論 文 要 旨

Mucosal and systemic immune response to sublingual or intranasal immunization with phosphorylcholine

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Abstract

Objective: Phosphorylcholine (PC) is a structural component of a wide variety of pathogens including Streptococcus pneumoniae and Haemophilus influenzae. Here, the immune response in mice to PC immunization via the sublingual (SL) route versus the intranasal (IN) route was investigated in terms of efficacy and safety. Methods: BALB/c mice were immunized with PC-keyhole limpet hemocyanin (KLH) plus cholera toxin (CT) or CT alone via the IN or SL route. The immune response generated was studied in terms of PC-specific antibody titers, interferon (IFN)-g and interleukin (IL)-4 production by CD4+ T cells, and cross-reactivity of PC-specific immunoglobulin (Ig)-A antibodies in nasal washes against S. pneumoniae and non-typeable H. influenzae. Results: SL and IN immunization with PC-KLH plus CT resulted in a marked increase in the levels of PC-specific, mucosal IgA and serum IgM, IgG, and IgA antibodies. Additionally, SL immunization elicited significantly higher levels of PC-specific IgG2a subclass antibodies and IFN-g in serum. On the other hand, IN immunization with CT alone remarkably increased the total IgE level in serum compared with SL and IN immunization with PC-KLH plus CT. PC-specific IgA antibodies in nasal wash samples reacted to most strains of S. pneumoniae and non-typeable H. influenzae. Conclusion: SL immunization is as effective as IN immunization to induce PC-specific immune responses and more effective than IN immunization to reduce the production of IgE and to prevent the sensitization to allergen causing type I allergy.