



Letters to the Editor

Hypersensitivity Pneumonitis Due to Exposure to *Mycobacterium avium*[☆]

Neumonitis por hipersensibilidad por exposición a *Mycobacterium avium*

Dear Editor:

Hypersensitivity pneumonitis (HP), or extrinsic allergic alveolitis, is a group of inflammatory lung diseases that usually affect the more peripheral airways and are induced immunologically after the reiterated inhalation of different materials, fundamentally organic substances and low-molecular-weight chemical compounds.¹ Disorders similar to HP have been described in patients who have had massive exposure to nontuberculous mycobacteria (NTM), especially by inhaling them from hot water aerosol sources like saunas, etc. The NTM that has been described in practically all these cases is *Mycobacterium avium*-complex, although *M. immunogenicum* has also been reported.²

We present the case of a 29-year-old woman, originally from Colombia, who has been living in Spain for the last 4 years. The patient was working as a receptionist at a Spa. She had no toxic habits or personal medical/surgical history of interest. Prior to admittance, she had no history of asthma-type respiratory pathology or known tuberculosis contact. She came to our emergency department with symptoms of cough without expectoration and 39 °C fever, and was diagnosed with bronchial hyperreactivity. She was prescribed bronchodilator treatment and was discharged. Two weeks later, she came to the emergency department once again due to sudden dyspnea when climbing stairs associated with a feeling of retrosternal oppression that increased with deep breathing and palpitations. During the patient interview, the patient commented that at her workplace, after renovations were done approximately one year before, a sort of niche was created in a wall, and pigeons had been nesting there.

Upon physical examination, the patient presented no fever, tachycardia (140 bpm), tachypnea (36 breaths per minute) and baseline oxygen saturation (breathing room air) of 91%. Lung auscultation showed preserved vesicular murmur with bibasilar crackles. Blood workup revealed normal ionogram, C-reactive protein 80 g/dl, leukocytes 11 430 mm³ (90% neutrophils and 1.4% eosinophils), hemoglobin 12.4 g/dl, hematocrits 36.4%, platelets 309 000 mm³. Baseline arterial blood gas analysis reported pH 7.44, pCO₂ 31 mmHg, pO₂ 54 mmHg, CO₃H 21.1 mmol/L. Chest radiography showed a bilateral micronodular pattern in both lung bases associated with mild fissure thickening. Diagnostic bronchoscopy demonstrated no endobronchial lesions, and samples were taken from the bronchoalveolar lavage and aspirate as well as



Fig. 1. Thoracic tomography showing interstitial pattern with diffuse and bilateral centrilobular nodules.

a transbronchial biopsy. In the lavage, a moderate number of lymphocytes were observed along with polymorphonuclear cells. No eosinophils were observed. The biopsy showed fragments of lung parenchyma with isolated non-necrotizing epithelioid granulomas and isolated giant cells situated at the septum. Histochemical stains for detection of acid-fast bacilli (Kin-Youn) were negative. The bronchial aspirate was also negative for malignancy. In three sputum culture samples, *Mycobacterium avium* was isolated and the pigeon precipitin study was negative. Thoracic tomography (HRCT) showed an interstitial pattern with diffuse bilateral centrilobular nodules, together with images of airway consolidation in the sloping parts of both bases, probably related with atelectasis, as well as pneumomediastinum related with the transbronchial biopsy. No mediastinal or axial pathologic lymphadenopathies were observed (see Fig. 1).

Given the diagnostic suspicion for hypersensitivity pneumonitis, treatment was initiated with corticosteroids (0.5 mg/kg), and the patient presented improved symptoms and gas exchange, with baseline saturation at discharge of 97%. The follow-up X-ray 7 days later also showed very favorable evolution, both of the pneumomediastinum (hardly visible), as well as the interstitial pattern, which was only present in the lung bases.

Hypersensitivity pneumonitis due to exposure to *Mycobacterium avium* is an emerging disease caused by exposure to whirlpool bathwater contaminated by said bacteria ("hot tub lung", "Jacuzzi lung"). Several cases have been reported since 1997.^{3–5} These patients have been treated with antimycobacterial and/or corticosteroid therapy, although some patients improve by simply avoiding contact with the source of exposure. There has been continuous debate about the optimal management of this pathology given that the need for antimycobacterial treatment is still controversial.⁵ In 2005, Hanak et al. carried out a retrospective review of 21 patients diagnosed with "hot tub lung" at a reference center in a 7-year period in order to analyze the characteristics

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and clinical evolution of these patients. The results of this study suggest that the entity behaves as a hypersensitivity pneumonitis more than as a mycobacterial infection, and therefore treatment with antimycobacterial drugs may not be essential.⁵

The patient's symptoms led us to consider the possibility of HP, although it was not very clear if it was secondary to exposure to pigeons. Given the improvement with corticosteroid therapy, we decided to send the patient home even though the results for precipitins and mycobacteria were pending. Once the diagnosis was confirmed, the Public Health Department was informed and the spa where the patient worked was closed.

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Home Intravenous Antimicrobial Therapy in Chronic Respiratory Disease*

Tratamiento antibiótico domiciliario endovenoso en la enfermedad respiratoria crónica

Dear Editor:

Home intravenous antimicrobial therapy (AMT) administered in a Home Hospitalization Unit setting can be an alternative to conventional hospitalization in patients with exacerbation of a chronic respiratory disease as a consequence of a respiratory infection. Our objective was to analyze its effectiveness and safety in chronic patients who were remitted directly from the Respiratory Disease Day Hospital.^{1,2}

The Home Hospitalization Unit of the Hospital de Sabadell keeps a prospective registry of patients treated. Based on these data, an observational study was carried out describing the cases referred for home intravenous AMT from the Respiratory Disease Day Hospital between January 2008 and December 2011. Admittance to the program was decided upon by both medical teams and accepted by the patient and/or primary caretaker. The infusion devices used were portable and disposable continuous-infusion elastomeric pumps (Intermate SV 200, Intermate XLV 250, Intermate LV 250, Baxter). The first dose of the treatment was administered at the Respiratory Disease Day Hospital. Later doses were administered in patients' homes by either the patients themselves and/or their primary caretakers after a training process provided by the Home Hospitalization Unit nursing staff. Home therapy was supervised by the nursing staff over the phone and with home visits (usually every 48 h). The descriptive statistical analysis was done with the SPSS version 18 statistical program, calculating means and standard deviations in the case of quantitative variables and percentages in the case of the qualitative variables. During the period described, 50 patients were included, generating a total of 74 home IV AMT cases. The main characteristics of the cases treated are summarized in Table 1.

Home intravenous AMT was administered by the primary caretaker in 63% of the cases and by the patients themselves in

37%. The most frequently-used venous accesses were abboath-type peripheral catheters (47%) and peripherally-inserted central venous catheters (47%); in the remaining 6%, previously-implanted port-a-caths were used. There were 30% fewer complications derived from the venous access methods, the majority of which (92%) were resolved in patients' homes. Mean hospital stay was 19 days (SD 13), eliminating a total of 1416 potential days of hospitalization.

In 87% of the cases clinical evolution was satisfactory, but 13% required conventional hospitalization due to poor clinical evolution. After discharge, 12% of the cases required re-admittance during the following month and 16% during the following 3 months. The percentage of failure (need for conventional hospitalization) observed during home IV AMT in our study was similar to that reported in other published papers. However, it is necessary to keep in mind that these experiences are very heterogeneous and depend on the population in which home IV AMT was used, the type of infection treated and the germ involved: 3.6% in a group of 81 patients (111 episodes) with respiratory infection due to *Pseudomonas aeruginosa*³; 7.5% in a series of 42 patients (145 episodes) with different infections that required home IV AMT⁴ and up to 20.7% in another group of 82 patients with infections caused by

Table 1
Main Patient Characteristics (n=74).

Main characteristics	Mean±standard deviation or frequency
Age, years	64±17
Sex	73% men (54/74)
Reason for admittance to HHU (IV AMT)	Respiratory infection – COPD, 47% (35/74) Respiratory infection – BR, 30% (22/74) Respiratory infection – CF, 15% (11/74) Community-acquired pneumonia, 7% (5/74) Nosocomial pneumonia, 1% (1/74)
FVC (l/%)	2.34±0.53 l/60±13%
FEV ₁ (l/%)	1.07±0.44 l/38±17%
FEV ₁ /FVC (%)	46±13%
LTOT (%)	24% (18/74)
Barthel index	90±19
Positive sputum culture	74% (55/74) <i>Pseudomonas aeruginosa</i> , 50% (37/74)

BR: bronchiectasis; COPD: chronic obstructive pulmonary disease; FEV₁: forced expiratory volume in 1 s; CF: cystic fibrosis; FVC: forced vital capacity; LTOT: long-term oxygen therapy; IV AMT: home intravenous antimicrobial therapy; HHU: Home Hospitalization Unit.

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