ASSOCIATION OF EARLY CHEMOTHERAPY WITH REDUCED IN-HOSPITAL MORTALITY AND COMPLICATIONS IN ACUTE PROMYELOCYTIC LEUKEMIA: INSIGHTS FROM A NATIONWIDE COHORT

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Introduction

Prompt treatment in Acute Promyelocytic Leukemia (APML) is critical due to the risk of early mortality from disseminated intravascular coagulation (DIC). Chemotherapy agents like all-trans retinoic acid (ATRA) and arsenic trioxide (ATO) have been linked to improved outcomes. This study investigates how timing of inpatient chemotherapy impacts clinical outcomes.

Aim

To assess the association between timing of chemotherapy initiation and inpatient outcomes in APML.

Objectives

- Identify APML patients receiving inpatient chemotherapy
- Compare early (within 24 hours) vs. late (after 24 hours) treatment cohorts
- Evaluate demographic, clinical, and outcome differences
- Analyze key complications and mortality rates

Methods

The National Inpatient Sample (2016–2020) was used to identify patients with APML who received inpatient chemotherapy. Patients were stratified into early and late cohorts based on chemotherapy initiation within 24 hours of admission. Demographics, Charlson Comorbidity Index (CCI), hospital utilization metrics, and clinical outcomes were compared using chi-square and t-tests.

Results

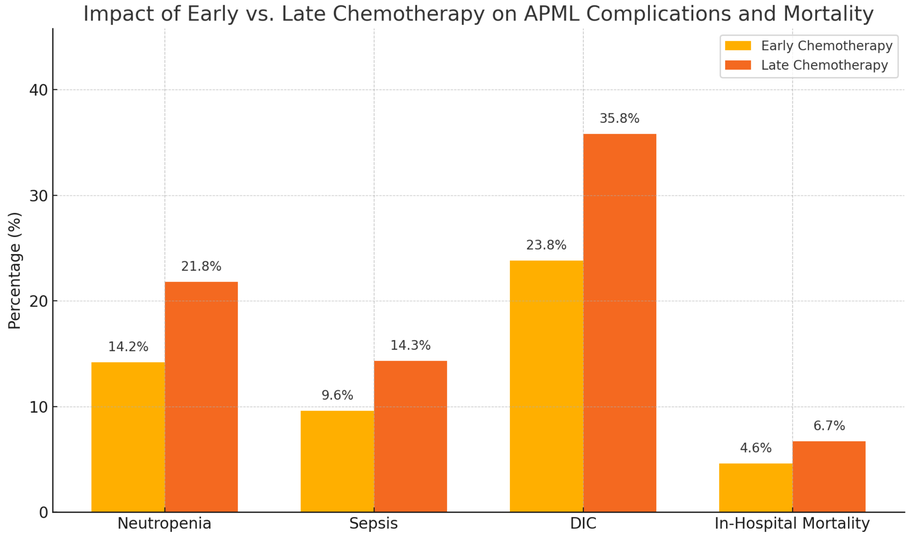
- **Sample Size**: 5,155 patients
  - Early: 1,300 (25.2%)
  - Late: 3,855 (74.8%)
- **Age**: Early group younger (45.4 vs. 47.6 years; $p < .001$)
- CCI Score: Lower in early group (3.9 vs. 4.2; $p < .001$)
- **Length of** Stay: 18.0 vs. 29.5 days ($p < .001$)
- **Hospital Charges**: $262,436 vs. $405,537 ($p < .001$)
- **Complication Rates (%):**
  - **Neutropenia**: 14.2 vs. 21.8
  - **Sepsis**: 9.6 vs. 14.3
  - **DIC**: 23.8 vs. 35.8
  - **In-hospital mortality**: 4.6 vs. 6.7 ($p < .01$ for all)

Summary

Early chemotherapy in APML was associated with younger age, fewer comorbidities, shorter hospitalization, lower cost, and significantly reduced complications including DIC and sepsis.

Discussion

Timely initiation of ATRA, ATO, or equivalent chemotherapy regimens significantly reduces morbidity and mortality in APML patients. These results emphasize the importance of clinical readiness to initiate treatment upon presentation.



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