P130 PREVALENCE AND CLINICAL OUTCOMES OF FUNGAL SENSITIVE ASTHMA IN A SEVERE ASTHMA POPULATION

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Introduction It has been proposed that severe asthma patients with fungal sensitisation might endure worse clinical outcomes than non-sensitised patients. However, the extent of fungal sensitisation and its influence on the disease severity remain unconfirmed. This study explores the prevalence of severe asthma with fungal sensitisation (SAFS) and its clinical effect.
Methods Consecutive patients referred to a severe asthma centre has been put through systematic assessment protocol to establish their asthma diagnosis, severity, and clinical outcome measures that includes lung function, biomarkers, exacerbations and hospital admissions frequency. Total and specific serum immunoglobulin E (IgE) and skin prick testing to 27 allergens including 5 fungal allergens were undertaken.
Results A total of 263 patients with a mean age of 45.5 yrs (SD ± 14.6), 72% females, mean age at onset of asthma 21.52 years (range 0.0–69 years), mean pre FEV1% predicted 69.8 (SD ± 24.5) and FEV1/FVC ratio of 66.1 (SD ± 15.3) were considered for the analysis. Allergic characterisation demonstrated atopic status in 182/256 (71.1%), positive sensitisation to alternaria 27/256 (10.5%), aspergillus 57/256 (22.3%), candida 24/256 (9.4%), cladosporium 24/256 (9.4%), penicillium 16/256 (6.2%), meeting SAFS criteria 93/254 (36.4%), and allergic bronchopulmonary aspergillosis (ABPA) 18/247 (7.3%). The SAFS group had higher total IgE than non SAFS group: mean total IgE 974.5 ng/l vs 330.1. However, we observed no statistically different outcomes for the SAFS versus non SAFS groups, ACQ 3.17 vs 3.515, AQLQ 4.0 vs 3.52, FeNO 36.4 ppb vs 32.9, peripheral blood eosinophils (PBE) 385 cells/µl vs 361, annual hospital admissions 1.28 vs 0.97 and annual OCS burst therapy of 5.7 vs 5.9. In contrast the ABPA versus non ABPA cohort had higher PBE 585 cells/µl vs 364, total IgE 2882ng/L vs 326, lower% predFEV1 60.2L vs 71 L, and ever ITU admissions 0.9 vs 0.46.
Conclusion Fungal sensitisation is relatively common in severe asthma but it did not seem to influence overall clinical outcomes. ABPA is less common with worse outcomes.

P131 OUTDOOR FUNGAL SPORE LEVELS, LUNG FUNCTION AND SYMPTOMS IN PATIENTS WITH ASTHMA AND ASPERGILLUS SENSITISATION

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Background IgE sensitisation to *Aspergillus fumigatus* is seen in a significant proportion of patients with refractory asthma. The EVITA3 study recently showed that three months' treatment with voriconazole did not improve asthma-related outcomes in this patient group. It is not known whether daily variations in outdoor fungal spore levels are associated with concomitant fluctuations in symptoms and lung function in patients with *Aspergillus*-associated asthma.
Methods Participants in the EVITA3 study kept daily diaries of peak expiratory flow (PEF) and asthma symptoms during their follow-up period. These diary records were retrospectively analysed together with contemporaneous fungal spore levels measured locally, in those patients (n = 36) who consented to the secondary use of their clinical and research data. Participants also underwent skin-prick tests for *Aspergillus*, *Alternaria*, *Cladosporium*, *Penicillium* and *Botrytis*. For each participant, cross-correlation was used to investigate the relationship between PEF and local spore counts of *Aspergillus/Penicillium*, *Alternaria*, *Cladosporium*, *Botrytis*, *Sporobolomyces*, *Tilletiopsis*, and *Didymella*. Group-level relationships were investigated using linear mixed models for PEF and generalised estimating equations for daily symptom scores, with participants stratified by skin prick test status. The analyses were performed with the exposure and outcome measured on the same day (lag 0), and with the exposure lagged by 1 day with respect to the outcome (lag 1).
Results The analysis cohort comprised 20 men and 16 women with a mean (standard deviation) age of 60 (8) years. No significant or consistent relationships were observed between fungal spore counts and either PEF or self-reported symptom scores, regardless of skin prick test status and lag time between exposure and outcome. In a linear mixed model, the effect size of total fungal spore count on morning PEF was negligible (−0.000011, p = 0.343 for lag 0; −0.000002, p = 0.847 for lag 1).
Conclusion In this retrospective analysis we found no evidence of a significant link between fungal spore counts and either PEF or symptoms in patients with *Aspergillus*-associated asthma. Further research is required to confirm this result in a prospective study and to identify whether aeroallergen levels relate to other important asthma outcomes such as exacerbations.

P132 FACTORS ASSOCIATED WITH NEAR-FATAL ASTHMA REQUIRING EXTRACORPOREAL MEMBRANE OXYGENATION

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Introduction Until recently the ceiling of management for life-threatening asthma exacerbation involved intubation and mechanical ventilation. In many cases these measures were inadequate given the degree of airflow obstruction. The emergence of extracorporeal membrane oxygenation (ECMO) has offered a management strategy for these otherwise fatal events, however there is a dearth of published data regarding ECMO use in asthma. We sought to investigate factors associated with the requirement for and success of using ECMO in near-fatal asthma.
Methods Patients requiring mechanical ventilation (MV) and/or ECMO for acute asthma at our tertiary centre between 2011–2015 were retrospectively identified from an electronic database.
Results Seventy-five patients were identified. 56/75 (75%) received MV and 19/75 (25%) received ECMO. The proportion of females in the ECMO group was significantly greater than in the MV group (68% vs. 29%, P = 0.002). Median age in the ECMO group was lower (24 years old vs. 41, P = 0.003). There was no statistically significant difference in the smoking history or 30- and 90-day survival between ECMO and MV groups. Bronchoscopy was undertaken in all ECMO and in 28/56 MV patients on admission. Respiratory viruses were identified in significantly more patients requiring ECMO than MV (58% vs. 29%, P = 0.04). The proportion of patients with positive bacterial and fungal cultures was not significantly different between groups. In a subgroup analysis there was no difference in