no need for EBUS-TBNA, and the patient can go through EBUS-TENNA or EUS-FNA directly.

The value of these two studies is not only about combining EBUS-TBNA and TENA; they have also given us a valuable guide among the many alternative procedures for the staging of lung cancer. For that we are grateful for their contribution.
Affiliations: From the Department of Interventional Pulmonology (Drs Wang, Feller-Kopman, and Yarmus), The Johns Hopkins Hospital; the Department of Pulmonology (Dr Mehta), Cleveland Clinic; and the Department of Gastroenterology (Dr Sharma), Jasvant Rai Speciality Hospital.

Financial/nonfinancial disclosures: The authors have reported to CHEST the following conflicts of interest: Dr Feller-Kopman has received consulting fees from Olympus America, Inc. The remaining authors have reported that no conflicts of interest exist with any companies/organizations whose products or services may be discussed in this article.

Correspondence to: Ko Pen Wang, MD, FCCP, Department of Interventional Pulmonology, Johns Hopkins Hospital, 1830 E Monument St, 5th Floor, Baltimore, MD 21205; e-mail: kopenwang@yahoo.com

© 2011 American College of Chest Physicians. Reproduction of this article is prohibited without written permission from the American College of Chest Physicians (http://www.chestpubs.org/site/misc/reprints.xhtml).

DOI: 10.1378/chest.11-0171

REFERENCES


Response

To the Editor:

In their comment, Dr Wang and colleagues raise the point that endobronchial ultrasound (EBUS) and endoscopic ultrasound (EUS) should not always be performed just because they are available. How endosonography relates to other techniques and how it should be positioned in diagnostic and staging algorithms for patients with lung cancer are very relevant indeed. Important issues in that discussion are the ability to detect vs exclude mediastinal nodal spread, complication rate, cost-effectiveness, and patient preference for the various tests.

Ideally, patients with suspected lung cancer on CT imaging (PET scan) are diagnosed and staged in an accurate, safe, minimally invasive, and cost-effective way. Conventional or “blind” transbronchial needle aspiration (TBNA) has variable sensitivity in detecting nodal metastases (39%-78%), depending on the population studied and the experience of the operator. TBNA is good for confirming metastases, but not for excluding them, and should, therefore, be performed at initial bronchoscopy. A comparative study between TBNA and radial (not real-time) EBUS-guided TBNA was performed by Herth et al, who found that EBUS guidance significantly increased the yield of TBNA in all nodal stations except the subcarinal region.

EBUS and EUS have a similar (lower left paratracheal and subcarinal region) as well as a complementary diagnostic reach (for EBUS, right paratracheal and hilar regions; for EUS, lower mediastinum and aortopulmonary window). With EUS, identification of paraesophageal nodes occurs by relating them to vascular structures such as the aorta, pulmonary artery, and left atrium; fluoroscopy is not indicated.

In a randomized study, EUS and EBUS combined, followed by mediastinoscopy (in the absence of nodal metastases), had higher sensitivity in assessing mediastinal metastases than mediastinoscopy (94% vs 79%). Additionally, unnecessary thoracotomies were reduced by more than one-half. Therefore, mediastinal nodal tissue staging (after TBNA) should start with endosonography. Eleven patients needed to undergo mediastinoscopy after negative endosonography to detect one patient with N2 disease. Further studies should focus on predictors for false-negative endosonography findings, to identify which subset of patients should undergo additional staging.

Adaptation of training in TBNA, EBUS-TBNA, and EUS (with bronchoscope) fine-needle aspiration is essential; dedicated hands-on teaching and simulators may help achieve this goal. Even more important, however, is to assess the proper indication (ie, which technique to use for which patient); this, obviously, also applies to endosonography.

Jouke T. Annema, MD, PhD
Leiden, The Netherlands

Affiliations: From the Department of Pulmonology, Leiden University Medical Center.

Financial/nonfinancial disclosures: The author has reported to CHEST that no potential conflicts of interest exist with any companies/organizations whose products or services may be discussed in this article.

Correspondence to: Jouke T. Annema, MD, PhD, Department of Pulmonology C3-P, Albinusdreef 2, 2300 RC, Leiden, The Netherlands; e-mail: j.t.annema@lumc.nl

© 2011 American College of Chest Physicians. Reproduction of this article is prohibited without written permission from the American College of Chest Physicians (http://www.chestpubs.org/site/misc/reprints.xhtml).

DOI: 10.1378/chest.11-0657

REFERENCES


