

Correspondence

Timing of regular egg intake for prevention of egg allergy

To the Editor:

We read with great interest the articles titled “Randomized placebo-controlled trial of hen’s egg consumption for primary prevention in infants” by Bellach et al.¹ and “Randomized controlled trial of early regular egg intake to prevent egg allergy” by Palmer et al.² Both the excellent studies investigated the efficacy of regular consumption of egg protein from age 4 to 6 months on the reduction of egg allergy. Both of them failed. According to the theory of infant immunotolerance induction, the failure of these studies might be caused by the timing of regular egg intake.

Design of the clinical intervention to prevent allergic disease shall be based on the understanding of the mechanism of immunotolerance to external antigens of infants. After delivery, infants have to face massive external antigens. Thus, the immune system of the infant needs to balance 2 different jobs: immunotolerance to massive safe external antigens and prevention of infection. Infants live in a relatively safe environment with low level of pathogens due to the protection of parents. Thus, the major job of infant immune system is to induce immunotolerance to external antigens. The mechanism of this tolerance is still controversial. Studies indicated that the T_H1/T_H2 balance was different among children and adults.³ Children tended to present to T_H2 priority, which was considered the mechanism of immunotolerance of infants. However, overactivation of T_H2 caused allergic diseases including asthma.⁴ Thus, T_H1/T_H2 balance might not be the key inducer of immunotolerance. Recently, 2 novel immunosuppressive cells in infants, CD71⁺ erythroid cells⁵ and regulatory T cells,⁶ were found to play critical roles in inducing immunotolerance to external antigens and help the colonization of microbiota in intestine and skin. The 2 novel mechanisms highly suggested that immunotolerance of infants was induced by the immunosuppressive cells, which presented T-cell sensitization to safe external antigens. Notably, these cells only exist shortly after birth, which indicated the key window for immunotolerance induction, first weeks after birth. Thus, to prevent egg-related allergic disease, the regular egg intake shall be started shortly after birth by being added to milk.

All in all, based on the recent understanding of infant immunotolerance to external antigens, regular egg intake shall be a promising method to prevent egg allergy. However, the treatment was too late for 4- to 6-month infants. The studies shall be redesigned and regular egg intake shall be started shortly after birth by being added to milk.

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