

Annual childhood flu vaccines may interfere with development of crossresistance

November 17 2011

Vaccinating children annually against influenza virus interferes with their development of cross-reactive killer T cells to flu viruses generally, according to a paper in the November *Journal of Virology*.

In this study, first author Rogier Bodewes of Erasmus Medical Center, Rotterdam, The Netherlands and his collaborators collected blood samples from Dutch children with cystic fibrosis, who are vaccinated annually against influenza, and from healthy control children who are not vaccinated, and tested both sets of blood samples for the presence of virus-specific killer T cells. The majority of virus-specific killer T cells are directed to conserved [viral proteins](#), that is, proteins that are very similar among different [flu viruses](#), unlike the rapidly evolving, highly variable proteins which are targets of antibodies induced by [influenza vaccines](#).

In unvaccinated children, the investigators found that the number of virus-specific T cells rises with age, while such an increase was absent in children vaccinated annually. In fact, vaccination appeared to interfere with induction of such killer T cells, says Bodewes.

“Vaccinated children with [[cystic fibrosis](#)] will develop lower cross-reactive virus-specific CD8+ T cell responses than unvaccinated children,” says the study.

“Most countries recommend annual flu vaccination of certain high risk groups to protect against seasonal influenza,” says Bodewes.

“Furthermore, some countries recommend annual influenza vaccination of all healthy children more than six months of age.”

The research points up potentially conflicting policy outcomes. Annual flu vaccines are effective against seasonal flu, but could leave people more vulnerable to novel pandemics, says Bodewes, as induction of virus-specific killer T cells caused by childhood flu infection may reduce morbidity and mortality rates from pandemic influenza viruses.

Referring to the paper, he says that the findings “highlight the need for the development and use of universal influenza A virus vaccines for children, especially in light of the pandemic threat of avian influenza A/H5N1.” Nonetheless, he says that efforts to develop such vaccines have for several decades been stymied by the sheer complexity of targeting inner proteins.

More information: R. Bodewes, P.L.A. Fraaij, M.M. Geelhoed-Mieras, C.A. van Baalen, H.A.W.M. Tiddens, A.M.C. van Rossum, F.R. van der Klis, R.A.M. Fouchier, A.D.M.E. Osterhaus, and G.F. Rimmelzwaan, 2011. Annual vaccination against influenza virus hampers development of virus-specific CD8+ T cell immunity in children. *J. Virol.* 85:11995-12000.

Provided by American Society For Microbiology

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