Improved diagnostic procedure by ISAC multiplex assay in food and latex allergic children

Tina Vesel¹, Anja Koren Jeverica¹, Mira Šilar², Meta Accetto¹, Mirjana Zupančič¹, Tadej Avčin¹, Peter Korošec²
¹University Children’s Hospital, University Medical Center, Ljubljana, Slovenia; ²University Clinic of Respiratory and Allergic Diseases, Ljubljana, Slovenia

Introduction: One of the most important implications of a multiplex assay such as ISAC assay should be its ability to distinguish between allergy and asymptomatic sensitisation due to cross reactivity which could influence the decision for performing a food/latex challenge in children with multiple allergies.

Methods: Test results of food and latex recombinants in 53 ISACs were retrospectively analysed and compared in allergic versus tolerant children. Allergy was confirmed by typical clinical history and determination of specific IgE/skin prick test, by provocation test or by very high values of specific IgE/skin prick tests. When analysing potential cow’s milk/egg/wheat/peanut/hazelnut/fruit/latex allergy 1/2/8/1/14/15/3/3 children were excluded because of unknown clinical allergic status (e.g. waiting/refusing provocation test).

Results: 12 egg allergic children had significantly higher specific IgE to nGal d 1, nGal d 2 and nGal d 3 than 39 egg tolerant children (p<0.0001). 12 cow’s milk allergic children had significantly higher specific IgE to nBos d 4, nBos d 5 and nBos d 8 than 40 cow milk tolerant children (p< 0.0001). 16 peanut allergic children had higher specific IgE to rArah 1, n/rArah 2, n/rArah 3, nArah 6, rArah 8 and rArah 9 than 23 peanut tolerant children (p from <0.0001 to < 0.05). 14 hazelnut allergic children had higher specific IgE to rCor a 8 and rCor a 9 than 25 hazelnut tolerant children (p= 0.006 and p= 0.0009, respectively) and significantly lower specific IgE rCor a 1 than hazelnut tolerant children (p< 0.0001). Three soy allergic children had significantly higher specific IgE to nGly m 5 and nGly m 6 than 42 soy tolerant children (p< 0.001 and p= 0.003, respectively). Two wheat allergic children differed from 50 wheat tolerant in rTri a 19, rTri a 14, tTri a aA_TI (p from < 0.001 to < 0.05). 6 children with anaphylaxis to different fruit had significant higher n/r Pru p 3 than 25 fruit tolerant children (p= 0.03). 18 children with OAS associated with fruit had significantly higher specific IgE to rPru p 1, rMal d 1 and rApi g 1 than 25 fruit tolerant children (p< 0.0001). Four children allergic to latex had significant higher specific IgE antibodies to rHev b 6.01 than 46 latex tolerant children (p= 0.005).

Conclusions: ISAC differentiated allergic from tolerant children when analysing recombinants of cow’s milk, egg, peanut, hazelnut, soy, wheat, fruit or latex.