Editorial

Utility of Various Bronchoscopic Techniques for Diagnosing Suspected Lung Cancer

Lung cancer is usually suspected based on compatible symptoms and an abnormal radiographic image. The modality selected for diagnosing a suspected lung cancer depends on the location and size of the primary tumour. The limited sensitivity of sputum cytology has made fiberoptic bronchoscopy (FOB) the preferred invasive diagnostic procedure for lung cancer. Bronchoscopy allows various procedures to be performed, such as biopsy, cytobrushing, transbronchial needle aspiration (TBNA), and transbronchial biopsy for obtaining a diagnosis. For visible endobronchial lesions, endobronchial biopsy and needle aspiration have comparable yield, whereas for submucosal lesions, needle aspiration is considered superior. Transbronchial biopsy and TBNA of peripheral nodules that are smaller than 3 cm have a lower diagnostic yield.[1]

A comprehensive literature search conducted by the Duke University Center for Clinical Health Policy Research analyzed 44 studies with at least 50 patients each that reported the sensitivity of FOB for the diagnosis of lung cancer.[2] Thirty of these studies reported on the sensitivity of FOB for central, endobronchial lesions. Among a total of 3754 patients, the overall sensitivity of FOB was 88%. The sensitivity of direct forceps biopsy, washings, and brushings were 74%, 48%, and 59% respectively. The addition of transbronchial needle aspiration (TBNA) where there is submucosal tumour spread or peribronchial tumour causing extrinsic compression increased the sensitivity of bronchoscopy.[3,4] Coming generations of thin bronchoscopes and improved radiographic guidance systems may improve our ability to biopsy these lesions with greater accuracy and safety.

Peripheral lesions are defined as those that are not visible in the main or lobar bronchi, and thus, not surprisingly, they are less frequently diagnosed by bronchoscopy. An analysis of 4136 patients by the above group found the average sensitivity of FOB to be 69%.[2] However, this figure depends on two factors; one, the use of fluoroscopy for guiding the procedure, and two, the number of samples taken. The sensitivity of FOB in diagnosing peripheral lesions depends primarily on the size of the lesion. Eight studies were identified by the Duke University Center for Clinical Health Policy Research that reported on the sensitivity of FOB based on the size of the peripheral lesion. In 879 patients with lesion< 2 cm, the sensitivity was only 33%, whereas it was 62% in the 341 patients with lesion size > 2 cm.[2]

In this issue of the journal, Prasad et al[5] have reported the sensitivity of FOB with forceps biopsy and brushings in 158 patients with lung cancer. The overall diagnostic yield of FOB (71%) is comparable to that in most previous studies. The yield was only 34.8% for peripheral lesions, which is perhaps expected given the fact that perhaps no fluoroscopic guidance was available. A significant finding of this study is the high yield of brushing in peripheral lesions (82.6%). Only two studies have previously reported comparable sensitivity

of brushings for peripheral lesions.[6,7] This finding emphasizes the utility of taking brush samples from the affected bronchial segment when the lesion is not visible grossly.

The correlation of tumour morphology with bronchial location is well known. The authors have further tried to correlate the visible characteristics of tumour lesion with the performance of bronchoscopic biopsy and brushings, and conclude that brushings are significantly more efficient in diagnosing peripheral lesions compared to biopsy (82.6% vs 34.8%). The present study does not contain any mention of bronchial aspirates and their yield. Bronchial aspirates may significantly increase the diagnostic yield in suspected lung cancer. The overall sensitivity of bronchial washings in central and peripheral lesions approaches 59% and 52% respectively.[8] Including the results of this modality in may further increase the overall diagnostic yield of FOB. Hence it seems reasonable to conclude that FOB is the most sensitive means to diagnose cancer in central lesions. On the other hand, regarding suspicious peripheral lesions, a nonspecific or inconclusive result on FOB must be followed by further testing to definitely rule out cancer.

Anant Mohan
Department of Medicine
All India Institute of Medical Sciences,
New Delhi 110029
E-mail : anantmohan@yahoo.com

REFERENCES:

1. *Yung RC. Tissue diagnosis of suspected lung cancer: selecting between bronchoscopy, transthoracic needle aspiration, and resectional biopsy. Respir Care Clin N Am 2003;9:51-76.*

2. *Schreiber G, McCrory DC. Performance characteristics of different modalities for diagnosis of suspected lung cancer. Chest 2003;123:115S-28S.*

3. *Dasgupta A, Jain P, Minai OA, et al. Utility of transbronchial needle aspiration in the diagnosis of endobronchial lesions. Chest 1999;115:1237-41.*

4. *Shure D,Fedullo PF. Transbronchial needle aspiration in the diagnosis of submucosal and peribronchial bronchogenic carcinoma. Chest 1985;88:49-51.*

5. *Prasad R, Verma Sk, Mall CP, et al. A study on morphological, histological and diagnositc correlation in endoscopically visible bronchogenic carcinoma. (Baca) Ind J Med & Paed Oncology 2006;27.*

6. *Popp, W, Rauscher, H, Ritschka, L, et al. Diagnostic sensitivity of different techniques in the diagnosis of lung tumours with the flexible fiberoptic bronchoscope: comparison of brush biopsy, imprint cytology of forceps biopsy, and histology of forceps biopsy. Cancer 1991;67:72-75.*

7. *Mori, K, Yanase, N, Kaneko, M, et al. Diagnosis of peripheral lung cancer in cases of tumours 2 cm or less in size. Chest 1989;95:304-308.*

8. *Pirozynski, M. Bronchoalveolar lavage in the diagnosis of peripheral, primary lung cancer. Chest 1992;102:372-374.*