

335 Strict Avoidance of Exposure to Natural Rubber Latex (NRL) Glove Products is Associated with Longitudinal Reduction in Percutaneous Reactivity to NAL and Hev B Proteins

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RATIONALE: Longitudinal effects of avoidance of powdered NRL glove exposure on puncture skin test (PST) reactivity to non-ammoniated latex (NAL) and purified native allergens (Hev b) have not been assessed. **METHODS:** Endpoint percutaneous threshold concentrations (EPCs) in 34 of 62 health care workers (HCWs; mean age = 45 yrs, range 26-73 yrs) first evaluated in 2000 were re-evaluated in 2005 by PST with NAL, native Hevs b1, b2, b3, b4, b6.01, b7.01 and b13 and recombinant Hev b5. A period of 56.2 + 2.2 months (mean + SD) elapsed between the two evaluations. Reduced NRL sensitization was defined on retesting as a conversion to a negative NAL PST or a 2-log increase in NAL EPC over the period 2000-2005.

RESULTS: In 2005, 7/34 (21%) of HCWs had lost all PST sensitivity to NAL and all Hev b proteins; 26/34 HCWs showed reduced NRL sensitization from 2000. Significant increases in median EPCs for NAL (Wilcoxon, $p < 0.001$) and reductions in the proportions of HCWs with positive PSTs to Hevs b2, b5, b6.01, and b7.01 were observed over the period from 2000-2005 (McNemar's, $p < 0.05$ to $p < 0.001$). An association with reduced NRL sensitization was observed in those individuals who changed jobs to one without latex glove exposure (Phi coefficient, 0.652, $p < 0.002$).

CONCLUSIONS: Personal avoidance of exposure in NRL sensitized HCWs produces detectable long term reduction or loss of skin sensitivity to NAL and Hev b allergens.

"The findings and conclusions in this abstract have not been formally disseminated by the National Institute for Occupational Safety and Health and should not be construed to represent any agency determination or policy".

Funding: CDC/NIOSH

336 Gastrointestinal Allergic Inflammation: IL-9, Mast Cells and Intestinal Anaphylaxis

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RATIONALE: The cytokine interleukin (IL)-9 has been shown to play a role in T-helper 2 (Th₂) immunity, mastocytosis and eosinophil biology; however, the role of IL-9 in gastrointestinal (GI) allergic inflammation has yet to be elucidated.

METHODS: Mice overexpressing IL-9 were generated using the rat fatty acid binding protein promoter, targeting expression specifically in the small intestine (iIL-9 Tg). The levels of inflammatory infiltrate were examined by histological analysis and activation status was determined using immunoassays. Furthermore, iIL-9 Tg and WT mice were systemically primed by intraperitoneal administration of ovalbumin (OVA) in alum and subsequently challenged orally with OVA, 3 times a week for 3 weeks to induce experimental allergic diarrhoea.

RESULTS: iIL-9 Tg mice present with increased levels of peripheral eosinophils, eosinophilia and mastocytosis in the jejunum and a significant increase in mast cell protease (mMCP-1) compared to WT mice. Moreover, iIL-9 Tg mice challenged with intragastric OVA develop acute intestinal anaphylaxis characterized by diarrhoea, increased intestinal permeability, elevated levels of IgE and mast cell degranulation significantly

more rapidly and severe compared to WT mice. Strikingly, iIL-9Tg mice develop this aetiology even in the absence of systemic priming.

CONCLUSIONS: Overexpression of IL-9 in the small intestine results in the development of Th₂ immunity, hallmark features of allergic inflammation and may predispose to the development of life-threatening intestinal anaphylaxis.

Funding: Australian National University

337 Allergic Sensitization to Cat as Major Predictor of Incident Respiratory Allergy in Children

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RATIONALE: Little is known on the predictive value of sensitization to aeroallergens in teenagers with respect to asthma and hay fever incidence. We aimed to assess the incidence of respiratory allergies in averaged 11-year old children and to analyze the predictive value of sensitization to five common aeroallergens.

METHODS: Three surveys were performed in East German school children. Questionnaire data were obtained and specific IgE antibodies to birch and grass pollen, HDM, cat, and cladosporium were measured (detection level 0.35kU/l). Incidence of respiratory allergies was observed over a 9 years follow-up period based on reported doctors diagnoses. By regression analyses it was controlled for age, sex, parental school education and parental history of allergies.

RESULTS: After excluding those with a positive history of atopic diseases 176 incident cases of hay fever and 78 asthma cases occurred (cumulative incidence of 1.93% and 0.86%/year). Incident asthma cases were only associated with a previous sensitization to cat (RR 3.35, 1.52-7.39). In contrast, sensitization to each single allergen was significantly associated with incident hay fever cases with sensitizations to grass pollen (RR 5.78, 3.91-8.55) and cat (RR 5.14, 2.77-9.54) exhibiting the strongest associations. When mutually adjusting for all allergens, sensitization to cat remained significantly associated with asthma and hay fever. The latter was also associated with sensitization to grass pollen. The highest positive predictive value for hay fever was obtained for birch pollen sensitization (93.7%).

CONCLUSIONS: Sensitization to cat predicts the incidence of hay fever and asthma in children. The predictive capacity differs by allergen and disease.

Funding: Federal Environmental Agency (Umweltbundesamt), Grant No. FKZ 298 61724

338 Maternal Asthma and the Risk of Prematurity

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RATIONALE: We sought to determine whether maternal asthma is a risk factor for prematurity/low birthweight in a population based cohort study.

METHODS: The Manitoba Health Services Insurance Plan (MHSIP) is a population-based, health care and prescription database which has records of every child born in the province of Manitoba, Canada. These records can be linked to maternal history. Mothers diagnosed with asthma [ICD-9 code 493 from 1990 - 1995 OR at least one prescription of an asthma medication in 1995] was obtained. The relative risk (RR) of an asthmatic mother having a premature/low birthweight child was obtained at various gestational ages (GA)/birthweights.

RESULTS: 13980 children were born in 1995 who are currently living in the province of Manitoba. The prevalence of maternal asthma in 1995 was 10.4% (N=1441). 881 babies (6.3%) were born prematurely (GA<37 wks)