Plasma Cytokeratin 18 (CK-18) Fragment in Adult Patients With Newly Diagnosed Acute Myeloid Leukemia

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INTRODUCTION

Febrile neutropenia (FN) is a common complication in hematological patients receiving intensive chemotherapy for acute myeloid leukemia (AML). During apoptosis, intracellular CK-18 is cleaved by caspase-3 at two sites, and the released fragments can be measured from blood using an antibody directed against the exposed M30 neoepitope.

AIM

This study aims to assess the cytokeratin18 fragment as a prognostic marker in adult patients with acute myeloid leukemia (AML).

METHOD

We investigated its association with febrile neutropenia, sepsis, treatment response, and early mortality. This study was conducted on 50 adult AML patients who were recruited from the Ain Shams University hospitals. Plasma CK-18 levels were quantified using the sandwich ELISA method. Patients were followed prospectively for 6 months.

CONCLUSIONS

CK-18 is a valuable possible prognostic marker of FN outcomes, response to induction therapy, and early mortality in adult Egyptian patients with AML.

RESULTS

Mean plasma CK-18 level was significantly higher on day 1 of FN compared to the initial level at diagnosis (*P*<0.001). A positive correlation was found between mean CK-18 at onset of FN and mean values of CRP and procalcitonin measured concurrently (*P*=0.001 and *P*=0.002, respectively). Significant positive correlations were observed between CK-18 levels (at baseline and at onset of FN) and patient outcomes, including mean hospitalization days (*P*<0.001 for both), ICU admission (*P*=0.006 and *P*<0.001), and early mortality (*P*=0.015 and *P*<0.001). On the other hand, CK-18 levels initially and at onset of FN were negatively correlated with response to induction therapy (*P*=0.001 for both). Initial CK-18 level >180 U/L predicted nonresponse to therapy (sensitivity,100%; specificity,76.92%), while a level >239 U/L at onset of FN predicted patient deterioration and ICU admission (sensitivity, 66.67%; specificity, 94.12%).

Correlation between Cytokeratin-18 at day 1 of FN and disease outcomes.

	Cytokeratin-18day 1 after fever	Test of sig.	p-value
Admission to ICU	mean ± SD*	t= 4.422	<0.001*
No (17)	193.65 ± 37.85		
Yes (33)	282.94 ± 78.4		
Mortality		t= 4.057	<0.001*
Alive	227.81 ± 66.41		
Died	316.29 ± 76.35		
Revaluation by BM Aspirate at day 28		F= 8.263	0.001*
Remission with negative MRD	199.50 ± 61.14		
Remission with positive MRD	214.31 ± 54.18		

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