Abnormal liver function is associated with food sensitisation: US NHANES, 2005-2006

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Background
Recently, it was observed that young children with severe liver dysfunction had a high prevalence of food sensitisation. However, the relationship in adults is unclear. Therefore, we aimed to study associations of liver function and serum total and food-specific IgE concentrations in adults in a national and population-based study.

Methods
Data were retrieved from United States National Health and Nutrition Examination Surveys, 2005-2006, including demographics, liver function test scores, and serum total and food-specific IgE concentrations.

Exposure: liver function tests
Outcome: food sensitisation including serum peanut, egg, milk, and shrimp IgE levels
Covariates: age, sex, ethnicity, vitamin D, waist circumference, family poverty ratio, and ever asthma

Analyses included t-test, chi-square test, generalized linear model and logistic regression model. Models were also weighted for the survey design to generalise to the general population.

Summary of Main Results
Abnormal gamma glutamyl transpeptidase (GGT) was significantly associated with serum total IgE concentrations (OR 1.38, 95%CI 1.03-1.85, P=0.035).
Abnormal GGT was significantly associated with food-specific IgE concentrations (peanut: OR 2.23, 95%CI 1.64-3.04, P<0.001; egg: OR 2.62, 95%CI 1.43-4.80, P=0.004; milk: OR 2.65, 95%CI 1.60-4.41, P=0.001; shrimp: OR 1.85, 95%CI 1.31-2.61, P=0.002).
Abnormal aspartate transaminase (AST) was associated with serum total IgE concentrations (OR 1.29, 95%CI 1.02-1.63, P=0.033).
Abnormal albumin was significantly associated with serum egg IgE concentrations (OR 2.02, 95%CI 1.14-3.60, P<0.002).
Abnormal alanine transaminase (ALT) was significantly associated with serum egg IgE concentrations (OR 2.14, 95%CI 1.08-4.23, P=0.031).

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Conflict of Interest Disclosure:
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Conclusions
- Abnormal liver function was associated serum total IgE concentrations and food sensitisation in adults
- Causality cannot be established from this cross-sectional study
- Longitudinal studies are needed, to explore these relationships further, since they may contribute significantly to our understanding of the pathophysiology of food allergy