Vaccine response of HIV-exposed uninfected infants to hepatitis B immunization

A. Nikolarakou, T.Goetghebuer

Department of Paediatrics,
Centre Hospitalier Universitaire St Pierre Hospital,
Brussels, Belgium

Background

The efficacy of the hepatitis B vaccine is well demonstrated and since its inclusion in the national immunization programs, the prevalence of Hepatitis B infection and chronic disease in children has decreased especially in countries with high prevalence of Hepatitis B in adults.

HIV –exposed uninfected infants (HEU) represent a population with some **altered immunity** and susceptibility to infections in infancy.

The aim of this retrospective study was to describe their **antibody response to HBV vaccination**.

193 HEU infants with post vaccin serologic test (PVST)>18 months

143 patients ≥3 doses and complete data

- A=born to Ag HBs –mothers and benefited 4 doses of vaccine
- B= born to Ag HBs+ mothers and benefited 5 doses
- C= born to Ag HBs– mothers and benefited 3 doses

Among the infants of HBsAg negative mothers, those who received **4 doses (group A) had significantly higher median antibody titers compared to those who received 3 doses** ($p=0,006$). Infants of Ag HBs positive mothers had also higher median antibody titers compared to those of group A but not significantly ($p=0,27$). No correlation was found between neonatal/maternal CD4 and anti-HBs antibodies.

Conclusions

HIV-Exposed Uninfected infants present a **good vaccine response to Hepatitis B immunization** after a completed vaccination program with the **last dose administrated after the age of 6 months**. Prospective studies are needed in order to determine the influence of the maternal infection to the immune response of the newborns, especially in countries with high prevalence of HIV.

Methods

HBV serology was measured in HIV-exposed infants at the time of HIV serology to confirm the loss of maternal HIV antibodies around 18 months of life between January 2008 and December 2015

All children benefited at least 3 doses of hepatitis B vaccine according to the Belgian vaccination program (4doses).

Children whose mothers were Hepatitis B surface Antigen (HBsAg) positive received an additional dose at birth, together with HBV antibodies. Patients were divided in three groups

Results

The measure of the anti-HBs antibody titers was performed 2 to 20 months after their last dose.

The **overall percentage** of infants with **anti-HBs antibody titers < 10mU/ml was 2.7%**.

Group	A	B	C
Mean age of control (months)	20,4	18,5	18,1
Mean gestational age (weeks)	39	39,2	38,3
Mean birth weight (gr)	3305	3390	3012
Girls (%)	61%	42%	42%
Mean infant CD4 (cell/μl)	2194	2306	1647
Mean maternal CD4 (cell/μl)	570	791	622
Mean Antibody titers (mU/ml)	606	735	361
Median Antibody titers (mU/ml)	747	1000	188
Anti –HBs N(%)			
<10 mU/ml	2(1,8%)	1(8,3%)	1 (4%)
10-1000 mU/ml	62 (58%)	3(25%)	19 (79%)
>1000 mU/ml	43(40,2%)	8 (66,7%)	4 (17%)
Interval between the last doses and PVST(months)	5	4,8	12

References

1. World Health Organization. *Weekly epidemiological record*. 2009 ;40(84) :405–420.
2. World Health Organization. *Weekly Epidemiological Record*. 1992; 28:208-210.
- 3.Brian A. et al. Altered innate immune development in HIV-exposed uninfected infants. *J Acquir Immune Defic Syndr*. 2014 ; 66(3): 245–255.
4. Hygino J et al. Altered immunological reactivity in HIV-1-exposed uninfected neonates. *Clin Immunol*. 2008 ;127(3):340-7.