Parental hay fever reinforces IgE to pollen as pre-clinical biomarker of hay fever in childhood.

Abstract:
An early IgE response to grass or birch pollen can anticipate seasonal allergic rhinitis to pollen later in life or remain clinically silent. To identify risk factors early in life that allow discriminating pathogenic from non-pathogenic IgE responses and contribute to the development of seasonal allergic rhinitis to grass pollen. The German Multicentre Allergy Study examined a birth cohort born in 1990. A questionnaire was yearly administered and blood samples collected at age 1, 2, 3, 5, 6, 7, 10, 13 yr. The definition of the primary outcome grass- and birch-pollen-related seasonal allergic rhinitis (SARg, SARb) was based on nasal symptoms in June/July and April, respectively. Serum IgE antibodies to Phleum pratense and Betula verrucosa extracts were monitored with immune-enzymatic singleplex assays. Of the 820 examined children, 177 and 148 developed SARg and SARb, respectively. Among healthy children aged 3 or more years, IgE to grass pollen was the strongest risk factor of SARg (OR 10.39, 95%CI 6.1-17.6, p< 0.001), while parental hay fever was the only risk factor in early childhood independently associated with future SARg (1 parent: OR 2.56, 95%CI 1.4-4.5, p< 0.001; 2 parents: OR 4.17, 95%CI 1.7-10.1) and SARb.
Parental hay fever was associated with an increase in the concentration of pollen-specific IgE in seropositive subjects, after the age of 6 and was also a hallmark of molecularly more complex specific IgE responses to grass or birch pollen at age 6 or older. Parental hay fever and specific IgE to grass and/or birch pollen are strong pre-clinical determinants and potentially good predictors of seasonal allergic rhinitis.