Differing Clinical Courses in Spouses With Shared Non-Tuberculous Mycobacteria Exposure

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INTRODUCTION: Hypersensitivity pneumonitis (HP) related to non-tuberculous mycobacterial (NTM) inhalation (hot tub lung) has been described in various exposures to aerosolized water. We review a case of acute respiratory compromise from such exposure in the setting of coincidental NTM isolation from the patient’s spouse who presented with mild clinical illness. Shared water sources were examined by PCR to identify the possible source of infection.

CASE PRESENTATION: A 51 year-old non-smoking woman (CR) presented with worsening dyspnea over six months. She swims indoors and uses a sauna but no hot-tub. Dyspnea was present on level ground with dry cough. Basilar rales were present. PFT: mild airway hyper-reactivity, normal lung volumes, no gas trapping and DLCO 52%. CT revealed diffuse HP. Rapid decline occurred. Open biopsy confirmed acute hypersensitivity, no AFB seen. Prednisone 1mg/ kg resulted in clinical response. M. avium (MAC) grew from the biopsy and triple anti-NTM therapy was added as a prolonged prednisone course was anticipated. Pool and sauna avoidance was initiated. Prednisone was tapered as symptoms subsided, CT cleared, DLCO normalized. Sputum sterilized at eight months of treatment. She has returned to swimming but not to the sauna. The patient’s 65 year old non-smoking husband (CF) presented two months later with four months of progressive dyspnea. PFT: Mild obstruction and normal DLCO. CT showed centrilobular ground glass nodules and subacute HP diagnosed. Sputum grew MAC x 3. Symptoms and CT resolved with sauna avoidance in four months. Sputum cultures remain positive. Home water specimens were analyzed by PCR fingerprinting methods. (J.Falkinham III, PhD). Table I. Pool and sauna samples were not available for testing. Each household member had a different PCR Type, matching different water sources in the home. No intervention has been made in home water sources.

DISCUSSION: Hot tub lung is a hypersensitivity reaction to the NTM cell wall inhaled via aerosols in hot tubs. (1) Swimming pools and saunas have been identified in some studies as sources of NTM lung infection(2). A genetic predisposition in both NTM-related HP and infection may exist.(3) The analysis performed underscores the difficulty in being certain of the specific source of NTM in a given patient.

CONCLUSIONS: In our patients, severe and subacute NTM-related HP coincide with specific water sources in a shared living environment. Sauna and indoor swimming pool sources are to be considered as well. Genetic differences may account for different clinical courses in these individuals. Identifying the causal water source may be problematic even with advanced DNA testing of organisms.


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