Pneumothorax Risk Prediction in Lung Needle Biopsy by Pulmonary Function Tests

To the Editor:

The article by Vitulo and colleagues (March 1996) that appeared in CHEST evaluates the usefulness of functional respiratory tests to predict risk of pneumothorax after lung needle biopsy under CT scan control. No relation between the functional parameters and the pneumothorax occurrence was found. Then, the authors conclude that bronchial obstruction, per se, is not a good predictor of pneumothorax risk. Disagreement with previous reports is attributed to a nonuniform biopsy procedure (CT scan or fluoroscopy), to an inadequate statistical analysis (univariate correlations), and to the use of absolute spirometric values.

Recently, we reported that spirometry is useful in assessing the risk of pneumothorax in CT-guided percutaneous needle biopsy. In our study, a logistic multivariate analysis showed that FEV1 (percent predicted) was most strongly associated with the incidence of pneumothorax.

Some important differences between both studies are found. All biopsies in our study were performed with 25-gauge (BD Yale spinal) needles, whereas in the study by Vitulo et al. biopsies were done with different needles (19.5- to 23-gauge “Chiba” or “Rotex” needles), and the type of needle was not an analyzed variable.

We prospectively performed the spirometry in the 5 days prior to the needle biopsy. In contrast, Vitulo et al. retrospectively evaluated subjects with respiratory functional tests within the 12 months prior to biopsy. As it is well known that spirometric parameters have an important long-term variability, we think that this introduces a strong possibility for bias in their study.

In contrast to Vitulo et al., we believe that routine spirometry should be performed on all patients undergoing CT-guided percutaneous needle biopsy of the lung to provide both the operator and the patient a more accurate prediction of the risk of pneumothorax.

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REFERENCES


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The letter by García-rio et al proposes several arguments to explain the conflicting results between our and their study on the predictive power of FEV1 in pneumothorax after percutaneous needle biopsy (PNB) of the lung. In our opinion, the most important difference between the two studies is the sample size; we believe that our study, with a multiple logistic analysis of 243 patients, has a stronger statistical significance. As far as the concern of the use of different needles, only 7/243 cases were biopsies performed with Rotex needles, while 224/236 were biopsies performed using 23-gauge Chiba needles. The median timing of functional respiratory tests was 29 days; 78% of the patients had spirometry within the month prior to the PNB. The large number of study population minimizes the influence that a few biopsies performed with other than a 23-gauge Chiba needle might have had on the results, and a majority of the patients had spirometry shortly before the PNB. Furthermore, the spirometric examinations were performed in the setting of a surgical evaluation of suspected lung cancer and thus “photograph” a clinically stable situation. In fact, if this was not the case (bronchodilatory or antibiotic treatment needed), the first spirometric examination was followed shortly after by another. We showed that it is the