89 An Exploratory Proof of Concept Study to Quantify the Major Cat Allergens, Fel d1 and Fel d4 from Domestic House Cats

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RATIONALE: Cat dander is ubiquitous in our environment and is one of the most potent indoor allergens causing an IgE mediated Type 1 allergic response. While patients may be sensitized to several different allergens found in the dander, the major ones are Fel d1 and Fel d4 with more than 80% of these individuals exhibiting IgE antibodies to these two allergens. The purpose of this preliminary work was to measure the levels of Fel d1 and Fel d4 found in saliva, fur and urine of male and female domestic house cats and to determine whether there are differences in allergen levels dependent on breed, gender, sterilization status and age.

METHODS: Cats volunteered by owners from a local animal hospital were used for this study. Owners signed an informed consent prior to any sample collection. Twenty cats were studied, five in each of four cohorts: neutered males, neutered females, females not in oestrus and males. The breed, age, weight and health status of each cat was recorded. Commercially available ELISA kits were used to measure the allergen levels and a standard curve created from the Fel d1 and Fel d4 standards.

RESULTS: Triplicate samples were analyzed to allow for a sufficient sample size for analysis and comparison.

CONCLUSIONS: The information generated by this study will be used to determine the characteristics of cats to be housed in a cat allergen challenge room in order to obtain consistent levels of airborne allergen.

90 Modulatory Effects of Aspergillus Colonization and Abpa on Blood and Sputum Granulocytes in CF

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RATIONALE: Fifteen to sixty percent of CF patients are colonized with Aspergillus fumigatus (Af) [CF-AC] and are at risk for allergic bronchopulmonary aspergillosis [CF-ABPA]. Although airways inflammation in CF is typically characterized by neutrophilia, ABPA-associated inflammation is defined by eosinophilia. We hypothesized that blood basophil and blood and sputum eosinophils and/or neutrophils may be primed or activated in CF-ABPA or CF-AC patients when compared to CF patients without Af colonization or ABPA [CF].

METHODS: Using flow cytometry, we measured surface CD63 and CD203c on basophil and Dectin 1, CD16, CD63 and CD66b on blood and induced sputum neutrophils as well as surface CCR3 (eotaxin receptor) on eosinophils from CF-ABPA (N=11), CF-AC (N=9), and CF (N=10) patients. We also studied the blood granulocytes from patients with celiac disease as controls. We measured serum IL-17 by Elisa.

RESULTS: No differences were observed within the three groups of CF patients in any activation surface markers on blood neutrophils or on IL-17 levels. Levels of surface CCR3 on blood eosinophils and CD203c on basophils were increased in CF-ABPA patients compared to CF-AC (0.04 and $<10^{-3}$respectively). In the sputum, the levels of surface CD66b were higher on the neutrophils from patients with CF compared to CF-AC (P=0.03).

CONCLUSIONS: Blood neutrophil activation profiles are similar in CF, CF-AC and CF-ABPA patients, while the observed increased expression of CCR3 on blood eosinophils from patients with CF-ABPA indicates the systemic immunopathology of this complication, complements our previously described activation of blood basophils in CF-ABPA (ERJ accepted).

91 Mobility of Aeroallergens in Home: Effect of Location of Air Sampling and Implication for Evaluation of Patient Exposure

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RATIONALE: We developed a user-friendly airborne allergen sampling device for patients with allergic asthma or rhinitis. This device was previously evaluated for its use in the bedroom. Here we run multiple devices at multiple locations within a house to determine whether bedroom aeroallergen profile is representative of the whole house.

METHODS: The devices were run at the same time at 12 locations in a home occupied by a family and a dog. The dog had access to all rooms except the basement. Twelve common household allergens were tested with MARIA™ multiplex immunoassays kits from Indoor Biotechnologies. Biomass measurements on the same samples were performed by spectrophotometry. Allergen and biomass capture increased linearly for 5 days and plateaued between 5 and 7 days. Five days was therefore selected as the standard sampling time.

RESULTS: Allergen profiles showed similar levels of Can f 1 (dog) at all testing locations except for a trace found in the basement from where the dog was excluded. Mold Asp f 1 was found in the basement but in no other location. Four locations showed timothy grass at borderline detectable levels. No other allergens were detected. Biomass was within a cv of +14%, showing relative consistency of air quality throughout the house.

CONCLUSIONS: Outdoor allergens may appear sporadically. Results are consistent with a dynamic equilibrium throughout the house depending on air flow and pet movements. Home aeroallergen sampling from any of several locations may accurately reflect a person's allergen exposure.

92 Homes Assessed As a Result of Physician Referral Have Higher Fungal Burden

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RATIONALE: Exposures in the home environment can play a significant role in health, prompting physicians to obtain an environmental history. We hypothesized that homes assessed following physician referral would have higher fungal counts.

METHODS: Air samples were obtained from homes assessed after physician referral. A control group consisted of samples obtained from homes of healthy children. Samples were obtained using a Biostage collector operating at 15 L/minute for 10 minutes. Mold inhibitory agar (Remel Labs; Lenexa, KS) was utilized for media. The mean number of viable fungal colonies per cubic meter of air was compared between the groups utilizing independent sample t-tests.

RESULTS: The mean number of total viable fungal colonies in the referral group was significantly higher than the control group (536.40 vs 268.11; p=0.0001). Prominent mold species in both groups were *Alternaria*, *Cladosporium* and *Penicillium*. A higher mean number of colonies was seen in the referral group for *Penicillium* (132.67 vs 36.34; p=0.0005). There was no difference between the two groups in regard to *Alternaria* or *Cladosporium*. There was a significant difference in the presence of *Aspergillus*, with the referral group having a higher mean number of colonies (85.91 vs 6.44; p=0.003). Nineteen individual species of mold were identified in the referral group, as compared to 9 species in the control group.

CONCLUSIONS: Patients referred by a physician for an environmental assessment resided in homes with a higher mean number of viable fungal colonies. This is of uncertain clinical significance, with future studies needed.

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