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THE EFFECT OF ELEVATED SERUM LACTATE DEHYDROGENASE LEVEL ON SURVIVAL OF NEWLY DIAGNOSED ACUTE MYELOID LEUKEMIA PATIENTS.

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INTRODUCTION

AML is a heterogeneous clonal neoplasm. The most common prognostic risk factors for AML are cytogenetic abnormalities and environmental risk factors. Pathological indicators of high tumor burden and poor prognosis include high White blood cell (WBC) count and Lactate Dehydrogenase (LDH) level.

AIM

The current study intended to determine the clinical significance and prognostic value of serum LDH Level levels in AML patients.

METHODS

This is a retrospective single-center study of 40 (M/F:19/21) AML patients at the Hematology unit, Oncology Center Mansoura University, Egypt. The mean age ±SD was 44.3±15.1 years. Median WBC count was 31.5 x10^9/L; median hemoglobin (Hb) concentration was 8.5 g/dL; and median platelet count was 32.2 x10^9/L. Median serum LDH was 731.5 IU/L [range:188-6292]. Patients received standard intensity induction chemotherapy (7+3), followed by consolidation by high-dose cytarabine for patients in complete remission (CR).

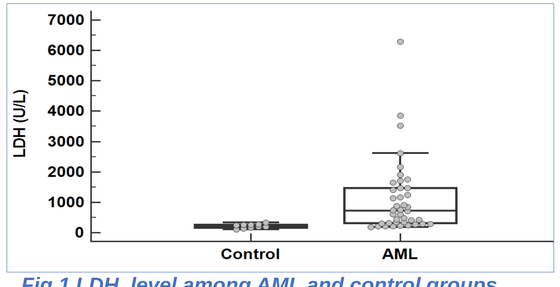


Fig.1 LDH level among AML and control groups

RESULTS

LDH levels were significantly higher in AML patients than in healthy controls [214 IU/L, range 107-330] (*P<0.001*) [fig.1]. LDH levels showed a significant positive correlation with WBC count, while no significant correlations were found between LDH levels and Hb concentration or platelet counts. Higher LDH levels were significantly associated with advanced age and WBC counts >50 x10^9/L [Table 1]. No correlation was detected between LDH levels and stratified risk groups, response to treatment, or mortality.

AML patients with LDH levels above the median value were associated with significantly shorter median overall survival (OS) [95% CI 2 months, range 1-6 months] compared to AML patients with lower LDH levels [95% CI 6 months, range 1-9 months] (*P 0.035*) [fig.2].

Elevated WBC counts and LDH levels were associated with shorter OS. Cox regression analysis illustrated that higher LDH levels are a poor prognostic factor for the prediction of survival among studied AML patients (*P= 0.018*, HR: 1.012, 95% CI 1.005-1.071 and *P= 0.036*, HR: 1.007, 95% CI 1.001-1.011 in univariable and multivariable analysis, respectively) [Table 2].

CONCLUSIONS

Evaluation of LDH serum levels at diagnosis is easy and not an expensive test. We conclude that high serum LDH level in newly diagnosed AML patients is considered a poor prognostic factor as regards survival outcomes.

Table 1. Comparison of LDH level between different studied subgroups

		LDH level			P
		Median	Range		
Age	<60 years	478	188	3860	0.008
	≥60 years	1645	412	6292	
WBC count	≤50 x10^9/L	417	188	6292	0.003
	>50 x10^9/L	1465	246	3860	
	≥ 100 x10^9/L	907	275	1470	
Risk categories	Favorable	693	290	1134	0.451
	Intermediate	601	188	6292	
	Poor	1235	1158	1470	
Response to treatment	CR	732	188	2615	0.825
	No response	676	215	6292	
Mortality	Alive	599	275	1715	0.555
	Dead	750	188	6292	

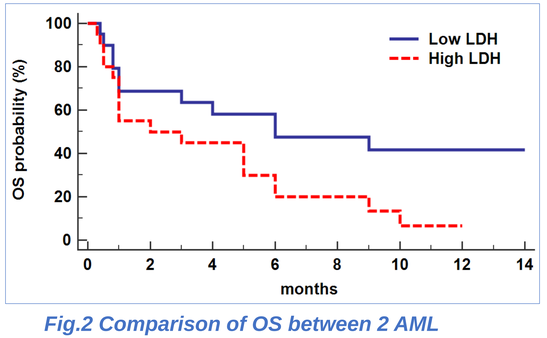


Fig.2 Comparison of OS between 2 AML subgroups ''below and above median LDH level''

Table 2. Cox regression analysis for prediction of OS of studied AML cases

	OS					
	Univariable			Multivariable		
	P	HR	95% CI	P	HR	95% CI
Age	0.920	1.001	0.976-1.027			
WBC count	0.041	1.006	1.002-1.011	0.318	1.003	0.997-1.010
Absolute neutrophil count (ANC)	0.928	0.999	0.981-1.018			
Abnormal cytogenetics	0.784	0.888	0.378-2.082			
LDH	0.018	1.012	1.005-1.071	0.036	1.007	1.001-1.011

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