

265 Nasal Allergic Symptoms are Highly Reproducible in Cat-Allergic Mild Asthmatics in a Naturalistic Exposure Chamber



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RATIONALE: To evaluate the reproducibility of nasal and ocular allergic symptoms elicited among cat-allergic mild asthmatics during live cat allergen exposure in a Naturalistic Exposure Chamber (NEC)

METHODS: In this prospective, observational study, 30 cat-allergic mild asthmatics (GINA-1; 43% male, mean age 32 years) underwent two (Day 1 and 28) up to 180-minute cat allergen challenges in a NEC. Total nasal symptom score (TNSS) and total ocular symptom score (TOSS) were measured every 20 mins. Average TNSS and TOSS during NEC exposure were calculated as the AUC divided by time in NEC. Least squares means are presented, adjusted for baseline values and NEC cat allergen concentration. Serum IgE levels for cat dander and Fel d 1 as well as skin prick test (SPT) to cat allergen were measured at screening.

RESULTS: Mean (95% CI) of average TNSS and TOSS on Day 1 were 3.17 (2.51-3.84) and 0.82 (0.30-1.23), respectively, and 2.6 (1.91-3.39) and 1.04 (0.38-1.69) on Day 28, respectively. TNSS was highly correlated within-subjects between the two NEC exposures ($r=0.73$, $p<0.0001$), TOSS was not ($r=0.28$, $p>0.05$). Baseline SPT to cat and IgE to cat and Fel d 1 did not correlate with magnitude of nasal or ocular symptoms (absolute value of Spearman's $r<0.3$, $p>0.05$ for all comparisons).

CONCLUSIONS: Mean nasal and ocular symptoms of cat-allergic asthmatics, were reproduced in the NEC; however, individual ocular symptoms were not. NEC is a good model for development of therapies for cat-specific allergic rhinoconjunctivitis.

266 Wind Influence on the Grass Airborne Pollen in Bahía Blanca, Argentina



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RATIONALE: The objective of this work was to identify the influence of the wind direction and speed on the airborne grass pollen during the year 2019 in the city of Bahía Blanca. Its geographical location is by the sea in the southwest of Buenos Aires province.

METHODS: The pollen count was carried out with a Rotorod M 40© type impact device. Pollen data are daily and are expressed in pollen grains per cubic meter of air. The wind data were provided by the Departamento de Geografía de la Universidad Nacional del Sur. A descriptive and comparative statistical analysis was used.

RESULTS: The analysis showed that the predominant wind during 2019 was from the South, Southeast and Southwest sectors (for 257 days). In the year studied, a maximum gust of 127 km/h was recorded on August 15. The maximum number of grass pollen was 36 gr/m³ on November 22.

CONCLUSIONS: Historically, the dominant winds come from the North, Northwest and West with maximum average speeds of 70 km/h. The pollen count during the year 2019 was lower compared to other years, for example, that a value of 122 gr/m³ registered on November 7, 2018. The decrease in the air of Poaceae grains may be due to the wind direction that was predominantly from the estuary (southern sector) where there is a scarce population of grass because of the sea.

267 Asthma Prevalence and Mold Levels in US Northeastern Schools



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RATIONALE: Asthma is among the most common chronic diseases of children in the United States (US). Mold exposures have been linked to asthma development and exacerbation. In homes, mold exposures have been quantified using the Environmental Relative Moldiness Index (ERMI) and higher home ERMI values have been linked to occupant asthma. In this analysis of the School Inner-City Asthma Study 2 (SICAS 2), we aimed to evaluate the ERMI's applicability to measuring mold in schools compared to homes, to assess the relationship between the prevalence of asthma in schools and mold levels, and to examine the prevalence of asthma in relationship to students' demographics and the physical characteristics of school-buildings.

METHODS: Northeastern US schools (n=32) and homes (n=33) were selected and the 36-ERMI molds were quantified in a dust sample from each classroom or home. School building characteristics, student demographics and asthma prevalence data were collected from the SICAS 2 study or obtained from government websites. Linear regression and mixed models were fit to assess the association of current asthma prevalence and physical characteristics of the school, make-up of the student body and the ERMI metric.

RESULTS: Levels of outdoor Group 2 molds were significantly ($p<0.01$) greater in schools compared to homes and higher Group 2 levels in schools were linked to higher asthma prevalence for their students. The presence of AC in school buildings correlated significantly ($p=0.02$) with lower asthma prevalence.

CONCLUSION: Higher mold levels in northeastern US schools were associated with an increase in students' asthma.

268 Forecasting Airborne Pollen for Allergy Management for Contiguous United States



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RATIONALE: Management of pollen allergies can be improved with a skillful forecast of pollen concentrations by allowing allergy sufferers to plan and prepare medical therapy and practice exposure avoidance. In the past, pollen forecasts have been limited spatially and temporally in the contiguous US.

METHODS: Allergenic pollen concentrations are obtained from the National Allergy Bureau (2003-2018), we focus on the ten most abundant and allergenic pollen types in the contiguous US. Machine learning Random Forest model based on meteorological, vegetation indices, geographic data and google search terms of "pollen" and "ragweed" is used to predict daily pollen concentrations.

RESULTS: We forecast pollen 1-14 days in advance throughout the contiguous US, in locations that presently do not have pollen observations, thereby extending the spatial resolution of pollen forecasts. This work represents a substantial improvement over the present forecasting ability.

CONCLUSIONS: This model has the potential to forecast pollen concentrations throughout the contiguous US and allows allergy sufferers early warning to prepare and plan medical therapy and exposure avoidance.