Vocal Cord Dysfunction And Other Respiratory Illnesses In Two Water-Damaged Buildings

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Rationale:
Vocal cord dysfunction (VCD) is the intermittent paradoxical adduction of the vocal cords during respiration, resulting in variable upper airway obstruction. Symptoms of VCD include dyspnea, cough, stridor, wheeze, throat or chest tightness, and hoarseness. The condition possibly results from the effect of intrinsic or extrinsic irritants on a hyper-responsive larynx. VCD has been reported in association with many extrinsic irritants. However, the role of exposure to indoor dampness or mold in the development of VCD is not well described.
Methods:
The National Institute for Occupational Safety and Health received a request for a health hazard evaluation concerning respiratory symptoms in two small, water-damaged office buildings. We interviewed managers, nine affected employees, treating physicians, and an environmental consultant. We reviewed medical records of six affected employees and 24 reports from building evaluations conducted over a two-year period.
Results:
Fourteen (78%) of 18 employees who regularly staffed the buildings reportedly experienced upper and/or lower respiratory symptoms related to building occupancy. Among interviewed employees, symptoms included nasal congestion, sinus pressure and pain, cough, chest tightness, wheezing, and shortness of breath. In all cases, symptoms improved after avoidance of the buildings. Medical records review revealed diagnoses of VCD (n=2), asthma (n=2), and sinusitis (n=1). The two employees with VCD experienced cough, chest tightness, dyspnea, wheezing, and hoarseness when in the buildings. Spirometry was normal. Methacholine challenge did not reveal bronchial hyperreactivity, but did elicit symptoms of VCD and inspiratory flow-volume loop truncation. Direct laryngoscopy revealed vocal cord adduction during inspiration.
Building evaluations noted that water damage and mold growth were visible on vinyl wall coverings, drywall, and ceiling tiles. Destructive sampling revealed visible mold on the back of the drywall and on underlying plywood in some areas. Testing with a moisture meter demonstrated elevated levels of moisture in some walls. Penicillium/Aspergillus and Pithomyces spores were elevated in indoor air compared to outdoor air in some areas, indicating an indoor source. Spores of Stachybotrys, which can grow on wet building materials with high cellulose content, were detected in some carpet dust samples.
Conclusions:
Respiratory symptoms were common among occupants of two office buildings with documented water damage. Diagnoses of sinusitis and asthma were consistent with recognized effects of exposure to indoor dampness. Two cases of VCD that were temporally related to building occupancy indicate that VCD can occur with exposure to water-damaged buildings. VCD should be considered in exposed patients with asthma-like symptoms.

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