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The effect of obesity on the immune response of hepatitis B virus vaccination

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بسم الله الرحمن الرحيم

قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا
إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
العَلِيمُ الحَكِيمُ .

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List of Abbreviations

AASD	the American Association for the Study of Liver Diseases
ACIP	Advisory Committee on Immunization Practices
AgRP	agouti-related peptide
AIDS	Acquired immunodeficiency syndrome
ALT	Alanine aminotransferase
AST	Aspartate aminotransferase
BMI	body mass index
BR	Biochemical response
CABG	coronary artery by pass grafts
CART	amphetamine-regulated transcript
CCK	cholecystokinin
CDC	Centre for disease control and prevention
CHB	Chronic hepatitis B
CR	Complete response
CT scan	computed tomography
CNS	Central nervous system
DASH	Dietary Approaches to Stop Hypertension
DEXA	dual energy X-ray absorptiometry
DSM	Diagnostic and Statistical Manual of Mental Disorders
DTaP	diphtheria and tetanus toxoids and acellular pertussis
DTP-OPV	tetanus, pertussis and oral polio
ELISA	Enzyme-linked immunosorbent assays
FDA	Food and drug administration
GLP-1	glucagon like peptide-1
HBcAg	Hepatitis B core antigen
HBeAg	Hepatitis B envelope antigen
HBIg	Hepatitis B immune globulin

HBsAg	Hepatitis B surface antigen
HBsAg	Hepatitis B surface antigen
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HDV	Hepatitis D virus
Hib	influenza type b
HIV	Human immunodeficiency virus
hnRNP K	Heterogeneous nuclear Ribonucleoprotein K
HR	Histological response
IFN	interferon
IL-6	Interleukin-6
IPV	inactivated poliovirus
IPV	inactivated poliovirus
LH	lateral hypothalamus
MCH	major-histocompatibility-complex
MIF	migration inhibitory factor
MIF	macrophage migration inhibitory factor
mIU	Mili international unit
MRI	magnetic resonance imaging
MS	Multiple sclerosis
NASH	Non-alcoholic steatohepatitis
NCEP	National cholesterol education program
NEJM	New England journal of medicine
NHLB	National Heart, Lung, and Blood Institute
NIH	National Institutes of Health
NK cells	natural killer cells
NPY	neuropeptide Y
PCR	Polymerase chain reaction
POMC	proopiomelanocortin
PPARγ	peroxisome proliferator activated receptor
PYY	Peptide YY
SIDS	sudden infant death syndrome

TNF	Tumor necrosis factor
TNF-α	tumour necrosis factor α
VLCD	very low calorie diet
VMH	ventromedial hypothalamus
VR	Virological response
VSD	Vaccine Safety Datalink
WHO	World Health Organization

Introduction

Approximately two billion people worldwide, of which 350 million are chronic virus carriers, have serological evidence of HBV infection. One million people die each year from acute and chronic sequelae of HBV infection. Despite recent advances in anti-viral therapy, there remains no cure for chronic HBV infection. So primary prevention with HBV vaccination is the only strategy likely to reduce the morbidity caused by HBV infection. ***(Alter, 2003).***

Infection of infants and young children with the hepatitis B virus (HBV) represents an important health hazard, since the younger the age at which the infection is acquired, the greater the predisposition to the carrier state, chronic liver disease and subsequent development of cirrhosis and hepatocellular carcinoma. ***(Arnot, 1997).***

The World Health Organization (WHO) has targeted hepatitis B as one of eight infectious diseases that should be controlled by vaccination. In most developing countries, HBV infection is endemic, and attempts to prevent infection must be made very early during childhood. Accordingly, in 1992, Egypt started a programme of universal immunization in infancy. The schedule adopted by the Egyptian Ministry of Health was three doses of a yeast-recombinant HB vaccine administered to all