Measurement of CD155 in Egyptian Adult Patients of acute Myeloid Leukemia and its Relation to Clinical Outcome

Thesis

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Mona Atia Maghawry Atia

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List of Abbreviations

Abb.	Full term
AML	Acute myeloid leukemia
APL	Acute promyelocytic leukemia
ASXL1	Additional sex comb like
ATO	Arsenic trioxide
ATRA	All-trans-retinoic acid
BiTE	Bispecific T-cell engager
BM	Bone marrow
IFN-γ	Interferon gamma
CAMs	Cell adhesion molecules
CBC	Complete blood picture
CBF	Core binding factor
CEBPα	CCAAT-enhancer restricting protein α
CML	Chronic myeloid leukemia
CMML	Chronic myelomonocytic leukemia
CNS	Central or peripheral nervous system
CR1	1st Complete remission
CR2	2nd complete remission
DART	Dual-affinity retargeting
DDR	DNA damage reaction
DNAM-1	DNAX accessory molecule-1
DNMT3A	DNA methyltransferase
ECM	Extracellular matrix
ELISA	Enzyme linked immunosorbant assay
ESR	Erythrocyte sedimentation rate
ET	Essential thrombocytosis
EVI1	Ecotropic viral integration site 1
FISH	Fluorescence in situ hybridization
FLT3	Fms-like tyrosine kinase 3
GFR	Growth factor receptors

List of Abbreviations Cont..

Abb.	Full term
GO	Gemtuzumab ozogamicin
HDAC	Histone deacetylation
ICPIs	Immune checkpoint inhibitors
IDH	Isocitrate dehydrogenase
ITD	Internal Tandm Duplicate
ITT	Immunoglobulin tail tyrosine
KMT2A-PTD	Histone-lysine N methyltransferase 2A incomplete tandum copy
LDH	Lactate dehydrogenase
MFC	Multicolor flowcytometry
MM	Multiple myeloma
MPAL	Mixed phenotype acute leukemia
MRD	Minimal residual disease
NCRs	Natural Cytotoxicity Receptors
Nec3	Nectin-3
NK cells	Natural killer cells
NKG2D	Natural Killer group 2D
NPM1	Nucleophosmin-1
NRAS	Neuroblastoma RAS
OD	Optical densit
PCs	Presenting cells
PDGF	Platelet-derived growth factor
PML-RARα	Promyelocytic Leukemia/Retinoic Acid Receptor Alpha
PRV	Polycythemia rubura vera
PVR	Poliovirus receptor
RNS	Reactive nitrogen species
ROS	Reactive oxygen species
RT-qPCR	Real-time PCR

List of Abbreviations Cont..

Abb.	Full term
RUNX1	Runt-related translation factor
Shh	Sonic hedgehog
STP	Signal transduction pathway
TET2	Ten-eleven translocation 2
Th1	T-helper cells
TIGIT	T cell immunoreceptor with Ig and ITIM domains
TKD	Tyrosine kinase domain
TNF-α	tumor necrosis factor-α
TP53	Tumor protein p53
WHO	World health organization
WT1	Wilms Tumor 1
α-KG	α-ketoglutarate

Abstract

Background: CD155 is also called polio virus receptor (PVR) and nectin-like protein 5 (necl-5) due to functioning as the receptor for poliovirus, it described initially as poliovirus binding site and related to blood cells as being extra neural site for polio virus, and harboring domain structures similar to nectins.CD155 recruits and trans-interacts with nectin to promote cell migration and enhance cell motility.

Objective: To measure the level of CD155 in newly diagnosed acute myeloid leukemia patients and post chemotherapy . And to find the correlation of CD155 with other prognostic factors in AML.

Methods: A Prospective cohort study that was conducted on 30 acute myeloid leukemia patients who were recruited from clinical hematology department at Ain Shams university hospital and 20 healthy control subjects matched age and sex.

All the patients were subjected to the following: Full history, clinical examination, routine laboratory investigations and measurement of serum CD155 level by ELISA

Results: The present study proved that the level of CD155 is increased postchemotherapy in patients with acute myeloid leukemia and related to poor outcome

Conclusion: Serum CD155 measurement is useful as prognostic marker in Acute myeloid leukemia and can be used as an indicator of survival in patients with acute myeloid leukemia.

Keywords: serum CD155, acute myeloid leukemia, clinical outcome

INTRODUCTION

CD155 is also called polio virus receptor(PVR) and nectin-like protein 5 (necl-5) due to functioning as the receptor for poliovirus, it described initially as poliovirus binding site and related to blood cells as being extra neural site for polio virus, and harboring domain structures similar to nectins.CD155 recruits and trans-interacts with nectin to promote cell migration and enhance cell motality ***(Mueller and Wimmer, 2003; Ikeda et al., 2004).***

CD155 has been implicated in migration, invasion, proliferation and apoptosis of human cancer cells, and DNA damage response caused by chemotherapeutic agents or reactive oxygen species has been shown to attribute to CD155 induction ***(Ardolino et al., 2011).***

As many of chemo therapeutic agents induce DNA damage and induce releasing of free radicals which increase CD155 expression through DNA damage response (DDR) ***(Nishiwada et al., 2015; Fionda et al., 2015).***

CD155 is overexpressed by some tumors as in melanoma, glioma, colorectal and pancreatic carcinoma ***(Inozume et al., 2016).***

A knockout of CD155 will improve the prognosis and prolong the survival in acute myeloid leukemia as study done

on cell lines and mice, and they found that targeting of CD155 will represent a promising future therapeutic option in AML.

As CD155 has a role in increasing the growth of the tumor, in this study we asked whether CD155 has a prognostic factor in acute myeloid leukemia and the effect of chemotherapy on its regulation ***(Nishiwada et al., 2015).***

AIM OF THE WORK

To measure the level of CD155 in newly diagnosed acute myeloid leukemia patients and post chemotherapy. And to find the correlation of CD155 with other prognostic factors in AML.