

Abstract #6 (0346_0513_000010)

SEX AND AIRWAY INFLAMMATION: DEFINING DIFFERENCES IN A HOUSE DUST MITE-CHALLENGED PRECLINICAL MODEL OF ASTHMA

Dina Mostafa, Department of Immunology; **Hadeesha Piyadasa**, Department of Immunology; **Christopher Pascoe**, Department of Physiology; **Andrew Halayko**, Department of Physiology; **Neeloffer Mookherjee**, Department of Internal Medicine and Immunology

Background:

Asthma is a chronic inflammatory respiratory disease that has higher prevalence in boys during childhood but around puberty there is a shift where adult females exhibit higher prevalence and disease severity compared to males. Yet, sex as a variable is neglected in most preclinical animal models, leading to a limited understanding of sex-related variability in allergen-driven response in murine models.

Objective:

Therefore, we examined sex-related differences in allergen house dust mite (HDM)-challenged murine model of allergic airway inflammation. We hypothesized that HDM-mediated airway inflammation (leukocyte accumulation in the lungs) and the expression of pro-inflammatory molecular indicators will be higher in female compared to male mice.

Methods:

Balb/c mice (female and male) were challenged with HDM (0.7 µg/ml saline) for 2 weeks or 5 weeks (five intranasal administrations per week).

Results:

Females showed significantly higher total number of leukocytes in bronchoalveolar lavage (BAL) compared to male mice. Cell differentials showed that the numbers of neutrophils and eosinophils in BAL following HDM-challenge were significantly higher in female compared to male mice. Female mice demonstrated higher levels of antigen specific serum IgE antibodies compared to male mice.

Conclusion:

These results indicate that female mice exhibit significantly higher airway inflammation compared to male mice, in response to allergen challenge. We further identified specific protein indicators that were quantitatively different in female compared to male mice following HDM exposure. Stratifying sex-based differences in preclinical asthma research will provide better understanding of mechanisms related to sex-variability in the inflammatory disease process and for evaluating response to new interventions