Engy El-Ghitany et al., J Vaccines Vaccin 2014, 5:5
http://dx.doi.org/10.4172/2157-7560.S1.021

OMICS Group Conferences
Accelerating Scientific Discovery

4th International Conference on
Vaccines & Vaccination
September 24-26, 2014 Valencia Convention Centre, Spain

Long-term immune response to hepatitis B virus (HBV) vaccine among type 1 diabetic students: Do they need a booster?

Engy El-Ghitany, Hanan Shatat, Safaa Hassouna and **Azza G Farghaly**
Alexandria University, Egypt

Background: Despite being highly efficacious vaccine, no response to HBV vaccination is properly evaluated among diabetics who retain post-vaccination seroprotective antibodies level for shorter time than healthy ones. The present study was conducted to determine how long immunity persists in Egyptian diabetic school students previously vaccinated against hepatitis B, whether boosters are needed, and, if so, when and in whom they should be administered.

Methods: The study included two phases, a comparative-case-control (screening) phase followed by a quasi-experimental (boosting) phase. A baseline serologic screening for anti-HBs titre was carried out among 260 school students (130 diabetics and 130 healthy non-diabetics, matched for age and sex) who were in the age group 10-17 years and had received the full three-dose regimen of HBV vaccine under the EPI in Egypt. Ninety participants (45 diabetic and 45 healthy ones) with anti-HBs <10 mIU/ml were included in the quasi-experimental phase after being consented where up to three vaccine booster doses were given and anti-HBs level (mIU/ml) was determined.

Results: The median value of anti-HBs titre was significantly lower among diabetics (3.0 m IU/mL) as compared to non diabetics (6.8 m IU/mL) (p=0.002). The frequency of poor response (anti-HBs titre <10 m IU/ml) was higher among diabetic group as compared to non diabetics (70.8% vs. 60%) respectively. Those with anti-HBs titre >100 m IU/ml were 10(7.7%) among diabetics versus 14(10.8%) among non diabetics. Independent factors shown by the stepwise logistic regression analysis showed that being diabetic has 60% more risk for having a poor response. The only significant risk factor associated with poor response was the age. One year increase in age was associated with about 30% higher risk for being poor responder. One month after giving both the first and second booster doses of HBV vaccine, the diabetic students had a minimum level of anti-HBs lower than that of non-diabetics (0.0 versus 21mIU/ml and 11.0 versus 146.0 respectively). Moreover, the diabetic students showed a lower mean titre of anti-HBs (124.3±60.4 versus 149.3±32.0 and 104.2±63.0 versus 156.5±7.0 respectively) than that of the non-diabetic students (P=0.016) after the first booster dose only. In contrast to non-daiabetics, the mean titre of anti-HBs among diabetics after first, second and third booster doses revealed statistically significant difference (P=0.018*). To reach full protection, we found that only one booster dose was needed by 80.0% of diabetics compared to 91.1% of non-diabetics while two booster doses were needed by 11.1% of diabetics in comparison to 8.9% of non-diabetic students. Four (8.9%) diabetic students needed a third booster dose in comparison to none of the normal students. Incorporating a booster dose of HBV vaccine would be best timed at age of 12 years old for immunocompromised diabetic students while it remains an optional one at the age of 13.5 years old for immunocompetent healthy students. We concluded that, type 1 DM adolescents express hyporesponsivness to HBV vaccination and more rapid decline of protective anti-HBs compared to healthy ones. Although such decline of anti-HBs, the presence of specific immune memory can be inferred by demonstrating anamnestic response to HBV vaccine booster doses. Adequate protection against HBV infection among students with unprotective anti-HBs level is achieved after one booster dose for healthy students and two booster doses for diabetic ones.

Biography

Engy M El-Ghitany is an Egyptian public health specialist. She is working for Tropical Health Department, High Institute of Public Health, Alexandria University, Egypt. She was graduated from the Faculty of Medicine, Alexandria University. She has earned her Doctorate degree in 2005 from her institution and in the same year she attended the six weeks course on "Immunology and Vaccinology applied to Infectious Diseases" organized by WHO in Lausanne. She has also got "Diploma of Tropical Medicine and Hygiene" from London School of Hygiene and Tropical Medicine in 2006. In 2012, she earned a Diploma in Vaccinology from Pasteur Institute, Paris. She is interested in travel medicine and is a member of international society of travel medicine. Her main research interest is viral hepatitis.

ingy.elghitany@gmail.com