



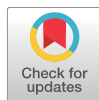
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Sensitisation to recombinant *Aspergillus fumigatus* allergens and clinical outcomes in COPD

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Sensitisation to recombinant *Aspergillus fumigatus* allergens rAsp f 1, 3, 5 and 6 in COPD identifies a patient group with poor clinical outcomes missed by assessing for sensitisation to crude *Aspergillus fumigatus* allergens alone <https://bit.ly/3zbZuFX>

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Abstract

Background Variable clinical outcomes are reported with fungal sensitisation in chronic obstructive pulmonary disease (COPD), and it remains unclear which fungi and what allergens associate with the poorest outcomes. The use of recombinant as opposed to crude allergens for such assessment is unknown.

Methods A prospective multicentre assessment of stable COPD (n=614) was undertaken in five hospitals across three countries: Singapore, Malaysia and Hong Kong. Clinical and serological assessment was performed against a panel of 35 fungal allergens including crude and recombinant *Aspergillus* and non-*Aspergillus* allergens. Unsupervised clustering and topological data analysis (TDA) approaches were employed using the measured sensitisation responses to elucidate if sensitisation subgroups exist and their related clinical outcomes.

Results *Aspergillus fumigatus* sensitisation was associated with increased exacerbations in COPD. Unsupervised cluster analyses revealed two “fungal sensitisation” groups. The first was characterised by *Aspergillus* sensitisation and increased exacerbations, poorer lung function and worse prognosis. Polysensitisation in this group conferred even poorer outcome. The second group, characterised by *Cladosporium* sensitisation, was more symptomatic. Significant numbers of individuals demonstrated sensitisation responses to only recombinant (as opposed to crude) *A. fumigatus* allergens f 1, 3, 5 and 6, and exhibited increased exacerbations, poorer lung function and an overall worse prognosis. TDA validated these findings and additionally identified a subgroup within *Aspergillus*-sensitised COPD of patients with frequent exacerbations.

Conclusion *Aspergillus* sensitisation is a treatable trait in COPD. Measuring sensitisation responses to recombinant *Aspergillus* allergens identifies an important patient subgroup with poor COPD outcomes that remains overlooked by assessment of only crude *Aspergillus* allergens.

