

# Bird Fanciers Lung in Mushroom Workers

## Abstract:

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## Abstract

Hypersensitivity pneumonitis has been described in mushroom workers caused by exposure to mushroom or fungal spores in the compost used to grow mushrooms. We describe two mushroom workers who developed hypersensitivity pneumonitis due to exposure to avian proteins found in poultry manure which was used in producing mushroom compost. Both workers were employed in the compost production area. Both presented with typical features of HP. Both workers had negative serological and precipitin studies to *Aspergillus fumigatus*, *Saccharopolyspora rectivirgula* and thermophilic actinomycetes but had positive responses to poultry antibodies. Neither was exposed to mushroom spores. Both workers required initial therapy with corticosteroids. Relocation with avoidance of further exposure resulted in complete cure in one worker and change in work practice with the use of personal protection equipment resulted in the second worker's clinical stabilisation. These are the first reported cases of bird fanciers lung in mushroom workers.

## Introduction

Hypersensitivity pneumonitis (HP) is an immunologically mediated diffuse lung disease caused by repeated exposure to organic agents in sensitised individuals. In mushroom workers HP has been described due to exposure to various types of mushroom spores as well as bacterial and fungal spores such as *Saccharopolyspora rectivirgula*, thermophilic actinomycetes and *Aspergillus fumigatus*. Bird fanciers' lung is induced by exposure to excreta and proteinaceous material from various poultry, resulting in a dried dust, finely dispersed throughout the manure. We describe for the first time two mushroom workers who developed HP due to exposure to poultry excreta used in the production of mushroom compost.

## Case Report

A 37-year old non smoker female presented with persistent cough, shortness of breath and night sweats over 18 months. Her symptoms briefly improved with absence from work. There was no prior exposure to agricultural antigens. The patient worked as a scientist in a mushroom compost processing plant. There was no exposure to mushroom spores. Pulmonary function tests (showed normal spirometry but a reduced diffusion capacity (61% pred.). High resolution computed tomography thorax (HRCT) showed diffuse bilateral parenchymal micronodularity in a miliary distribution (Figure 1). Bronchoalveolar lavage (BAL) showed 74% alveolar macrophages, 13% lymphocytes and 1% neutrophils with no organisms, eosinophils or acid-fast bacilli seen. Transbronchial biopsy (TBB) of the right lower lobe revealed non-specific inflammatory change of the bronchioles.

MMcV, a 56-year old male non-smoker, presented with a long-standing cough productive of green sputum and dyspnoea despite multiple courses of antibiotics. He worked as a farmer. He also worked as a contract cleaner in the compost area of the same mushroom processing plant. There was no exposure to mushroom spores. CXR showed numerous bilateral alveolar opacities (Figure 2). Spirometry was normal but diffusion capacity was reduced (44% pred). HRCT showed bilateral diffuse ground glass opacification. BAL revealed lymphocyte count 53%, macrophages 45%, neutrophils 2% with no eosinophils, organisms or acid-fast bacilli seen. TBB of the right lower lobe showed a mild bronchiolitis with patchy focal fibrosis.

In both cases serology was negative for *Aspergillus fumigatus*, *Thermoactinomyces vulgaris* and *Saccharopolyspora rectivirgula* however avian precipitin studies were positive to chicken feathers, chicken droppings and pigeon droppings. Direct challenge was not carried out. SMcG was treated with 40mg prednisolone tapering over three months. She was removed from her working environment. Complete resolution of her symptoms occurred and subsequent HRCT and PFTs were normal. MMcV was also treated with prednisolone with the introduction of personal protective equipment and continues to be monitored in the outpatients with stable disease.

## Discussion

We describe two cases of bird-fanciers' lung in mushroom workers working in a compost production area. Mushroom workers' lung has been attributed to exposure to mushroom spores or fungal spores in compost. In our two patients, there was no exposure to mushroom spores and precipitin studies were negative to bacteria and fungi. Both workers demonstrated significant precipitin-positive serology to avian proteins. Mushroom compost is produced from a combination of straw, horse manure, gypsum and inorganic nitrogen. A site visit found the compost production area was three miles from the mushroom-growing houses. Poultry manure was used in the production of compost due to local availability. Bird fanciers' lung is induced by exposure to excreta and proteinaceous material from various poultry, resulting in a dried dust, finely dispersed throughout the manure. In summary, we present two cases of bird fanciers' lung with a typical phenotype but unexpected exposure.

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Comments: