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Environmental fungal sensitisation associates with poorer clinical outcomes in COPD

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Fungal sensitisation associates with frequent exacerbations in COPD, and represents a treatable trait. Outdoor and indoor environments represent a key source of fungal allergen exposure, amenable to intervention, in “sensitised” COPD patients. <https://bit.ly/2Vw3kHi>

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ABSTRACT

Introduction: Allergic sensitisation to fungi such as *Aspergillus* are associated to poor clinical outcomes in asthma, bronchiectasis and cystic fibrosis; however, clinical relevance in COPD remains unclear.

Methods: Patients with stable COPD (n=446) and nondiseased controls (n=51) were prospectively recruited across three countries (Singapore, Malaysia and Hong Kong) and screened against a comprehensive allergen panel including house dust mites, pollens, cockroach and fungi. For the first time, using a metagenomics approach, we assessed outdoor and indoor environmental allergen exposure in COPD. We identified key fungi in outdoor air and developed specific-IgE assays against the top culturable fungi, linking sensitisation responses to COPD outcomes. Indoor air and surface allergens were prospectively evaluated by metagenomics in the homes of 11 COPD patients and linked to clinical outcome.

Results: High frequencies of sensitisation to a broad range of allergens occur in COPD. Fungal sensitisation associates with frequent exacerbations, and unsupervised clustering reveals a “highly sensitised fungal predominant” subgroup demonstrating significant symptomatology, frequent exacerbations and poor lung function. Outdoor and indoor environments serve as important reservoirs of fungal allergen exposure in COPD and promote a sensitisation response to outdoor air fungi. Indoor (home) environments with high fungal allergens associate with greater COPD symptoms and poorer lung function, illustrating the importance of environmental exposures on clinical outcomes in COPD.

Conclusion: Fungal sensitisation is prevalent in COPD and associates with frequent exacerbations representing a potential treatable trait. Outdoor and indoor (home) environments represent a key source of fungal allergen exposure, amenable to intervention, in “sensitised” COPD.