CONVENIENT ACUTE PROMYELOCYTIC LEUKEMIA CONSOLIDATION ARSENIC TRIOXIDE DOSING SCHEDULE

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BACKGROUND

- The current treatment paradigm for acute promyelocytic leukemia (APL) includes all-trans retinoic acid (ATRA) and arsenic trioxide (ATO), with or without chemotherapy.
- While the typical approach involves remaining on one treatment protocol throughout a treatment course (induction + consolidation), we present three cases where the more convenient consolidation ATO dosing schedule via the AML17 protocol was used after an alternative induction protocol.

METHODS

- We included three patients who followed different induction and consolidation protocols due to their inability to adhere to the frequent visits required by the standard ATO consolidation plan.

CASES

Patient 1
- A 21-year-old man diagnosed with high-risk APL, treated with several doses of ATRA, ATO, and Gemtuzumab Ozogamicin (GO).
- Experienced an intracranial hemorrhage (ICH), leading to complications in treatment, and was switched to a prolonged course of ATRA monotherapy.
- Achieved measurable residual disease negative (MRD−) status and completed four cycles of ATRA/ATO consolidation per the AML17 protocol, with significant neurological recovery.

Patient 2
- An 81-year-old woman with low-risk APL, treated with induction ATRA/ATO per the APL0406 protocol.
- After Achieving morphological remission, she completed four cycles of ATRA/ATO consolidation per the AML17 protocol.
- Due to her frailty and elevated transaminases, her ATO was dosed at a 67% reduction. She remains MRD− post-treatment.

Patient 3
- A 55-year-old woman with high-risk APL complicated by ICH.
- She received induction ATRA/ATO/GO per APL0406 and was transitioned to ATRA/ATO consolidation per AML17.
- She completed her four cycles of ATO consolidation and remains MRD− post-treatment, as confirmed by peripheral blood qPCR.

Figure 1: Comparison of ATO Consolidation Phase Between AML17 and APL0406 Protocol

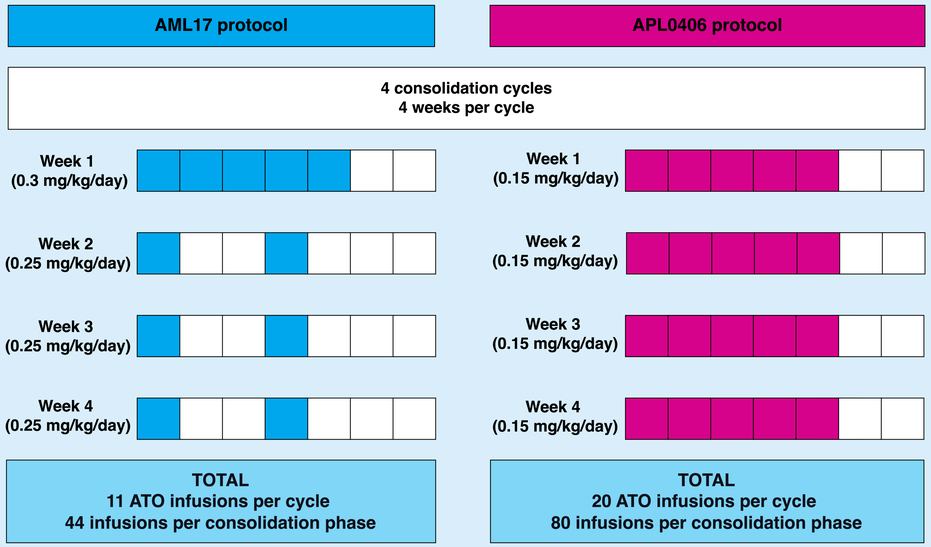


Table 1: Clinical and molecular characteristics of the patients

Characteristics	Patient 1	Patient 2	Patient 3
Age (years)	21	81	55
Sex	Male	Female	Female
WBC (x 10^9/L)	57.8	3	49
Absolute neutrophil count (x 10^9/L)	0.58	0.69	26
Platelet counts (x 10^9/L)	36	65	35
Risk level	High	Low	High
PML-RARA transcripts	BCR3	BCR1	BCR3
Mutations	FLT3-ITD	WT1	No
Additional cytogenetic abnormalities	MYC	No	No
Duration of MRD negativity by PML-RARA qPCR (months)	26	24	11

CONCLUSION

- All three patients have maintained MRD− remission, with duration of MRD negativity ranging from 11 to 26 months. Despite the diverse patient profiles and initial complications, all patients were able to receive their full course of ATO consolidation therapy without any missed doses.
- The standard of care consolidation schedule followed widely is APL0406, which requires 20 infusions per cycle. The AML17 schedule showed similar results with only 11 infusions per cycle. This alternate dosing schedule sustains high remission rates with similar toxicity while significantly reducing the burden of infusion visits.
- This is especially critical for patients with mobility/transportation issues, including frailer patients, while also lowering associated costs/utilization and time toxicity for patients (36 fewer infusion visits total per patient).
- This is the first report of successfully switching from APL0406 induction to AML17 consolidation. Adopting this regimen more widely could improve the quality of life for many APL patients.

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