

LIST OF TABLES

Table	Page
(1) Clinical features of childhood acute lymphoblastic leukemia	5
(2) Cytogenetic abnormalities in acute lymphoblastic leukemia	6
(3) MIC classification of acute lymphoblastic leukemia.....	7
(4) WHO Classification of ALL.....	8
(5) Risk stratification according to Modified CCG protocols used at AUCH	8
(6) Late sequelae of cancer treatment.....	11
(7) Epidemiology of hepatitis B virus worldwide	16
(8) Glossary of clinical terms used in HBV infection	19
(9) Recommended doses of currently licensed formulations of hepatitis B vaccine, by age group and vaccine type	25
(10) European Consensus Group recommendations for hepatitis B booster vaccination.	26
(11) Comparison between the studied groups according to sex and age.....	31
(12) Comparison between group I and group II according to immune status to HB vaccine:	33
(13) Comparison between group I and group II according to mean anti-HBs titer.	34
(14) Comparison between Group Ia and Group Ib according to age and sex:	35
(15) Comparison between Group Ia and Group Ib according to age at diagnosis and post chemotherapy interval	37
(16) Comparison of anti-HBs titer between children of ≤ 2 and >2 year post chemotherapy interval.....	39
(17) Comparison between Group Ia and Group Ib according to type of leukemia .	40
(18) Comparison between Group Ia and Group Ib according to the protocol used for treatment of leukemia:.....	41
(19) Comparison between Group Ia and Group Ib according to the number of blood units transfused since diagnosis of leukemia.....	42
(20) Comparison between anti HBs titer before and after re-vaccination in group I	43
(21) Distribution of group I as regards response to HB re-vaccination	44
(22) Comparison between non-immune and immune subjects of Group II according to age, post vaccination interval and sex.....	45
(23) Correlation between age at time of the study with Anti-HBs titer in GroupII and age at diagnosis in GroupI	47

LIST OF FIGURES

Figure	Page
(1) The TEL-AML1 translocation.....	3
(2) Killing of virally infected cells.....	13
(3) Comparison between the studied groups according to sex	32
(4) Comparison between the studied groups according to age.....	32
(5) Comparison between group I and group II according to immune status to HB vaccine.....	33
(6) Comparison between group I and group II according to mean anti HBs titer.....	34
(7) Comparison between Group Ia and Group Ib according to mean age.....	36
(8) Comparison between Group Ia and Group Ib according to sex.....	36
(9) Comparison between Group Ia and Group Ib according to mean age at diagnosis:	38
(10) Comparison between Group Ia and Group Ib according to post chemotherapy interval	38
(11) Comparison of anti-HBs titer between children of ≤ 2 and > 2 year post chemotherapy interval.....	39
(12) Comparison between Group Ia and Group Ib according to type of leukemia.....	40
(13) Comparison between Group Ia and Group Ib according to the protocol used for treatment of leukemia	41
(14) Comparison between Group Ia and Group Ib according to the number of blood units transfused since diagnosis of leukemia	42
(15) Comparison between anti HBs titer before and after re-vaccination in group I.....	43
(16) Distribution of group I as regards response to HB re-	44

Figure	Page
vaccination.....	
(17) Comparison between non-immune and immune subjects of Group II according to sex.....	46
(18) Comparison between non-immune and immune subjects of Group II according to age and post vaccination interval.	46
(19) Correlation between age at time of study with Anti-HBs titer (mIU/ml) in Group II.....	48
(20) Correlation between age at time of the study with and age at diagnosis in Group I.....	48

LIST OF ABBREVIATIONS

AASLD	American Association for the Study of Liver Disease
ALC	Activation-induced cytidine deaminase
ALL	Acute lymphoblastic leukemia
ALT	Alanine transaminase
AML	Acute myeloid leukemia
AMLL	Acute mixed-lineage leukemia
AMPs	Antimicrobial peptides
ANC	Absolute neutrophilic count
anti-HBc	Hepatitis B core antibody
anti-HBe	Hepatitis B early antibody
anti-HBs	Hepatitis B surface antibody
anti-HCV	Hepatitis C virus antibody
AST	Aspartate transaminase
AUC	Area under the curve
AUCH	Alexandria university children's hospital
AUL	Acute undifferentiated leukemia
BCG	Bacille Calmette Guerin
BM	Bone marrow
BMT	Bone marrow transplantation
CALLA	Common ALL antigen
CBC	Complete blood count
CCG	Children's cancer group
CD	Cluster of differentiation
CDC	Center for Disease Control and Prevention
CHB	Chronic Hepatitis B
CI	Confidence interval
CMV	Cytomegalovirus
CNS	Central nervous system
CSF	Cerebrospinal fluid
CTL	Cytotoxic T-lymphocytes
DCs	Dendritic cells
DIC	Disseminated intravascular coagulation

DNA	Deoxyribonucleic acid
DTaP	Diphtheria, tetanus, and acellular pertussis vaccine
DPT	Diphtheria, Pertussis, and Tetanus
EBV	Epstein Barr virus
EPI	Expanded Programme on Immunization
ELISA	Enzyme linked immunoabsorbant assay
FAB	French-American-British
FISH	Fluorescence in situ hybridization
G-CSF	Granulocyte-colony stimulating factor
GI	Gastro-intestinal
GM-CSF	Granulocyte-macrophage colony stimulating factor
GMT	Geometric mean titer
HAV	Hepatitis A virus
Hb	Hemoglobin
HB	Hepatitis B
HCC	Hepatocellular carcinoma
HBcAg	Hepatitis B core antigen
HBeAg	Hepatitis early antigen
HBIG	Hepatitis B immune globulin
HBsAg	Hepatitis B surface antigen
HBV	Hepatitis B virus
HBV-DNA	Hepatitis B virus deoxyribonucleic acid
HCV	Hepatitis C virus
HIB	Haemophilus influenzae type B
HIV	Human immunodeficiency virus
HLA	Human leukocyte antigen
HRP-HBsAg	HBsAg conjugated with horse reddish peroxidase
HSPs	Heat shock proteins
HSV	Herpes simplex virus
IgA	Immunoglobulin subclass A
IgG	Immunoglobulin subclass G
IgM	Immunoglobulin subclass M
IFN- γ	Interferon Gamma

JMML	Juvenile myelomonocytic leukemia
LDH	Lactate dehydrogenase
MHC	Major histocompatibility complex
MIC	Morphologic, immunologic and cytogenetic
MLL	Myeloid/lymphoid or mixed-lineage leukemia
MMR	Measles, Mumps, and Rubella
MNCs	Mononuclear cells
MRD	Minimal residual disease
NK	Natural killer
OD	Optical density
OR	Odds ratio
PASW	Predictive Analytics Software
PCR	Polymerase chain reaction
Ph+ CML	Philadelphia chromosome positive chronic myeloid leukemia
PMNs	Polymorphonuclear neutrophils
PT	Prothrombin time
PRBCs	Packed red blood cells
RNA	Ribonucleic acid
SD	Standard deviation
TCR	T-cell receptor Ag rearrangements
TEL	Translocation-ETS-Leukemia
TLRs	Toll-like receptors
TMB	Tetramethylbenzidine substrate
USPSTF	United States Preventive Services Task Force
WBCs	White blood cells
WHO	World Health Organization