Bronchoalveolar lavage fluid lymphocytosis in chronic hypersensitivity pneumonitis: a systematic review and meta-analysis

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BALF lymphocyte percentage is higher in patients with #CHP compared to #IPF, #IIP and #CTD-ILD, but studies available to fully address this question are limited in scope #AdvancesinILD


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ABSTRACT

Background: The role of bronchoalveolar lavage fluid (BALF) lymphocyte percentage in diagnosing chronic hypersensitivity pneumonitis (CHP) is unclear. We conducted a systematic review and meta-analysis of bronchoalveolar lavage (BAL) lymphocyte percentage in the diagnosis of CHP.

Methods: We searched Medline, Embase and the Cochrane Library from inception to August 2019. Individual patient data were obtained to test performance characteristics of BAL lymphocyte percentage at different thresholds. Random-effects models were used for pooled estimates, with comparisons made between CHP and non-CHP interstitial lung diseases (ILDs).

Results: Fifty-three studies were included in the systematic review and 42 in the meta-analysis. The pooled estimate for BAL lymphocyte percentage was 42.8% (95% CI 37.7–47.8, I²=95.3%) in CHP, 10.0% (95% CI 6.9–13.1, I²=91.2%) in idiopathic pulmonary fibrosis (IPF), 23.1% (95% CI 3.0–43.2, I²=85.2%) in non-IPF idiopathic interstitial pneumonia (IIP), 23.4% (95% CI 11.0–35.9, I²=45.7%) in connective-tissue disease associated ILD (CTD-ILD) and 31.2% (95% CI 17.6–44.8, I²=95.2%) in sarcoidosis. Results differed between CHP and IPF (p<0.0001), non-IPF IIP (p=0.0309) or CTD-ILD (p=0.0824), but not between CHP and sarcoidosis (p=0.0966). Using individual patient data from eight studies, a lymphocyte percentage threshold of >20% provided a sensitivity of 68.1% and a specificity of 64.8% for CHP. Higher thresholds provided lower sensitivity with higher specificity. Older age and ever having smoked were associated with lower lymphocyte percentage in CHP.

Conclusions: BAL lymphocyte percentage is higher in CHP compared to IPF and other IIPs, with higher thresholds providing improved specificity at the cost of sensitivity. However, the parent studies are at risk.
of incorporation bias and prospective studies should evaluate the additive discriminate value of BAL lymphocyte percentage to accurately diagnose CHP.