Poster Group 3

New Findings in Allergy Diagnosis

1399

Development and evaluation of a scanner based allergy lateral flow assay system for the determination of specific IgE

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Background: Type I hypersensitivity is driven by allergen specific immunoglobulin E (sIgE) and thus sIgE represents a marker for modern allergy diagnosis. Recently, a rapid assay has been developed for the detection of sIgE, termed as ALFA (Allergy Lateral Flow Assay). The objective of our study is the development and evaluation of a scanner based system for the semi-quantitative interpretation of ALFA results.

Methods: Agreement to Skin Prick Test (SPT, Allergopharma), ALLERG-O-LIQ System (Dr. Fooke) and ImmunoCAP® (Phadia) was investigated using 50 sera tested for specific IgE to timothy grass pollen (g6). To compare visual and scanner based results a smaller panel of sera was evaluated.

Results: About 35/50 sera were positive by SPT, ALLERG-O-LIQ and Immuno-CAP®. Excellent agreement was observed between ALFA results and SPT, Immuno-CAP® and ALLERG-O-LIQ. Area under the curve (AUC) values were found at 1.0 and at a cut-off value of 1.4 ALFA units 100% sensitivity and specificity was found (*versus* all other methods). Agreements according to Spearman were found at 0.94 (Confidence interval, CI = 0.89–0.96; ALFA *versus* ImmunoCAP®), 0.94 (CI = 0.9–0.97; ALFA *versus* ALLERG-O-LIQ) and at 0.94 (CI = 0.9–0.97; ALLERG-O-LIQ *versus* ImmunoCAP®). Visual and scanner based interpretation of ALFA results revealed excellent agreement.

Conclusion: Based on these data we conclude that the novel scanner-based system represents a useful tool for the interpretation of ALFA results meeting the growing demand for digital documentation of laboratory results.

1400

A correlation of serum specific IgE and skin prick tests

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The correlation of clinical data with laboratory tests is important in diagnosing the atopic diseases. This study is planned for investigating the predictivity of environmental allergen sp IgE levels toward diagnosing atopic diseases through clinical and laboratory (skin test) methods. The 172 patients were those who have been applied immunotherapy between November 2005 and July 2008, in Ege University Medical Faculty, Department of Pediatric Pulmonology–Allergy, and evaluated with serum specific IgE levels and skin prick tests. Male/female ratio was 1.6, with an average age of 12.5 ± 3.6 years (age range 5–20), average starting age of allergic complaint at 6.9 ± 3.5 years (age range 0–16). A 49.4% ($n = 85$) of the patients had family members having atopic problems. A 55.2% ($n = 95$) of the patients were being followed with a diagnosis of allergic rhino-conjunctivitis; the other diagnoses were 23.8% ($n = 41$) asthma, 14% ($n = 24$) allergic rhinoconjunctivitis + asthma, 2.9% ($n = 5$) allergic rhinoconjunctivitis + urticaria, 2.3% ($n = 4$) allergic rhinoconjunctivitis + atopic dermatitis, and 1.7% ($n = 3$) asthma + atopic dermatitis. The most frequently sp IgE positive observed allergens were grass pollens (72.2%), and cereals-olive pollens (69%). Likewise, the most frequently skin test positives were grass pollens (65.9%), and cereals pollens (65.8%). No significant link was found between the start age of the complaints, and the existence of atopy in the family ($P = 0.258$), nor the subject gender ($P = 0.941$). Based on the seasons of problem occurrences and patient diagnoses, investigating the serum spesific IgE data, significant differences were found, with d1($P = 0.000/0.001$), d2($P = 0.002/0.004$) (winter/asthma) and grass pollens (0.001/0.008) (spring/allergic rhinoconjunctivitis) IgE levels. Except for molds, all allergens had significant correlations between their serum sp IgE levels and skin test positivities. Furthermore, significant ($P = 0.000$) relationships (cross reaction) were found among cereals and grass pollens, and d1 and d2 serum spIgE levels, and skin test results. As the complaint start age increases, grass pollens ($P = 0.000$) and cereals pollens ($P = 0.000$) skin test positivities were found to increase, in contrast to the decrease of d1-d2 serum sp IgE levels and skin test positivities. Serum environmental allergen-specific IgE levels, is an important diagnosis method, which correlates with the other laboratory tests and clinical data, for diagnosing atopic disorders in childhood.

1401

Results from clinical studies with different assays for specific IgE versus skin prick tests in children

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Introduction: Following the introduction of a new POC test for Allergy, we have studied a pediatric allergic population with different pathologies, rhinitis, asthma and conjunctivitis, comparing with SPT, the diagnostic performance of ImmunoCAP® rapid wheeze/rhinitis child, in terms of allergen agreement.

Conclusion: On the basis of the agreement between of SPT and physicians assessment for each of the allergens which are in ImmunoCAP® rapid wheeze/rhinitis child, we must conclude that this test represents a major advance *in vitro* diagnostics, being a useful easy-to-use, first-rate tool for primary care in paediatric patients suspected of inhalant allergy and a good complement for SPT for allergologists, in those special patients, under treatment, with eczema, demographism or simply by patient convenience.