

Immunoglobulin A and immunoglobulin G antibodies against β -lactoglobulin and gliadin at age 1 associate with immunoglobulin E sensitization at age 6.

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Abstract

BACKGROUND:

Serum immunoglobulin A (IgA) and immunoglobulin G (IgG) antibodies against wheat gliadin and cow's milk β -lactoglobulin (BLG) are considered markers of gut permeability and inflammation which modulate the development of mucosal tolerance. Living on a farm has been shown to decrease allergies in children. Our aim was to study whether farm environment affected mucosal tolerance, immunoglobulin E (IgE) sensitization, or allergic diseases.

METHODS:

The PASTURE birth cohort study was conducted in Finland, France, Germany, Austria, and Switzerland. At age 1, we measured serum IgA and IgG against wheat gliadin (N = 636) and cow's milk BLG (N = 639) using ELISA. Serum-specific IgE was measured at ages 1 and 6 (N = 459). Data on environmental factors and allergic diseases were collected by questionnaires. Discrete time hazard and multivariate logistic regression models were used for analyses.

RESULTS:

Increased IgA or IgG antibodies against BLG at age 1 increased the risk of sensitization to at least one of the measured allergens or food allergens at age 6. Increased IgG against gliadin at age 1 increased the risk of sensitization to any, at least one inhalant, or at least one food allergen at age 6. Early exposure to cow's milk formula associated with increased IgA or IgG against BLG. No association with farming or clinical allergy was found.

CONCLUSIONS:

Increased IgA or IgG against BLG or gliadin at age 1 was associated with IgE sensitization at age 6. We suggest that an enhanced antibody response to food antigens reflects mucosal tolerance aberrancies, e.g., altered microbiota and/or increased gut permeability, which is later seen as sensitization to allergens.