J Occup Environ Med. 1998 Mar;40(3):241-9.

Building-associated pulmonary disease from exposure to Stachybotrys chartarum and Aspergillus versicolor

Hodgson MJ[1], Morey P, Leung WY, Morrow L, Miller D, Jarvis BB, Robbins H, Halsey JF, Storey E

Author information

[1]Division of Occupational and Environmental Medicine, University of Connecticut Health Center, Farmington 06032-6210, USA

Abstract

The authors present an outbreak of disease associated with exposure to Stachybotrys chartarum and Aspergillus species. A courthouse and two associated office buildings had generated discomfort among employees for two years since initial occupancy. Multiple interventions had been unsuccessful An initial evaluation of 14 individuals identified three with potential asthma and three with symptoms consistent with interstitial lung disease. A clinical screening protocol to identify individuals who should be removed from work identified three likely and seven possible cases of building-related asthma. Detailed environmental and engineering assessments of the building identified major problems in mechanical system design, building construction, and operational strategies leading to excess moisture and elevated relative humidities. Moisture-damaged interior surfaces in both buildings were contaminated with S. chartarum, A. versicolor, and Penicillium species. Aspergillus species, especially A. versicolor, at concentrations of 10(1) to 10(4)/m3 dominated the indoor air under normal operating conditions. Bulk samples also revealed large quantities of Stachybotrys. A questionnaire survey of the three case and two control buildings documented between three- and 15-fold increases in symptoms. A nested case-control study suggested emphysematous-like disease in individuals meeting questionnaire definitions for cases. Replication of analysis strategies used in similar previous investigations suggested an association between worsening symptoms and decreased diffusing capacity of the lung. Performance on neuropsychological measures was similar for both cases and controls, although workers with symptoms reported increased levels of current but not past psychiatric symptomatology. Chemical analyses demonstrated the presence of satratoxins G and H. Cytotoxic laboratory analyses demonstrated the presence of agents with biological effectiveness in bulk materials. No association was seen between IgE or IgG antibodies and the presence of disease. This outbreak represents a likely human response to inhaled fungal toxins in indoor environments. Moisture indoors represents a public health issue currently inadequately addressed by building, health, or housing codes.

PMID: 9531095

Source: https://www.ncbi.nlm.nih.gov/pubmed/?term=9531095