
Why Are Allergens Not Detected in the Bronchoalveolar Lavage Fluid of Patients Undergoing Fiberoptic Bronchoscopy? Possible Explanations

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J Investig Allergol Clin Immunol 2019; Vol. 29(6): 472-473
doi: 10.18176/jiaci.0429

Key words: Allergen. Allergic rhinitis. Allergic sensitization. Bronchial asthma. Bronchoalveolar lavage. Hypersensitivity. Pet allergy. Small airways.

Palabras clave: Alérgeno. Rinitis alérgica. Sensibilización alérgica. Asma bronquial. Lavado broncoalveolar. Hipersensibilidad. Alergia a animales domésticos. Vías aéreas pequeñas.

To the Editor:

We read with interest the excellent article from Rueda et al [1] showing that major allergens from various sources (mites, molds, and pollens) were not detected in bronchoalveolar lavage (BAL) fluid collected from patients undergoing fiberoptic bronchoscopy (FB) for a series of indications. The topic is relevant and worthy of study. However, we would like to underline limitations that can potentially influence the results and suggest further studies.

Firstly, the peak atmospheric presence of *Alternaria* and grass pollens throughout the world can fluctuate according to local conditions. In the Mediterranean area, clinically significant values are found in spring and summer [2,3]. During these critical periods, *Alternaria* can cause severe-to-fatal asthma exacerbations [4], and asthma-related events induced by grass pollens may require visits to the emergency department [5]. In the case of Barcelona, the pollen calendar shows grass in the environment from the last days of April to the first days of July [6]. As FB was performed consecutively over 1 year, it would be useful to know its temporal distribution (eg, plotted on a graph) to assess whether this could have significantly affected the results for pollens and molds

(grass and *Alternaria*), which have a very narrow window of detection. Secondly, when exploring a perennial allergen model, it would also be appropriate to perform enzyme-linked immunosorbent assay with allergens of common pets (cats/dogs), in addition to house dust mites [7]. Clearly, pet allergens must also be considered a "true" perennial allergen in indoor environments, both in the presence and in the absence of the animals (direct/indirect exposure) [8-10]. Another important reason for choosing pet allergens is the characteristics of allergen-transporting particles. Several studies have demonstrated that about 25% of cat/dog allergens are carried by submicronic particles (less than 1-2 µm), which easily become airborne under natural air ventilation. These particles are able to penetrate into the deep airways and induce persistent allergenic stimulation and prolonged small airway obstruction in previously sensitized individuals [11-13]. In fact, Zeidler et al [14] demonstrated that natural exposure to cat allergen (based on cat room challenge) results in significant small airway obstruction and hyperresponsiveness, which persists for at least 23 hours, as measured by pulmonary function testing and high-resolution computed tomography.

These data strongly suggest that the search for dust and pet allergens in BAL fluids throughout the year would be more likely to be successful because of their persistent presence in indoor environments, unlike *Alternaria* and grass pollens, whose presence outdoors is limited to a few months a year.

Finally, we suggest a possible explanation for the gap between the presence of Der p 1 in BAL reported by Ferguson and Broide [15] and its absence in the study of Rueda et al [1]. In our opinion, healthy individuals and patients with other nonasthmatic chronic respiratory diseases, such as the vast majority of those described by Rueda et al [1], did not constitute an adequate model for the study of penetration of aeroallergens into the lower respiratory tract. The main difference between the 2 groups is the presence of nasal events (hypersecretion, congestion, mucosal hypertrophy, and even nasal/maxillary polyposis) and consequent upper airway obstruction in most asthmatics. In these common conditions, asthmatics breathe open-mouthed, thus short-circuiting the physiological nasal filter and enabling easier penetration of allergens and other environmental pollutants into the distal airways. It is well known that endotracheal intubation constitutes a relevant risk factor for bronchospasm in noncontrolled asthmatics undergoing diagnostic/therapeutic procedures [16,17]. Nevertheless, we believe that allergen penetration into distal airways should be assessed only in asthmatic patients after an optimal preprocedure evaluation [16,17]

In conclusion, it is likely that the absence of Der p 1, Alt a 1, and Phl p 5 in BAL fluids might depend on the choice of allergen (seasonal rather than perennial), period of the year in which BAL fluids were collected, and respiratory diseases requiring FB. Further studies should be planned as indicated above.

Acknowledgments

We thank the veterinarian Dr. Giovanni Menna, who acted as pet consultant, and the biologists Drs. Giusy Sabatino and Mariagrazia Iengo for their kind assistance in the preparation of this manuscript.

Funding

The authors declare that no funding was received for the present study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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■ *Manuscript received June 14, 2019; accepted for publication June 24, 2019.*

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