395 Comparison of Polyclonal and Monoclonal Antibody Methods for Detecting Cockroach Antigen in Dust Samples

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BACKGROUND: Previously we have demonstrated excellent correlation between polyclonal (PC) and monoclonal (MC) antibody methods for detecting dust mite, cat and dog antigen levels in dust (correlation coefficients > 0.6) but not for cockroach (CR). The purpose of this study was to determine whether detection of different CR antigens using these two assays accounted for this discrepancy.

METHODS: Dust samples with high PC/MC, high PC/low MC and low PC/high MC levels for CR antigen were selected for analysis. SDS-PAGE and western blotting were performed using a polyclonal rabbit IgG antibody generated against German CR antigen (Greer labs). Separate experiments were performed using human serum from CR sensitized subjects as the detection antibody.

RESULTS: Western blotting revealed 8 protein bands against the CR antigen standard ranging from 26 to 120 kd. High MC/high PC dust samples yielded several bands spanning this molecular weight (MW) range. The low MC/high PC samples yielded only high MW bands (> 75 kd) whereas the high MC/low PC samples yielded no visible bands. When human serum from CR sensitized subjects was used as the detection antibody, multiple bands between 50 - 120 kd were observed for all dust samples analyzed.

CONCLUSION: PC antibody CR assays detected several high MW proteins not identified by MC assays. Although MC antibody CR assays are more sensitive and specific for detecting Bla g 1 (20-25 kd) and Bla g 2 (36 kd) in dust, they may underestimate CR exposure as CR-sensitized individuals reacted to several CR antigens above 36 kd.

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396 Effect of Co-Exposure of Recombinant Cockroach and Dust Mite Allergen on Airway Hyperresponsiveness in Mice

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RATIONALE: Recent focus on evaluating environmentally relevant allergens in human asthma has allowed us to develop murine model of allergen sensitization and exposure with recombinant cockroach and dust mite allergens. In this model we investigated the dose dependent effect of methacholine on airway rectivity.

METHODS: Four groups of A/J mice were evaluated. Control group was used to evaluate the effect of vehicle on airway reactivity. The treatment groups were sensitized and challenged with recombinant i)cockroach, ii) dust mite,or iii) cockroach and dust mite allergen at equal concentrations. Airway hyperresponsiveness to methacholine using barometric plethysmography and enhanced pause (Penh) as a correlate of airway reactivity was evaluated. Airways were challenged with aerosolized saline (control) and increasing concentrations of methacholine (1, 3,10 and 30mg/ml) introduced via an intlet of the main chamber for 3 min. Readings were performed every 3 min for 9 min, following each concentration.

RESULTS: The linear regression for Penh was evaluated for each individual mouse. Adminstration of methacholine aerosol caused a dose dependent increase in Penh. Changes in Penh were significantly higher in the cockroach and dust mite allergen sensitized and challenged group compared to each of the three groups.

CONCLUSIONS: The characteristics of the airway reactivity in the mouse model of sensitized and exposed cockroach and dust mite allergen were defined in this study. This rodent model is being used to characterize the genetic interaction of cockroach and dust mite allergen in experimental asthma.

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397 Allergist Referrals for Systemic Reactions to Imported Fire Ants: A Community Survey in an Endemic Area

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RATIONALE: Systemic reactions to imported fire ants (IFA) are known to be the most common cause of anaphylaxis in the Southeastern United States, including Texas. Despite this reaction prevalence, referrals to allergists for evaluation and treatment of IFA reactions seem to be infrequent. This study attempted to evaluate the frequency of referrals for systemic reactions to IFA in the Dallas/Fort Worth metroplex (DFW).

METHODS: A list of all practicing allergists in the DFW area was generated through allergy society membership directories as well as local phone book listings. Those practices that performed testing and administered immunotherapy (IT) to IFA were surveyed using a written questionnaire assessing new referrals for IFA systemic reactions as well as perceptions of referral patterns.

RESULTS: A total of 78 "allergists" were initially screened of which 51 indicated that they test and currently perform IT towards IFA. Of those surveyed, 35 allergists (68.6%) returned completed surveys. Based on responses, an estimated 0.6% of new patient referrals were for IFA reactions. Sixty-eight percent of respondents indicated that none to very few of the total patients in their area with systemic reactions to IFA were being referred to their office for evaluation.

CONCLUSIONS: Only 0.6% of new referrals to allergists' offices in an IFA endemic area are for IFA systemic reactions. This is even lower than the estimated 2% prevalence of systemic reactions to IFA in the general population of an endemic area. Efforts to improve awareness of treatment for IFA systemic reactions for both referring physicians and the public are needed.

398 Successful Administration of a One-Day Imported Fire Ant (IFA) Rush Immunotherapy Protocol in Two Children.

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RATIONALE: Young children with a history of anaphylaxis to IFA stings seem to be at a distinctly higher risk for repeat anaphylaxis as they do not know how to practice proper avoidance measures. One-day rush IFA immunotherapy in young children can provide immediate protection against anaphylaxis.

METHODS: A 30 month-old male with a severe anaphylactic reaction to an IFA sting was admitted to the hospital. On admission day one, he was skin test positive to IFA and the next day underwent a one-day IFA rush immunotherapy. He was pretreated the night before and morning of skin testing with prednisolone (2mg/kg) and cetirizine (5mg). In the second case, a 22 month-old male with wheezing and hives after approximately 20 IFA stings was skin tested 10 days after the reaction. The day after positive skin testing, he underwent rush immunotherapy without pre-treatment. During rush immunotherapy, both patients received 10 shots ranging from 1:100,000 weight per volume (*w/v*) to 1:100 (*w/v*) every 30 to 60 minutes. Vital signs and chest auscultation were performed before each shot.

RESULTS: Both patients had positive intradermal skin tests at 1:100,000 (*w/v*), notably including the first patient who had an anaphylactic reaction the previous day and received antihistamines prior to skin testing. Both patients tolerated the rush immunotherapy and had no systemic reactions.

CONCLUSIONS: We report the successful administration of IFA one-day rush immunotherapy in two young children under the age of 3 years. Young children who are at increased susceptibility to anaphylaxis from IFA stings could greatly benefit from this treatment.