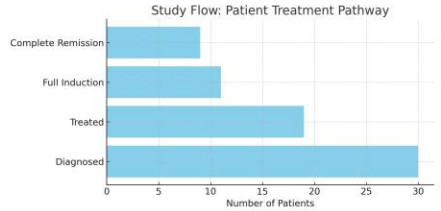
Treatment Outcomes of All-Trans Retinoic Acid, Arsenic Trioxide, and Daunorubicin in High-Risk Pediatric Acute Promyelocytic Leukemia: A Single-Center Study from South India

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BACKGROUND

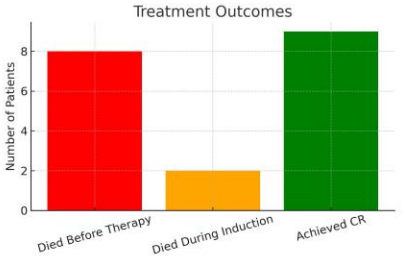
- Acute promyelocytic leukemia (APL) is a distinct subtype of AML, often curable in low/intermediate-risk groups.
- High-risk APL in children (WBC >10,000/µL) is rare and associated with high early mortality.
- ATRA + ATO ± anthracyclines (like daunorubicin) is now standard in adults.
- Limited pediatric-specific data exist for this combination, especially in high-risk groups.



METHODS

- Study design: Retrospective single-center study
- Duration: January 2015 – December 2023
- Participants: 30 children (<18 years) with newly diagnosed high-risk APL
- Definition of High-Risk: WBC >10,000/µL at presentation
- Treatment Protocol:
- Induction: ATRA + ATO + Daunorubicin
- Consolidation: ATRA + ATO

RESULTS



1. Baseline Characteristics:

- Total patients: 30
- Treated: 19 (63.3%)
- Males: 10 | Females: 9
- Median age: ~11 years

2. Early Mortality:

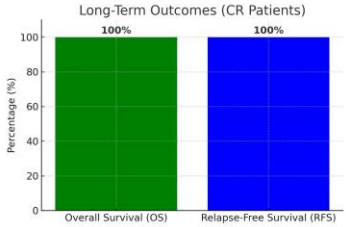
- 8 patients (42.1%) died before treatment initiation:
- 7 due to intracranial hemorrhage
- 1 due to renal failure

3. Induction Phase:

- 11 patients received full induction therapy
- 9 (81.8%) achieved complete remission
- 2 (18.2%) died during induction (ICH, ileal bleed)

COMPLICATIONS

- Differentiation syndrome: 3 patients
- QTc prolongation: 1 patient (required dose modification)



LONG TERM OUTCOMES

- All patients who achieved CR remained relapse-free during follow-up.
- 8-year Overall Survival (OS) = 100%
- 8-year Relapse-Free Survival (RFS) = 100%

DISCUSSION

- Early mortality remains a critical challenge due to bleeding at diagnosis.
- Once therapy is initiated, outcomes are excellent.
- ATRA+ATO regimens may reduce anthracycline exposure (lower cardiotoxicity), especially vital in pediatric populations.
- QT prolongation is manageable with close monitoring.
- Differentiation syndrome occurred at expected frequency; manageable with steroids.

CONCLUSION

- ATRA, ATO, and DNR induction followed by ATRA+ATO consolidation is safe, effective, and feasible in pediatric high-risk APL.
- Early identification and stabilization of patients is key to reducing pre-treatment mortality.
- Supports adapting adult APL protocols to pediatric populations in resource-limited settings.

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