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Possible impact of yearly childhood vaccination with trivalent inactivated influenza vaccine (TIV) on the immune response to the pandemic strain H1N1

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Background & Aim: Annual vaccination of children against seasonal influenza with trivalent inactivated influenza vaccine (TIV) has shown to be beneficial. However, this yearly practice may have unintended effect. Studies have shown that infection with wild type influenza A viruses can stimulate protective heterotypic immunity against unrelated or new influenza subtypes. We hypothesized that a consequence of yearly TIV vaccination is lack of induction of heterotypic immunity against the recent H1N1 pandemic.

Methods: This was a retrospective case-control study. We reviewed the medical records of polymerase chain reaction confirmed cases of 2009 H1N1 influenza infection in children 6 months to 18 years and a matched control group seen during the pandemic.

Results: We identified 353 polymerase chain reaction confirmed H1N1 cases and 396 matching control subjects. Among the H1N1 group, 202/353 (57%) cases received a total of 477 doses of seasonal TIV compared with 218/396 (55%) in the control group who received a total of 435 doses. Seasonal TIV uptake was significantly higher in the H1N1 group 477/548 (87%) than in the control group, 435/532 (81%) (P=0.017).

Conclusion: Seasonal TIV uptake was significantly higher in H1N1-infected group. The finding suggests that the practice of yearly vaccination with TIV might have negatively affected the immune response against the novel pandemic H1N1 strain. Given the rarity of pandemic novel influenza viruses and the high predictability of seasonal influenza occurrence, the practice of yearly influenza vaccination should be continued. However, the use of live attenuated intranasal vaccine, as opposed to TIV, may allow for the desirable development of a vigorous heterotypic immune response against future pandemics.

Biography

Ahdi Amer is an Associate Professor of Pediatrics at Wayne State University School of Medicine, Detroit, USA. He has expertise in the field of general academic pediatrics and pediatric infectious diseases. His main areas of interest are vaccine development, vaccine safety and various pediatric infectious and dermatological disorders. He has conducted clinical research supported by the WHO, Merck and Pfizer regarding vaccines and other topics related to infectious and dermatological diseases in children. He has consulted for UNICEF and WHO on the issue of diarrheal diseases and presented in several international settings on immunization topics.

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