Commentary

Is bronchoalveolar lavage a game changer in the diagnosis of interstitial lung disease?

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Bronchoalveolar lavage (BAL) is a technique that is in use since the advent of the rigid bronchoscope and subsequently it was also utilized with the flexible bronchoscope. It was evolved as a therapeutic modality to drain purulent secretions and also for treatment of diseases like alveolar proteinosis.[1] However, much later low volume BAL was used to diagnose diseases such as malignancy, infection, and interstitial lung disease (ILD).

ILD are a group of diseases that present with exertional dyspnea, dry cough, and infiltrates in bilateral lung fields, which are evident on chest radiography and high resolution computed tomography (HRCT) of the chest. There have been numerous tests to diagnose this perplexing disease. The gold standard for diagnosis is surgical lung biopsy.[2] However, with the advent of HRCT of the chest, it has been possible to identify and classify ILD’s through these noninvasive means. In early disease, however, diagnosis is difficult and in such cases BAL may be helpful. The role of BAL in the diagnosis of ILD had been debatable until the American Thoracic Society (ATS) issued guidelines to define the methodology, processing, and use of BAL in the diagnosis of ILD in 2012.[3]

The guidelines stated that BAL may be a useful adjunct to other diagnostic modalities rather than being a stand-alone diagnostic test. The site for BAL should be decided by the part of the lung involved with disease process on HRCT rather than the conventional BAL sites such as the right middle lobe or lingula. Differential cellular count should be performed on the BAL sample and should include measurement of lymphocytes, neutrophils, macrophages, and eosinophils. Lymphocyte subset analysis is not routinely recommended in all ILD cases. BAL analysis may also exclude diseases such as malignancy, infections, and certain rare diseases like pulmonary alveolar proteinosis.

In the current issue of the journal, Palaniswamy et al.[4] diagnosed fifty cases of ILD on the basis of HRCT and then performed BAL in the same. The paper highlights few important issues. The first, BAL is a relatively safe test which can be performed in a suspected case of ILD. The BAL findings may not be pathogonomic for a certain type of ILD, but they may help confirm or exclude a certain disease diagnosis. For example, a patient who was suspected to have idiopathic pulmonary fibrosis (IPF) on HRCT underwent bronchoscopy and BAL analysis, which subsequently revealed histiocytes. Thus, the diagnosis was revised to chronic langerhan cell histiocytosis rather than IPF. This supports a previous study conducted by Ohshima et al. in which they found that 8% of patients diagnosed as usual interstitial pneumonia pattern on HRCT thorax may have a different diagnosis when evaluated with BAL analysis.[5] The second issue that has been highlighted in the current paper is that BAL may help in identifying acute exacerbations and super-added infections. These may be treated with a systemic course of steroids and antibiotics, respectively.

The study has certain limitations that including lack of gold standards such as surgical lung biopsies and non inclusion of ILD patients with inconclusive HRCT. The ATS recommends performing BAL in all patients of ILD with nondiagnostic HRCT and these may be the patients who may be candidates of surgical lung biopsy subsequently.

A BAL lymphocyte count of >25% is suggestive of nonspecific interstitial pneumonia, hypersensitivity pneumonitis (HP), or sarcoidosis.[5,6] An eosinophil percentage of more than 25% is highly diagnostic of eosinophilic pneumonia.[6] Similarly, a BAL neutrophil level of >50% is suggestive of acute interstitial pneumonia or acute infection.[6] These BAL abnormalities may also be seen in other non-ILD conditions such as bronchiolitis, asthma, or allergic bronchopulmonary aspergillosis. Thus, BAL findings should be cautiously interpreted and correlated with clinical and HRCT findings. Furthermore, it has been shown that BAL findings may alter once fibrosis sets in diseases like HP.[7]

In conclusion, BAL analysis subsequent to HRCT evaluation is a useful test to confirm the diagnosis, exclude acute exacerbation and super-added infections in cases of ILD. BAL findings should however be carefully interpreted in context to the clinical and radiological findings.
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