

A Large Case-series of Successful Treatment of Patients Exposed to Mold and Mycotoxin

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ABSTRACT

Purpose: The goal of this study was to present the results of treatment of 100 chemically sensitive and chronically mold-exposed patients, who continued to be disabled even after decontamination of their houses or work places or they were physically removed from their sources of mold.

Methods: Molds were identified, serum anti-mold immunoglobulin G antibodies were measured, patients were skin-tested, immunologic abnormalities were recorded, and objective neurologic tests were performed in a subset of patients.

Findings: Patient sensitivities and exposures were confirmed by measuring serum immunoglobulin G anti-mold antibodies, intradermal skin testing, and trichothecene toxin breakdown products in the urine. Patients were positive (44%–98%) for individual molds. Abnormalities in T and B cells were found in >80% of patients. Respiratory signs were present in 64% of all patients, and physical signs and symptoms of neurologic dysfunction were present in 70%. Objective autonomic nervous system test results were abnormal in almost 100% of patients tested. Objective neuropsychological evaluations were conducted in 46 of the patients who exhibited symptoms of neurologic impairment and showed typical abnormalities in short-term memory, executive function/judgment, concentration, and hand/eye coordination. Patients (N = 100) with documented mold exposure were divided into 3 groups: (1) those who improved easily, with mold avoidance and antigen injections; (2) those who improved after desensitization to their mold antigens plus additional mycotoxin antigens; and (3) those who had their regular mold antigens, additional mycotoxin antigens, along with regimens that included sauna, oxygen therapy, and nutrients. Approximately 85% of all patients cleared completely; 14% had partial improvement, and 1% remained unchanged.

Implications: Exposure to molds has been increasingly recognized as a major reason for patients presenting with multiple organ symptoms that could not otherwise be explained. Early diagnosis and appropriate treatment could be very successful. (*Clin Ther.* 2018;■:■■■–■■■) © 2018 Published by Elsevier HS Journals, Inc.

Key words: immunologic, mold, mycotoxins, neurologic, sauna.

INTRODUCTION

Molds and mycotoxins have been increasingly associated with illnesses due to faulty construction, water leaks, floods, and other forms of moisture accumulation that allow them to grow indoors.¹ Visual and odor inspections, as well as spore counts and culture plates, can be used to determine the level of contamination in a building.^{2,3} When houses and buildings were considered to have molds, measurements for the content of molds and mycotoxins confirmed the suspicion.^{4,5}

Although there are thousands of molds, a few were chosen for the present study for diagnosis and treatment because of their commonality and propensity to create sensitivity and health problems in humans.⁶ These include the molds designated in mold mixes 1 through 4 shown in [Table I](#) and were those found in mold counts sampled in the air, especially in Texas and the surrounding states.

PATIENTS AND METHODS

A total of 100 patients (61 female subjects, 39 male subjects; age range, 21–78 years; mean age, 44.3 years) were studied at the Environmental Health

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Table I. Common mold mixtures used for desensitization.

Mold mix #1: <i>Alternaria</i> , <i>Aspergillus niger-fumigatus</i> , <i>Hormodendrum</i>
Mold mix #2: <i>Epicoccum</i> , <i>Fusarium</i> , <i>Pullularia</i>
Mold mix #3: <i>Mucor</i> , <i>Phoma</i> , <i>Fomes</i> , <i>Rhodotorula</i>
Mold mix #4: <i>Cephalosporium</i> , <i>Helminthosporium</i> , <i>Stemphylium</i> , <i>Geotrichum</i>

Center–Dallas (Dallas, Texas) from 2003 to 2013. Many of the procedures used were reported previously.⁷ Dwellings were analyzed for the presence of mold by an independent investigator. All patients had to vacate their homes at least 1 week before testing and during treatment.

Signs and symptoms were recorded by the author at presentation and subsequent visits as noted. Immune abnormalities were evaluated for T4- and T8-cell counts, performed by using flow cytometry. Immunoglobulins to mold were assayed as previously reported by Vojdani et al.⁸ Mold and mycotoxin sensitivity was confirmed by positive skin test results.⁹ Urine trichothecenes were measured by using the Croft method.¹⁰ Delayed recall antigens were measured 48 hours' postinjection to assess cell-mediated immunity by using the Multi-Test II kits supplied by Lincoln Diagnostics, Inc (Decatur, Illinois).¹¹

The autonomic nervous system was evaluated according to the pupillography method of Ishikawa et al.¹² and by the heart rate variability method of Terechtchenko et al.¹³ Neuropsychological tests were performed and analyzed as reported previously.⁷ Due to financial constraints, patients were not retested after treatment.

Desensitization was conducted by using select mold antigens, dissolved in normal sterile saline without any preservatives (Table I). The antigens were immediately frozen and thawed only when used.

Testing was performed in mold-free rooms outfitted with special filters and constructed with walls and ceilings of sand fused on steel at 2000° F (porcelain) and ceramic floors (Figure). Patients discontinued any medications or supplements before they were tested. Objective signs were recorded within 10 minutes of skin provocation as described previously.⁷ A serial antigen dilution of 1/5, 1/25, 1/125, 1/625, or 1/300

was used to determine the correct antigen dose. Antigens were then combined for the individualized treatment dose administered every 4 to 7 days. Histamine was used as a positive control. Intradermal testing reactivity varied from 44% to 98% positive results.

A sauna lasting 10 to 30 minutes daily was used for patients in group 3 to detoxify the body faster.

RESULTS

Symptoms

Patients presented with a multitude of symptoms: (1) immunologic symptoms (hypersensitivity to molds, foods, and chemicals) in 100%; (2) neurologic symptoms (short-term memory loss, imbalance, and dizziness) in 70%; (3) respiratory symptoms (ie, sneezing, rhinorrhea, nasal stuffiness, dyspnea, wheezing) in 64%; (4) musculoskeletal symptoms (ie, muscle and joint aches and tenderness) in 29%; (5) gastrointestinal symptoms (ie, bloating, gas, cramps) in 24%; and (6) cardiovascular symptoms (ie, bruising, hemoptysis, petechiae) in 10%.

Mold Exposure

Results of the indoor mold cultures are given in Table II. Most patients reacted to at least 4 molds. The remaining patients were also positive for the Ascomycetes molds *Leptosphaeria* (98%) and

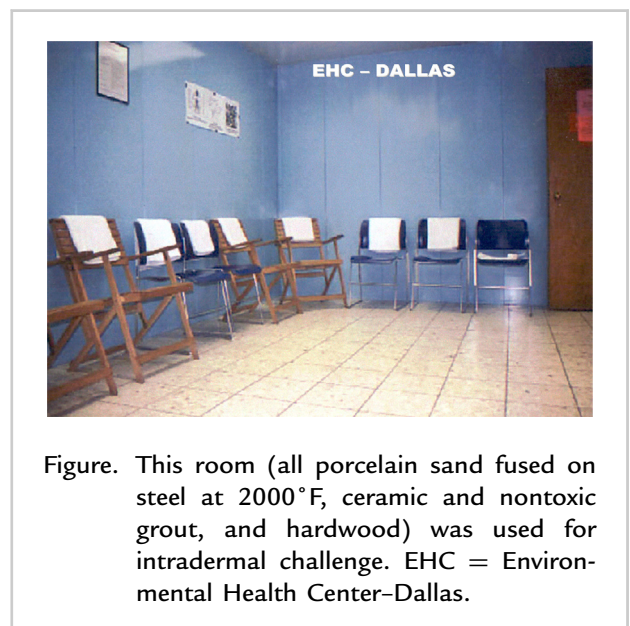


Figure. This room (all porcelain sand fused on steel at 2000° F, ceramic and nontoxic grout, and hardwood) was used for intradermal challenge. EHC = Environmental Health Center–Dallas.

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