Risk factors for egg allergy in Europe: EuroPrevall birth cohort


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Background and Aims: Hen’s egg is the second most common allergen with a mean incidence of allergy of 1.23% (95% CI 1.27-3.47) in the EuroPrevall birth cohort. There are little data on the risk factors for egg allergy. In this study we aimed to assess the risk factors for egg allergy in the EuroPrevall birth cohort with a particular focus on eczema.

Methods: The EuroPrevall birth cohort was established across nine European countries and children were followed up to 2 years. Questionnaires were undertaken at 12 and 24 months. Children with suspected egg allergy were invited for skin prick testing, measurement of specific IgE and double-blind, placebo-controlled challenge (DBPCFC) to hen’s egg if allergy was suspected. Each egg allergy case (positive DBPCFC or egg induced anaphylaxis) was allocated two age-matched controls. Statistical analysis was undertaken in SPSS version 22 (IBM, New York, USA) and STATA SE 13 (StataCorp, College Station, USA).

Results: 12 049 infants were recruited into the EuroPrevall birth cohort and 9336 (77.5%) were followed until 2 years. 86 infants had egg allergy (98% via DBPCFC) and were matched with 140 controls. Cases were evaluated at a mean age of 11 months. Infants with egg allergy were significantly more likely to have eczema than controls (76% versus 39%, p<0.001). Cases were significantly more likely to report rhinitis (26% versus 9%, p<0.001), to have mould in their home (15.5% versus 6.5%, p=0.038) and to have received any skin cream, lotion or powder (87.2% versus 70.9%, p=0.001); they were less likely to be Caucasian (83% versus 93%, p=0.027). Factors that were independently associated with egg allergy in this analysis were current eczema (adjusted OR 24.08, 95% CI 7.41-78.22), current rhinitis (2.68, 1.02-7.04), antibiotics in the first week of life (7.71, 2.15-27.64) and male gender (2.44, 1.16-5.26). Increasing eczema severity was associated with an increasing risk of egg allergy and eczema was reported to have started an average (SE) of 3.6 (0.5) months before egg allergy was evaluated.

Discussion and Conclusions: Eczema, rhinitis, antibiotics in the first week of life and male gender are the key risk factors for developing egg allergy. The onset of eczema is temporarily related to developing egg allergy with infants with more severe eczema being more likely to develop egg allergy. This provides potential preventative strategies for egg allergy.