2 cases of Hypersensitivity Pneumonitis with BAL culture positivity

M. Malekzadegan, K. Solanki, H. Patel, SH. Pir, T. Ullah, S. Chauhan, C. Thurm

Jamaica Hospital Medical Center, Jamaica, NY , 11418 - USA

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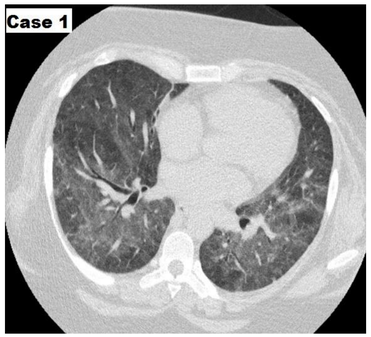
Introduction :

In hypersensitivity pneumonitis (HP) finding the responsible antigen in cultures of sputum, bronchoalveolar lavage (BAL), or lung tissue is not commonly reported in the literature. Here, we report two cases of HP where BAL culture grew the same mold to which the patient showed sensitivity in a serum HP panel.

Case #1:

A 32-year-old obese female presented on two separate occasions to the emergency room with dyspnea, cough, and bilateral infiltrates on chest radiograph. The computed tomography of the chest revealed bilateral ground-glass-opacities, prominent in the peri-hilar regions and lower lobes. She reported that she lived in a basement apartment where she kept several parakeets and had noted a wall covered with black material.

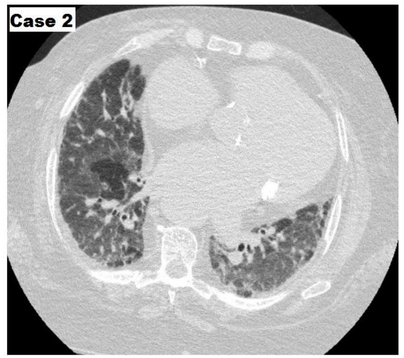
The BAL revealed 40% lymphocytes. Serum hypersensitivity assay revealed elevated *Penicillium notatum* IgG, *Cladosporium herbarum* IgG, and *Phoma* spp IgG. Parrot/parakeet serologies were negative. She eventually underwent VATS with wedge biopsy. Pathology reported cellular and fibrosing interstitial pneumonia with vague bronchiolocentric features and focal organizing pneumonia favoring hypersensitivity pneumonitis. BAL culture grew *Penicillium* species. The patient improved after treatment with oral steroids.



Case #2:

A 76-year-old obese female with obstructive sleep apnea on CPAP presented to the emergency department with dyspnea for 1 week. She was recently admitted and treated for a CHF exacerbation at another facility. She denied bird exposure. The computed tomography of the chest revealed peripheral reticular changes, bilateral ground-glass-opacities, mild traction bronchiectasis, honeycombing, and air-trapping on expiratory views.

BAL revealed 7% lymphocytes. Serum hypersensitivity assay showed elevated *Penicillium notatum* IgG, *Phoma* spp IgG, and *Cladosporium herbarum* IgG. The BAL culture grew *Penicillium* species. On further investigation, the patient reported that she had not changed the water in her CPAP machine for a prolonged period of time and it was now black in color. The patient was treated with PO steroids with good clinical response. There was partial improvement in her restrictive ventilatory defect seen on follow-up spirometry.



Discussion:

HP may be caused by a variety of agents including mold, fungi, and bird droppings/feathers. Diagnosis is usually established by a consistent exposure history, computed tomography scan, BAL findings, and in some cases pathologic examination.

Review of the literature rarely mentions the growth of the etiologic agent from the respiratory cultures. *Mycobacterium avium-intracellulare* has been cultured from sputum and lung biopsies in Hot Tub Lung. Recently quantitative PCR of some agents has been used to identify antigens in BAL fluid of the patients with HP[1].

We present two cases of HP where penicillium was both cultured from BAL fluid and found on the serum HP panel, suggesting this as the etiologic agent.

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