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Evaluation of HBsAb titre in adolescents 15-17 years after Hepatitis B vaccine administration

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Thesis

Submitted for partial fulfillment of Master Degree in Pediatrics

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LIST OF ABBREVIATIONS

Abbrev.		Meaning
HBV	:	Hepatitis B virus
DNA	:	Deoxynucleic acid
ccc DNA	:	covalently closed circular DNA
RNA	:	Ribonucleic Acid
HBsAg	:	Hepatitis B surface Antigen
qHBsAg	:	quantification of Hepatitis B surface Antigen
HBcAg	:	Hepatitis B core Antigen
HBeAg	:	Hepatitis B e Antigen
HBsAbs	:	Hepatitis B surface Antibodies
HBcAbs (anti-HBc)	:	Hepatitis B core Antibodies
HBeAbs	:	Hepatitis B e Antibodies
HIV	:	Human Immunodeficiency Virus
MTCT	:	Mother to Child Transmission
HBIG	:	Hepatitis B Immunoglobulin
NAT	:	Nucleic Acid Testing
CHB	:	Chronic Hepatitis B
ALT	:	Alanine Aminotransferase

AST	:	Aspartate Aminotransferase
GGT	:	Gamma Glutamyl Transpeptidase
HCC	:	Hepatocellular Carcinoma
HCV	:	Hepatitis C Virus
PAN	:	Polyarteritisnodosa
RIA	:	Radioimmunoassay
EIA	:	Enzyme Immunoassay
PCR	:	Polimerase Chain Reaction
WHO	:	World Health Organization
CDC	:	Centers for Disease Control and Prevention
EASL	:	European Association for the Study of the Liver
AASLD	:	American Association for the Study of Liver ds
APASL	:	Asia-Pacific Association for the Study of the Liver
USPSTF	:	US Preventive Service Task Force
DPT- OPV	:	Diphtheria,Tetanus, Pertussis and Oral Polio
HLA	:	Human Leukocyte Antigen
PEP	:	Post Exposure Prophylaxis
MS	:	Multiple Sclerosis
ULN	:	Upper Limit of Normal

FDA	:	Food and Drug Administration
IFNα	:	Interferon alfa
IFNγ	:	Interferon Gamma
VR	:	Virological Responses
LAM	:	Lamivudine
LdT	:	Telbivudine
ETV	:	Entecavir
NA	:	Nucleoside/tide Analogue
ELI spot	:	Enzyme-Linked Immunospot assay
HCWs	:	Health care workers
SOC	:	Standard Of Care

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Introduction

Egypt is considered as a region of intermediate prevalence for HBV infection with reported figure of 4.5%. Infection with HBV in infancy or early childhood may lead to a high rate of persistent infection (25–90%), while the rates are lower if infection occurs during adulthood (5–10%) (WHO, 2007).

In most endemic areas, infection occurs mainly during early childhood and mother-to-infant transmission accounts for approximately 50% of the chronic infection cases (Chang, 2007).

Neonatal HBV vaccination is the most effective measure for prevention of HBV infection in countries with intermediate to high levels of HBV endemicity (Puvacic *et al.* 2004). A compulsory vaccination programme against hepatitis B infection among infants was started in Egypt in 1992 using a yeast recombinant DNA vaccine (10 µg) and with a schedule of 2, 4 and 6 months of age (Mansour *et al.*, 1993).

Seroprotection is assured when hepatitis B surface antibody (anti-HBs) level is > 10 IU/L (Floreani *et al.*,2004). The duration of protection in low risk infants whose mothers are negative for HBsAg and who receive hepatitis B vaccine from birth is unknown. In these populations the risk of HBV infection increases during adolescent and early adulthood (CDC, 2007).

Serologic studies have shown that the titer of antibodies against hepatitis B surface antigen drops within the first few years after vaccination and that one-third to one half of children vaccinated as infants will have titers below 10 IU/L by 10–15 years of age (Dentinger *et al* ., 2005).

Previous studies were done in egypt ; In Al - Azhar university the long-term immunity to hepatitis B was assessed among vaccinated (245) children aged 6–11years, (39.3%) of them had protective level of anti-HBs (>10 IU/L).(*Afifi* et al.,2009). In Menoufyia University, Sero

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protection against HBsAg was studied in 200 vaccinated children. Children were divided into two groups. Group A, (100 child around 6 years) of whom 19 (19%) had HBsAb titre < 10 mIU/ mL &81 (81%) had HBsAb titre ≥10mIU/ mL. While in Group B, (100 child around 11 years), 52 child (52%) had HBsAb titre < 10 mIU/ mL& 48 (48%) had HBsAb titre ≥10mIU/mL .(*El-Sayed* B, et al.,2009).

Also in Alexandria university, a seroepidemiologic study was conducted to examine the impact of HB vaccination on the carrier state among a vaccinated group of children (1000) compared to a non vaccinated group (500) aged 6ys. The efficacy of HB vaccine in preventing the carriage of HbsAg ,5 ys after full course vaccination was estimated to be around (67%).(*Reda A.A* et al .,2003)

~~Aim of the study~~

~~The aim of this study is to evaluate the HB surface antibody titer in adolescents aged 15-17 years who had received a full vaccination course during infancy.~~

~~Methods & population~~

~~Population:~~

- ~~Hundred and fifty healthy first year students in the Faculty of Medicine Ain-Shams University.~~

~~Inclusion criteria:~~

- ~~Healthy adolescent who is 15-17 year old and received full hepatitis B virus vaccination course according to Egyptian Expanded Immunizing Protocol (EEIP) during infancy.~~

~~Exclusion criteria:~~

- ~~Adolescent who did not receive a full vaccination course during infancy.~~
- ~~Adolescent that received a full vaccination course after infancy.~~
- ~~Adolescent that received a booster dose after the initial vaccination course during infancy.~~
- ~~Adolescent with hematological, renal or chronic liver disease.~~

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