EXPRESSION OF MESOTHELIN GENE (MSLN) IN ACUTE MYELOID LEUKEMIA

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Introduction

Acute myeloid leukemia (AML) is a heterogeneous disorder characterized by clonal expansion of abnormal myeloid progenitor cells (blasts) in the bone marrow and peripheral blood. The genetic alterations arising in the neoplastic clone lead to cascades of molecular events that cause abnormal proliferation, aberrant differentiation, and inhibition of normal hematopoiesis by the malignant cells.

MSLN is not only expressed in solid tumors but also there is a correlation in its expression in AML.

Recent studies have shown that MSLN is highly expressed in 36% of acute myeloid leukemia (AML) patients and barely expressed in normal hematopoietic cells, which makes MSLN a promising target for the treatment of AML.

In all MSLN cases, MSLN expression was confined to the leukemic blasts and was absent from normal hematopoietic cells. Aberrant MSLN expression on tumor cells plays an important role in promoting proliferation, invasion and induces resistence to apoptosis.

Aim of the Work

The aim of this study was to determine the relative expression level of MSLN gene and its relation with other clinicopathological parameters in a cohort of Egyptian patients with acute myeloid leukemia.

Patients and Methods

This study was conducted on 40 newly diagnosed acute myeloid leukemia patients and 40 healthy subjects as control matched for age and sex. Patients were recruited from the Hematology Unit, Internal Medicine Department, Alexandria Main University Hospital.

All patients were subjected to detailed history taking, thorough clinical examination and laboratory investigations that included routine laboratory tests, bone marrow aspiration with immunophenotyping and conventional cytogenetic.

MSLN gene expression level was detected in patients and control by real time quantitative (RQ-PCR).

Patients with acute myeloid leukemia received induction regimen in the form of 3+7 protocol.

Statistical analysis was done using IBM SPSS software package version 20.0.

Results

Table 1: Comparison between the two studied groups according to $2^{-\Delta\Delta Ct}$ MSLN (mesothelin gene)

	Patients (n = 40)	Control (n = 40)	U	p
$2^{-\Delta\Delta Ct}$ MSLN				
Min. – Max.	0.11 – 26.78	0.09 – 5.87	166.0*	<0.001* Sig.
Mean ± SD.	9.05 ± 7.15	1.65 ± 1.46		
Median (IQR)	7.61 (2.99 – 13.98)	1.37 (0.70 – 2.14)		

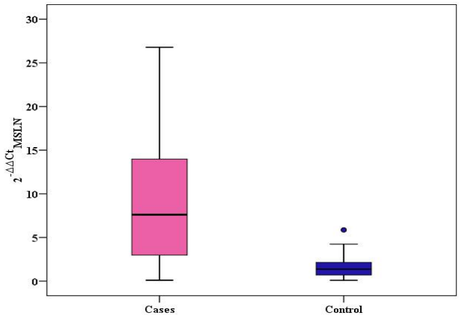

Figure 1: Comparison between the two studied groups according to $2^{-\Delta\Delta Ct}$ MSLN

Table 2: Relations between MSLN (mesothelin gene) and AML FAB subtypes in patients.

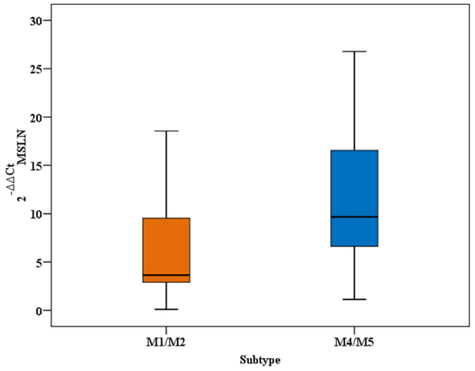

Figure 2: Relation between $2^{-\Delta\Delta Ct}$ MSLN with AML FAB subtypes in patients group (n = 40)

Table 3: Relation between MSLN gene and FLT3 in patients.

FLT3					
Negative	24	10.39 ± 7.05	9.19 (0.11 – 26.59)	U= 119.50*	0.044*
Positive	16	7.02 ± 7.03	4.61 (0.53 – 26.78)		

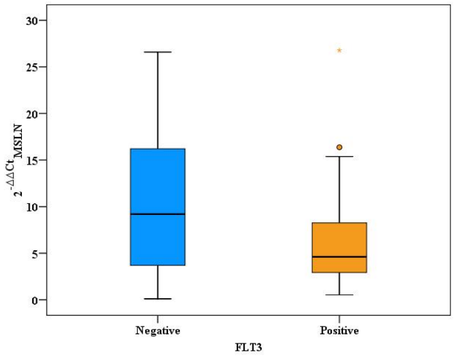

Table 3: Relation between MSLN gene and FLT3 in patients.

Conclusion

MSLN gene shows statistical significance in acute myeloid leukemia patients especially M4 and M5 of FAB subtypes.

MSLN is also significantly high in FLT3 negative patients compared to FLT3 positive patients.