Continued Efforts To Improve the Sensitivity of Transbronchial Needle Aspiration

Since the development of transbronchial needle aspiration (TBNA) in 1978, initial skepticism and slow progression are evidenced by the first editorial comment on this subject by Kvale in 1985 and later a survey conducted by Prakash and colleagues in 1991. Even to date, the TBNA procedure is still underused by bronchoscopists and may still be ignored for staging of lung cancer by surgeons. The skepticism and low acceptance of TBNA are due to its low yield or unpredictable results. Different operators with varying degrees of experience can obtain a wide range of sensitivities using this procedure.

Continued efforts, including improvements to the instrument, preparations of specimens, and education by hands-on courses, have gradually improved the results and acceptance of this procedure.

The article in this issue of CHEST by Rong and Cui (see page 36) typifies the initial difficulty usually experienced when performing TBNA. With initial failure, the authors chose to use the CT-guided method, which immediately increased the success rate from 10 to 60% and made this less-invasive procedure more applicable in their institution for staging of lung cancer. Their idea and technique are quite original. Their message is beneficial and encouraging to CHEST readers who are still skeptical or have difficulties performing this procedure.

I do believe that the low yield of the TBNA procedure is primarily caused by failure to place the needle tip exactly into the lesion. The operator will never have the opportunity to find this out. Instead one may attribute the failure to other factors, such as instruments or cytology laboratory, and so forth.

Although the authors should be congratulated for their perseverance and ultimate success, a follow-up study is needed to analyze whether they have a continuous need for CT guidance or whether the diagnostic yield for TBNA without CT guidance increases after their skills have improved. Even if the authors no longer need CT guidance for TBNA procedures, I do not think that this will diminish the importance of this article. On the contrary, their methodology should be used during the initial executions of TBNA if needed.

To improve TBNA sensitivity, fluoroscopy and occasional CT scan guidance have been used initially. Later, ultrasound was used. In using ultrasound-guided TBNA biopsy, it was concluded that the number of punctures needed on right paratracheal lymph node lesions can be decreased. In 1994, mediastinum and hilar lymph node mapping system was proposed to describe the nomenclature and locations of lymph nodes in the mediastinal and hilar areas from CT scan, and puncture sites for each of those lymph node stations with the airway branching as a landmark were recommended.

Recently, virtual bronchoscopy and a high-tech real-time bronchoscopy tip position technology displayed on previously acquired CT images to guide TBNA has been suggested after a preliminary study on six swine. The authors concluded that the feasibility study showed that real-time bronchoscopy tip position technology coupled to previously acquired CT images can enable TBNA of extrabronchial lesions. Their clinical implication is that, by supporting TBNA with bronchoscopy tip position technology coupled with CT scan images, the need for mediastinoscopy biopsies might be reduced.

The facts are that TBNA has been performed for extrabronchial lesions already and has reduced the need for mediastinoscopy without this new technology. By adding this newer technology, will it increase the sensitivity of TBNA, or will it enhance the learning process of performing TBNA? This does deserve more study.

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REFERENCES


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Bronchioloalveolar Carcinoma

Bronchioloalveolar carcinoma (BAC) is a type of adenocarcinoma of the lung that remains controversial, with varying histological categorization, clinical and roentgenologic presentation, natural history, and approach to treatment. Although previous cases were reported, it was Liebow in 1960 who characterized this tumor as a “well-differentiated adenocarcinoma primarily in the periphery of the lung beyond a grossly recognizable bronchus, with a tendency to spread chiefly within the confines of the lung by aerogenous and lymphatic routes, the walls of the distal air spaces often acting as supporting stroma for the neoplastic cells.” BAC is listed as a subtype of adenocarcinoma according to the World Health Organization histologic classification of bronchogenic carcinoma. Microscopically, it may consist of any admixture of mucin-secreting bronchiolar cells, Clara cells, and type II pneumocytes. Individual cells may be columnar, cuboidal, or “hob nail,” with tuftlike proliferations into the airspaces. The multicentric forms resemble the viral sheep disease Jaagsiekte, but BAC has not been proven to be of viral origin. Barsky and associates, in reviewing a 35-year experience of 187 patients with BAC, concluded that there was a rising prevalence of this tumor and noted an increase from 5 to 24% of total lung cancer cases over that period. They considered that the clinicopathologic features of this tumor were unique and that prior distinction of a “sclerotic” variant was arbitrary in that many of the more common nonmucinous BAC variety were also associated with evidence of desmoplasia. In a further work, Barsky and colleagues questioned the traditional explanation of multifocality in BAC as due to intrapulmonary metastases, since the lymphatic-intra-alveolar spread-aerosol-aspiration hypothesis had never been proven experimentally, and they presented evidence that the synchronous multifocality could be better explained by multicloneity. Investigators at the Montreal Chest Hospital matched 43 consecutive BAC cases with a similar number of randomly selected patients with usual adenocarcinoma of the lung, as well as those with squamous and oat cell carcinomas. They noted the strong female predominance and increased presence of scarring in the BAC group and found multiple differentiating epidemiologic features from other major cell types but not from other adenocarcinomas. Harpole and Bigelow found BAC in only 3% of 7,406 patients with lung cancer over a 15-year period, noting the usual absence of symptoms in those with TNM stages I and II. Multivariate logistic regression identified weight loss and dyspnea as independent prognostic factors for predicting advanced disease, which correlated with poor survival irrespective of treatment utilized. Rapid onset of dyspnea with recent weight loss and copious sputum production correlated with the infiltrative form of BAC and its poor prognosis. Roentgenographic manifestations of BAC include: localized single or multiple nodules or an infiltrate, rarely with cavitation but confined to one segment; and diffuse lobar or bilateral infiltrates, often with consolidation but without volume loss. Trigaux and associates investigated the CT patterns of 42 pathologically proven BAC cases and found only 38% with a solitary nodule or mass, 24% with lobar and 31% with multilobar consolidations, and 7% with diffuse nodules. Grover and Piantadosi, of the Lung Cancer Study Group, published the largest series of 235 successfully resected cases with uniform operative staging, which allowed accurate delineation of TNM status, and the authors concluded that surgically treatable BAC presents at an earlier stage than other adenocarcinomas, with a better survival and longer recurrence-free interval; this demonstrates the importance of diagnosis and resection while still in an early stage. With stage I extent of disease, the Duke University study reported no advantage in survival or recurrence rate at 3 years for wedge resection vs lobectomy.

In this issue of CHEST (see page 45), Regnard and colleagues report a large consecutive series of BAC cases referred to their facility for surgical treatment. Although accumulated over a 20-year period but