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Research Article Open Access

Abstract

This study was carried out on 41 newly diagnosed chronic lymphocytic leukemia (CLL) patients for investigation of the diagnostic value of CD49d and its correlation with disease outcome in CLL patients. CD49d expression on CLL cells in peripheral blood samples was estimated by flow cytometry analysis. Patients with ≥ 31.5% of neoplastic cells expressing CD49d were considered high CD49d cases. The cases with high CD49d expression were significantly associated with progression to a more advanced stage while lymphocytic doubling (LD) and mortality were not significantly associated with high CD49d expression. Lymphocytic doubling time (LDT) was significantly shorter in high CD49d versus low CD49d of CLL patients. Additionally, high CD49d group showed with [illegible] significantly between both high CD49d and low CD49d of CLL patients. Multivariate analysis revealed that CD49d is an independent prognostic factor for predicting lymphocytic doubling time. Moreover, the advanced Rai stage and high CD49d are independent prognostic factors for shorter progression free survival. Overall, CD49d is selected as the most important flow cytometry-based prognostic biomarker regardless of other prognosticators such as CD38 and ZAP-70. Consistently, bivariate analysis revealed that CD49d identified CLL patients with poorer outcome independent of CD38 and ZAP-70. Overall, CD49d acts as an independent bad prognostic marker for B-CLL patients at different stages and a predictor of overall survival.

Citation: Abdel-Aziz AF, Yahya RS, Abdel-Messih HM, Ata AM (2019) Diagnostic Value of CD49d Expression in Patients with Chronic Lymphocytic Leukemia. Biochem Physiol 8: 249. doi: 10.4172/2168-9652.1000249

Hematological data	Control (N=25)		CLL (N=41)		P
	Median	Range	Median	Range	
Absolute lymphocytic count (×10^9/L)	1.43	1-4	51.4	3 -230	<0.001
Relative lymphocytic count (%)	32.5	20-50	81.1	43.6-93.7	<0.001
Prolymphocytes (%)	-	-	1	1-3	-
Total leucocytic count (TLC) (×10^9/L)	5.19	4-7	71	8-336	<0.001
Hemoglobin concentration (Hb) (g/dL)	14	12-16	11	9.7-12.2	0.002
Platelet count (×10^9/L)	365.5	307-438	111	8-416	<0.001

Significance probability when P <0.05.

Abbreviation: TLC: Total Leucocytic Count; Hb: Hemoglobin concentration.

Table 2: Comparison between hematological data at diagnosis of studied CLL patients and matched control group.

Clinical chemistry data	Control (N=25)		CLL (N=41)		P
	Median	Range	Median	Range	
ALT (U/mL)	18.5	10-27	18	6-142	0.849
AST (U/mL)	28.5	25-35	25.3	6-225	0.146
Total bilirubin (mg/dL)	1	0.9-1.1	2.7	0.2-5.2	0.615
Albumin (g/dL)	5	4-5	5	3.4-6.4	0.594
Creatinin (mg/dL)	1	0.7-1.1	1	0.4-2	0.129
Uric acid (mg/dL)	5	3-6	5	2-10	0.209
LDH (U/mL)	140	120-170	460	227-1370	<0.001

Significance probability when P <0.05.

Abbreviation:

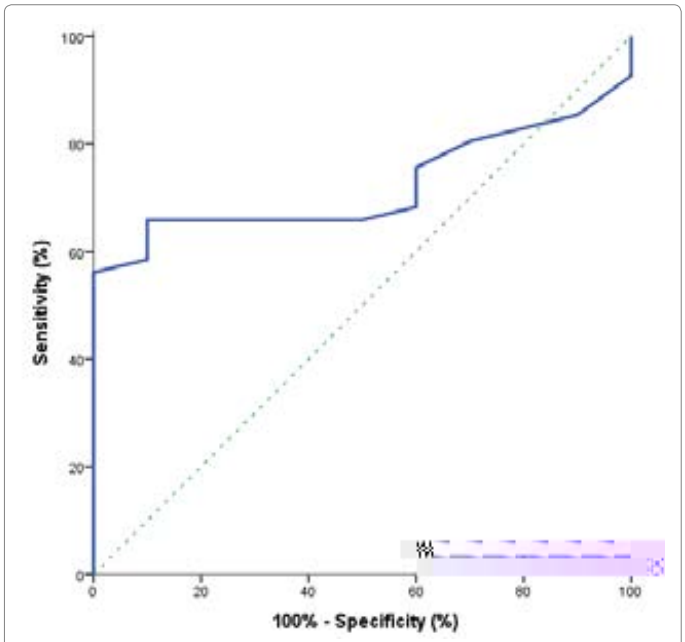

Figure 3: A receiver operating curve (ROC) analysis of CD49d levels.

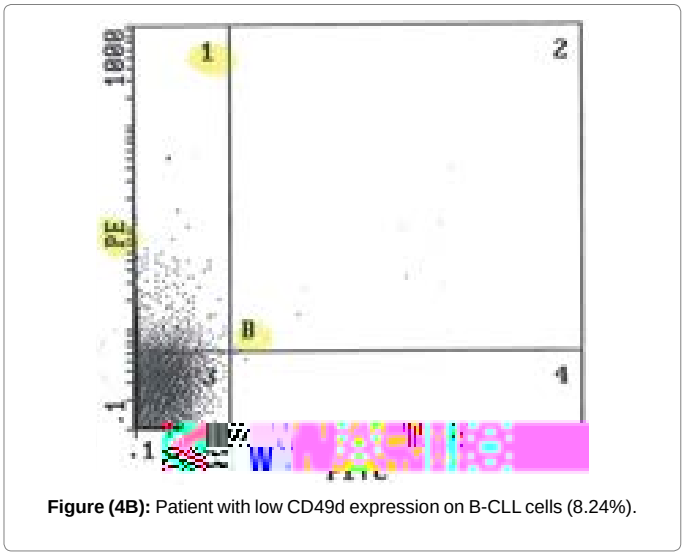

Figure (4B): Patient with low CD49d expression on B-CLL cells (8.24%).

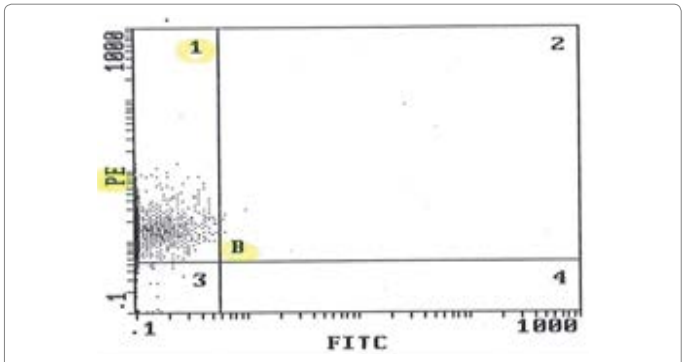

Figure 4(A): Patient with High CD49d expression on B-CLL cells (96.79%).

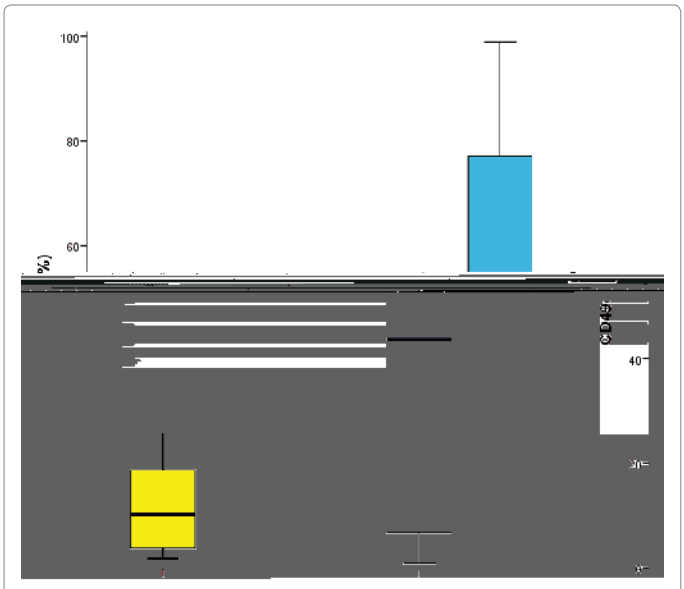

Figure 5: CD49d expression in control and CLL patients.

		CD49d^{low}	CD49d^{high}	P
		N=18	N=23	
Age (Years)	Median	57.5	59	0.285
	Range	45-69	48-84	
Gender	Males, N (%)	17 (94.4%)	17 (73.9%)	0.112
	Females, N (%)	1 (5.6%)	6 (26.1%)	

Age is presented by median and range. Gender is presented by number and percentage. Significance probability when P <0.05.

Table 6: Age and gender distributions according to CD49d positivity in studied groups of CLL patients

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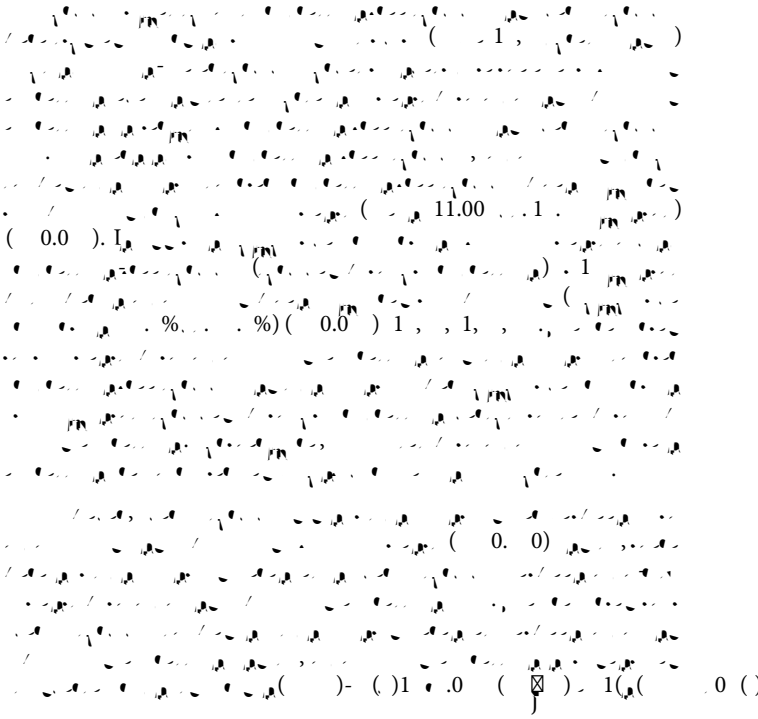

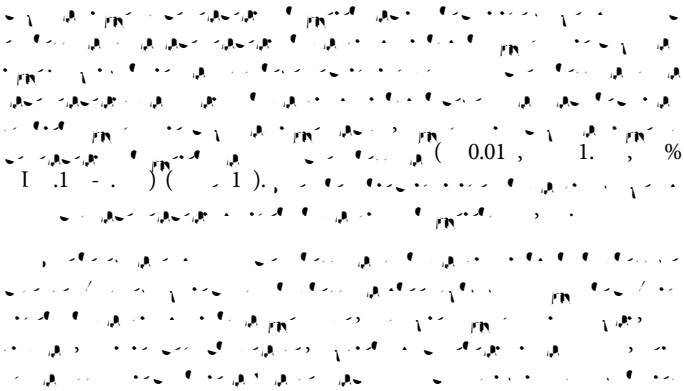

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