EXPRESSION OF A TUMOR RELATED GENE CHP2 IN LEUKEMIA CELLS AND ITS CLINICAL SIGNIFICANCE

THESIS

SUBMITTED FOR MASTER DEGREE IN CLINICAL PATHOLOGY

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ABSTRACT

Background and Objectives:

CHP2 (calcineurin B homologous protein 2) is identified as a tumor-associated antigen highly expressed in different malignancies. It plays a critical role in cancer cell development, proliferation, motility and survival. It is suggested that the human tumor related gene CHP2 expression in leukemia primary cells and leukemia cell lines significantly increase, which may play an important role in growth process of leukemia cells.

Design and Methods:

In this study, the expression of CHP2 gene was analyzed in 10 normal healthy controls and 40 patients with de novo acute leukemia (20 AML and 20 ALL). CHP2 expression was analyzed using a Real-Time Quantitative Reverse-Transcriptase Polymerase Chain Reaction (RTQ-PCR) to investigate a possible relation, association or correlation with the clinical features of AL at diagnosis, such as age, gender, lineage, HB, TLC, platelet count, BM blast cell infiltration and risk group.

Results:

CHP2 was highly expressed in 13/40 AL studied patients (7/20 AML and 6/20 ALL) with mean expression level 2.7

Conclusions:

Many studies suggest that CHP2 expression is a novel prognostic marker in AL and thus needs to be incorporated into the patient stratification and treatment protocols. In addition, a quarter of AL patients fail therapy and novel treatments that are focused on undermining specifically the leukemic process are needed urgently.

Key words:

CHP2, AL, RTQ-PCR.

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KyWords ;

AL, CHP 2.

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List of Abbreviation

AA	**Amino Acid**
AL	**Acute leukemia**
ALL	**Acute lymphoblastic leukemia**
ALT	**Alanine transaminase**
AML	**Acuta myeloid leukemia**
AST	**Aspartate transaminase**
AP	**Acid phosphatase**
AUL	**Acute undifferentiated leukemia**
BCSH	**British Committee for Standards in Haematology**
BM	**Bone marrow**
B-ME	**β-mercaptoethanol**
Buffer RLT	**Buffer RNeasy lysis**
CaM	**Ca^{+2}-calmodulin**
CBC	**Complete Blood Count**
CD	**cluster of differentiation**
cDNA	**Complementary DNA**
CHP	**Calcineurin homologous protein**
CHP2	**Calcineurin B homologous protein 2**
CML	**Chronic myeloid leukemia**
Cn A	**Catalytic subunit calcineurin A**
Cn B	**Regulatory B subunit of phosphatase calcineurin**
CNS	**Central Nervous System**
CSF	**Cerebrospinal Fluid**
CT	**Threshold cycle**

DIC	**Disseminated intravascular coagulopathy**
DNA	**Deoxyribose Nucleic Acid**
dNTP	**Deoxynucleotide triphosphate**
DRAK2	**DAP-kinase-related apoptosis-inducing protein kinase**
DDT	**Dithiothreitol**
EBV	**Epstein Barr virus**
EDTA	**Ethylene Tetra-acetic acid**
EF-hand	**EF-hand structural motif**
EGIL	**European Group for the Immunological classification of Leukemia**
FAB Classification	**French–American–British Classification**
FISH	**Fluorescence in Situ Hybridization**
GAPDH	**Glyceraldehyde -3- phosphate dehydrogenase**
GTPase	**Guanosine triphosphatase**
HB	**Hemoglobin**
HEK293 Cells	**Human Embryonic Kidney cell line 293**
HCA520	**Hepatocellular carcinoma antigen 520**
HTLV–I	**Human T-cell Leukemia Virus type –I**
Ig	**immunoglobulin**
IPT	**Immunophenotyping**
Kd	**Constant of dissosiation**
LDH	**lactate dehydrogenase**
MAbs	**Monoclonal antibodies**
MLL	**Mixed Lineage Leukemia or Myeloid/Lymphoid Leukemia**

MPAL	**Mixed phenotype acute leukaemias**
MPO	**Myeloperoxidase**
mRNA	**Messenger RNA**
NCI	**National Cancer Institute**
NES	**Nuclear export signal**
NFATC3	**Nuclear factor of activated T cells**
NHEs	**Na+/H+ exchangers**
NK	**Natural killer**
NSE	**Non specific esterase**
OVCAR3	**Human epithelial ovarian cancer cell line**
PAS	**Periodic acid Schiff**
PB	**Peripheral blood**
PBMNCS	**Peripheral blood mononuclear cell**
PCR	**Polymerase chain reaction**
Q-RT-PCR	**Quntitative Reverse transcriptase-PCR**
RNA	**Ribose Nucleic Acid**
ROC	**Receiver Operating Characteristic**
RQ	**Relative Quantification**
RTmix	**Reverse transcriptasion mix**
RT-PCR	**Reverse transcriptase-PCR**
r-value	**Correlation coefficient**
SBB	**Sudan black B**
SD	**Standerd deviation**
Sm	**surface membrane**
TCR	**T-cell receptor**
TdT	**Terminal deoxynucleotidyl transferase**

TLC	**Total leucocytic count**
UNG	**uracil-N-glycosylase**
WHO	**World Health Organization**