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BONE MARROW NECROSIS IN APL

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INTRODUCTION

- Acute promyelocytic leukemia (APL) is a distinct variant of acute myeloid leukemia with abnormal promyelocytes.
- Arsenic trioxide and all-trans retinoic acid (ATRA) combination provides better outcomes than ATRA and chemotherapy for low- or intermediate-risk APL.
- Herein we describe a case of bone marrow (BM) necrosis after induction treatment in a patient with APL.

CASE REPORT

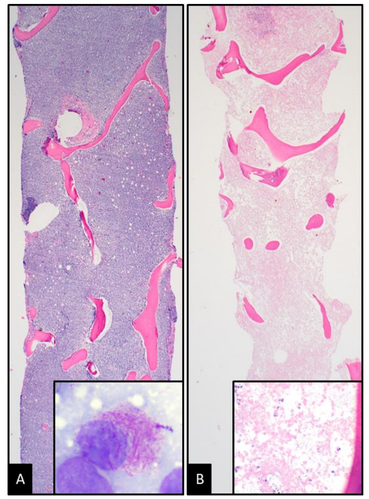
- 49-year-old man presented with weakness, fatigue, and fevers for the past few weeks.
- Complete blood count: hemoglobin 7.9 g/dL, platelets 26,000 x 10^3/µL, white cell count 2600 x 10^3/µL.
- Peripheral blood differential was concerning with 71% blasts.
- BM biopsy: APL with 66% blasts, cytogenetics showed t(15;17), and *PML::RARA* transcript was detected.
- He was started on arsenic trioxide and ATRA because of intermediate-risk APL.

CASE REPORT CONTINUED

- Diagnosis of disseminated intravascular coagulation was made and supportive treatment started.
- He developed differentiation syndrome and was started on dexamethasone.
- The patient underwent repeat BM biopsy on day 32 of starting treatment. It did not show any definitive morphologic or immunophenotypic evidence of APL.
- However, it was significant for predominantly necrotic BM with minute foci of partially viable marrow showing trilineage hematopoiesis, cellularity less than 5%, no overt dysplasia, and 2% blasts.
- Chemotherapy was held, and he was given 3 weeks to recover; his counts subsequently improved.
- Consolidation chemotherapy with arsenic trioxide and ATRA was then started.
- After cycle 1 of consolidation chemotherapy, BM biopsy and testing for *PML::RARA* was repeated; BM biopsy showed trilineage hematopoiesis, no evidence of acute leukemia, and no *PML::RARA* transcripts were detected in the blood or the BM.
- He completed consolidation chemotherapy, and the leukemia is currently in remission.

CONCLUSIONS

- APL has been associated with BM necrosis.
- The necrosis is suggested to be secondary to increased leukemic cell oxygen demand secondary to ATRA.
- In conclusion, early and adequate treatment interruption helps count recovery.
- BM necrosis after induction therapy in APL is not considered a contraindication for resuming treatment.



A. Diagnostic bone marrow trephine core biopsy. Inset: Abnormal promyelocyte/blast-equivalent with numerous Auer rods.
B. Post-treatment bone marrow trephine core biopsy with extensive necrosis. Inset: Necrotic cells and apoptotic debris.

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