

Selections from international journals

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J Clin Immunol. 2017;37(5):427-433.

The Use of Salmonella Typhim Vaccine to Diagnose Antibody Deficiency.

Bausch-Jurken MT, Verbsky JW, Gonzaga KA, Elms NP, Hintermeyer MK, Gauld SB, Routes JM.

PURPOSE: The specific antibody response to the unconjugated 23-valent pneumococcal polysaccharide vaccine is one of the most common tests used to assess for possible humoral immunodeficiency. The results can be difficult to interpret because most people have been immunized with one or more of the pneumococcal vaccines and there is controversy regarding what constitutes a normal response. To circumvent this problem, we developed an ELISA to measure IgG-specific antibodies to the Salmonella Vi Typhim (S. Typhim) vaccine, a pure polysaccharide vaccine, which is a neoantigen for the vast majority of people in the USA. **METHODS:** We compared the pre- and post-vaccination serum titers to the Vi Typhim vaccine in healthy controls (n = 22), patients previously diagnosed with a primary immunodeficiency (n = 30), and patients referred for possible humoral immune deficiency (n = 29). We also determined if the S. Typhim vaccine could be used to assess specific antibody responses in people on antibody replacement therapy. **RESULTS:** Following immunization with the S. Typhim vaccine, we found that a 2-fold increase in titers is 100% sensitive and specific in detecting known humoral immune deficiencies as determined by ROC curve analysis. This cut-off value was successfully applied to possible immune deficiency patients (n = 29), resulting in the diagnosis of seven subjects with humoral immunodeficiency. The use of immunoglobulin replacement therapy did not affect the median response ratios compared to subjects not receiving gamma globulin. **CONCLUSION:** This study suggests that measurement of the specific antibody response to the S. Typhim vaccine may have advantages over pneumococcal vaccination in the evaluation of the humoral immune response.

Ann Allergy Asthma Immunol. 2017;119(2):184-188.

Natural history of skin prick test reactivity: A 20-year prospective study of a random population sample of children and adolescents.

Schou Nielsen J, Meteran H, Ulrik CS, Porsbjerg C, Backer V.

BACKGROUND: Allergic reactions to airborne allergens may have important consequences for affected individuals and are believed to be unstable through life, although evidence from longitudinal studies is limited. **OBJECTIVE:** To assess changes in skin prick reactivity during 20 years in a random population sample of children and adolescents in relation to symptoms of rhinitis. **METHODS:** A total of 983 individuals, aged 7 to 17 years, were randomly selected in 1986 and invited to 4 examinations during a 20-year period. During each examination, a skin prick test was performed using common local aeroallergens (i.e., birch, grass, mugwort, horse, dog, cat, house dust mite [*Dermatophagoides pteronyssinus* and *Dermatophagoides farinae*] and 2 molds [*Alternaria iridis* and *Cladosporium herbarum*]). **RESULTS:** The prevalence of allergy to any tested allergen peaked at the ages of 13 to 23 years. Rates of sensitization were variable. In the group of individuals tested more than once (n = 592), 16% developed sensitization during the study period and 9% became desensitized. In the group of individuals tested at all 4 examinations (n = 148), 34% developed sensitization and 22% became desensitized. In the group who developed sensitization, 55% had rhinitis, 17% had asthma, and 70% had eczema. In the group who became desensitized, 30% had rhinitis, 10% had asthma, and 50% had eczema. **CONCLUSION:** This 20-year prospective study found that sensitization is common, but its prevalence in individuals is also variable over time. Furthermore, through puberty and early adulthood a large number of individuals develop sensitization and a smaller number become desensitized. In addition, we found that symptoms of rhinitis rarely preceded sensitization.

Allergy. 2017;72(6):857-865.

Pilot study of mobile phone technology in allergic rhinitis in European countries: the MASK-rhinitis study.

Bousquet J, Caimmi DP, Bedbrook A, Bewick M, Hellings PW, Devillier P, Arnavielhe S, Bachert C, Bergmann KC, Canonica GW, Chavannes NH, Cruz AA, Dahl R, Demoly P, De Vries G, Mathieu-Dupas E, Finkwagner A, Fonseca J, Guldemond N, Haahtela T, Hellqvist-Dahl B, Just J, Keil T, Klimek L, Kowalski ML, Kuitunen M, Kuna P, Kvedariene V, Laune D, Pereira AM, Carreiro-Martins P, Melén E, Morais-Almeida M, Mullol J, Muraro A, Murray R, Nogueira-Silva L, Papadopoulos NG, Passalacqua G, Portejoie F, Price D, Ryan D, Samolinski B, Sheikh A, Siroux V, Spranger O, Todo Bom A, Tomazic PV, Valero A, Valovirta E, Valiulis A, VandenPlas O, van der Meulen S, van Eerd M, Wickman M, Zuberbier T.

BACKGROUND: The use of Apps running on smartphones and tablets profoundly affects medicine. The MASK-rhinitis (MACVIA-ARIA Sentinel Network for allergic rhinitis) App (Allergy Diary) assesses allergic rhinitis symptoms, disease control and impact on patients' lives. It is freely available in 20 countries (iOS and Android platforms). **AIMS:** To assess in a pilot study whether (i) Allergy Diary users were able to properly provide baseline characteristics (ii) simple phenotypic characteristics based upon data captured by the Allergy Diary could be identified and (iii) information gathered by this study could suggest novel research questions. **METHODS:** The Allergy Diary users were classified into six groups according to the baseline data that they entered into the App: (i) asymptomatic; (ii) nasal symptoms excluding rhinorrhea; (iii) rhinorrhea; (iv) rhinorrhea plus 1-2 nasal/ocular symptoms; (v) rhinorrhea plus ≥ 3 nasal/ocular symptoms; and (vi) rhinorrhea plus all nasal/ocular symptoms. **RESULTS:** By 1 June 2016, 3260 users had registered with the Allergy Diary and 2710 had completed the baseline questionnaire. Troublesome symptoms were found mainly in the users with the most symptoms. Around 50% of users with troublesome rhinitis and/or ocular symptoms suffered work impairment. Sleep was impaired by troublesome symptoms and nasal obstruction. **CONCLUSIONS:** This is the first App (iOS and Android) to have tested for allergic rhinitis and conjunctivitis. A simple questionnaire administered by cell phones enables the identification of phenotypic differences between a priori defined rhinitis groups. The results suggest novel concepts and research questions in allergic rhinitis that may not be identified using classical methods.

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Blocking antibodies induced by immunization with a hypoallergenic parvalbumin mutant reduce allergic symptoms in a mouse model of fish allergy.

Freidl R, Gstoettner A, Baranyi U, Swoboda I, Stolz F, Focke-Tejkl M, Wekerle T, van Ree R, Valenta R, Linhart B.

BACKGROUND: Fish is a frequent elicitor of severe IgE-mediated allergic reactions. Beside avoidance, there is currently no allergen-specific therapy available. Hypoallergenic variants of the major fish allergen, parvalbumin, for specific immunotherapy based on mutation of the 2 calcium-binding sites have been developed. **OBJECTIVES:** This study sought to establish a mouse model of fish allergy resembling human disease and to investigate whether mouse and rabbit IgG antibodies induced by immunization with a hypoallergenic mutant of the major carp allergen protect against allergic symptoms in sensitized mice. **METHODS:** C3H/HeJ mice were sensitized with recombinant wildtype Cyp c 1 or carp extract by intragastric gavage. Antibody, cellular immune responses, and epitope specificity in sensitized mice were investigated by ELISA, rat basophil leukemia assay, T-cell proliferation experiments using recombinant wildtype Cyp c 1, and overlapping peptides spanning the Cyp c 1 sequence. Anti-hypoallergenic Cyp c 1 mutant mouse and rabbit sera were tested for their ability to inhibit IgE recognition of Cyp c 1, Cyp c 1-specific basophil degranulation, and Cyp c 1-induced allergic symptoms in the mouse model. **RESULTS:** A mouse model of fish allergy mimicking human disease regarding IgE epitope recognition and symptoms as close as possible was established. Administration of antisera generated in mice and rabbits by immunization with a hypoallergenic Cyp c 1 mutant inhibited IgE binding to Cyp c 1, Cyp c 1-induced basophil degranulation, and allergic symptoms caused by allergen challenge in sensitized mice. **CONCLUSIONS:** Antibodies induced by immunization with a hypoallergenic Cyp c 1 mutant protect against allergic reactions in a murine model of fish allergy.