16.ª EDIÇÃO

ENCONTRO DE INVESTIGAÇÃO JOVEM UNIVERSIDADE DO PORTO

10.11.12
MAIO 2023

REITORIA DA
UNIVERSIDADE
DO PORTO

U.PORTO

iUP INVESTIGAÇÃO JOVEM DA UNIVERSIDADE DO PORTO

20522 | Comprehensive assessment of environmental fungus-reactive T cells response in hypersensitivity pneumonitis patients

Santos, Rita F., Instituto de Investigação e Inovação em Saúde (i3S), Portugal; Escola Superior de Saúde, Instituto Politécnico do Porto (ESS-IPP), Portugal;
Coelho, Andreia L., Instituto de Investigação e Inovação em Saúde (i3S), Portugal; Faculdade de Ciências da Universidade do Porto (FCUP), Portugal; Instituto Ciências Biomédicas Abel Salazar (ICBAS), Portugal;
Rufo, João C., EPIUnit – Instituto de Saúde Pública, Universidade do Porto, Portugal; Laboratório para a Investigação Integrativa e Translacional em Saúde Populacional (ITR), Universidade do Porto, Portugal;
Coelho, David, Faculdade de Medicina da Universidade do Porto (FMUP), Portugal; Centro Hospitalar Universitário de São João, EPE, Portugal;
Gonçalves, Melany, Instituto de Investigação e Inovação em Saúde (i3S), Portugal; Escola Superior de Saúde, Instituto Politécnico do Porto (ESS-IPP), Portugal;
Gonçalves, Samuel M., Instituto de Investigação em Ciências da Vida e Saúde (ICVS), Portugal;
Cunha, Cristina, Instituto de Investigação em Ciências da Vida e Saúde (ICVS), Portugal;
Carvalho, Agostinho, Instituto de Investigação em Ciências da Vida e Saúde (ICVS), Portugal;
Delgado, Luís, Faculdade de Medicina da Universidade do Porto (FMUP), Portugal; Centro Hospitalar Universitário de São João, EPE, Portugal; Basic&Clinical Immunology Unit, Department of Pathology, Faculty of Medicine, University of Porto, Portugal;
Morais, António, Faculdade de Medicina da Universidade do Porto (FMUP), Portugal; Centro Hospitalar Universitário de São João, EPE, Portugal;
Saraiva, Margarida, Instituto de Investigação e Inovação em Saúde (i3S), Portugal;
Novais-Bastos, Hélder, Instituto de Investigação e Inovação em Saúde (i3S), Portugal; Faculdade de Medicina da Universidade do Porto (FMUP), Portugal; Centro Hospitalar Universitário de São João, EPE, Portugal;

Abstract

Hypersensitivity pneumonitis (HP) is an interstitial lung disease that results in parenchymal and small airways inflammation and culminates in breathlessness, negatively impacting patient's quality of life and survival. HP is initiated by an exaggerated immune response triggered by the inhalation of a variety of environmental antigens. The identification of the triggering antigen is a cornerstone of the diagnostic algorithm, and importantly, exposure avoidance ameliorates the clinical outcomes. However, the inciting antigen is not identified in a large proportion of patients. A difficult to identify, but common inciting antigen, is exposure to household fungi.

We pioneered the indoor characterization of household fungal exposure in HP patients' houses. Up to now, we have visited 35 residences, characterized their building environment, and collected indoor air samples using a single-stage microbiologic air impactor. Collected samples were quantified and fungal species were identified according to standardized methodology. A total of 21 (60%) patients had either toxic levels of specific fungus or indoor levels superior to outdoor ones. We found a total of 28 different fungal species, being *Cladosporium* spp. and *Penicillium* spp. the most prevalent ones.

Based on this, we are currently developing a novel diagnostic method for HP, through the analysis of mold-reactive T cells response. For that, we are stimulating peripheral blood mononuclear cells from HP patients and co-inhabitants, with inactivated fungi antigens isolated from the

corresponding household. Importantly, different fungal antigen concentration and fungal cocktails are being tested as potent stimulators to be used for day-to-day diagnosis purposes, avoiding the need for house inspections. In some patients, we observed an increased T cell activation and proliferation associated with an augmented secretion of T cell mediated cytokines which could be of great importance to future diagnostic methodologies.

Keywords: Hypersensitivity Pneumonitis, Interstitial Lung Disease, Household Fungi, T cell response

References

[1] Bellanger AP, Reboux G, Rouzet A, Barrera C, Rocchi S, Scherer E, et al. Hypersensitivity pneumonitis: A new strategy for serodiagnosis and environmental surveys. Respir Med. 2019;150:101-6.

[2] Nogueira R, Melo N, Novais e Bastos H, Martins N, Delgado L, Morais A, et al. Hypersensitivity pneumonitis: Antigen diversity and disease implications. Pulmonology. 2019;25(2):97-108.

[3] Santos V, Martins N, Sousa C, Jacob M, Padrão E, Melo N, et al. Hypersensitivity pneumonitis: Main features characterization in a Portuguese cohort. Pulmonology. 2020;26(3):130-7.