

Predictors Of Morbidity And Mortality During the Induction Phase with Anthracycline Plus Cytarabine-Based Chemotherapy in Newly Diagnosed Acute Myelogenous Leukemia: A Retrospective Cohort Study

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Abstract

Rationale and Objectives: This retrospective cohort study identifies clinical and laboratory predictors of 28-day morbidity and mortality during the induction phase of cytarabine plus anthracycline based ("7+3") chemotherapy in newly diagnosed Acute Myelogenous Leukemia (AML) patients to improve risk stratification.

Research Design and Methodology: This study included 111 adult patients with newly diagnosed AML who received standard "7+3" induction chemotherapy between 2015 and 2025 at two tertiary hospitals in the Philippines. Univariate and multivariate Cox proportional hazards regression models were performed to identify independent predictors of 28-day induction-phase morbidity and mortality.

Results: Twenty-six patients (23%) experienced induction-phase morbidity or mortality. On univariate analysis, poor functional status (ECOG 3–4, $p=0.011$), severe thrombocytopenia (platelet count $<50,000/\mu\text{L}$, $p=0.019$), renal impairment (creatinine $>1.3\text{ mg/dL}$, $p=0.029$), and higher serum lactate dehydrogenase (continuous LDH $p=0.008$) were associated with adverse outcomes. Chronological age was not predictive, while diabetes mellitus demonstrated a borderline association ($p=0.062$). In the multivariate model, only baseline creatinine $>1.3\text{ mg/dL}$ (adjusted Hazard Ratio (aHR)=3.61; 95% Confidence Interval (CI): 1.30 to 9.97; $p=0.013$) and continuous LDH (aHR = 1.0008 per unit increase; 95% CI: 1.0003 to 1.0014; $p=0.004$) remained independent predictors.

Discussion and Conclusion: Survival during induction-phase is more strongly influenced by baseline renal function and leukemic burden than by chronological age. Pre-induction renal insufficiency and elevated LDH levels are powerful predictors that enable early identification of high-risk patients and guide proactive supportive care during induction chemotherapy.