Oncology, Nuclear Medicine and Transplantology
(eISSN 3105-8760)

Conference Abstract A19

Treatment of Acute Promyelocytic Leukemia During Pregnancy: A Clinical Case Report

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Proceedings of III International Scientific and Practical Conference "Current Issues of Bone Marrow Transplantation and Hematology", October 11-12, 2025, Astana, Kazakhstan

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Background

Acute promyelocytic leukemia (APL) is a rare subtype of acute leukemia characterized by an excessive proliferation of promyelocytes in the bone marrow, associated with the chromosomal translocation t(15;17) and the mutant PML-RARA gene.

The occurrence of acute leukemia during pregnancy is uncommon, occurring in fewer than 1 case per 100,000 pregnancies. APL is considered as an urgent condition and initiation of chemotherapy is required as soon as the diagnosis is confirmed.

Case Report

A 33-year-old patient was delivered to hospital at 34 weeks of gestation. At 32 weeks, she had been found to have mild anemia, moderate thrombocytopenia, and leukopenia. Since then, her condition has been monitored by general practitioners and obstetrician-gynecologists. During physical examination hemorrhagic symptoms were not detected, though she was urgently hospitalized to NROC by reason of progressive cytopenia. Laboratory results: agranulocytosis 0.9×10^9/L, hemoglobin 105 g/L, platelets 43×10^9/L. Bone marrow aspirate revealed 66.8% blasts. PCR confirmed the PML/RARA mutant gene with t(15;17) accounting for 14%, which established the diagnosis of APL. Fetal ultrasound demonstrated placental circulation disturbance grade I and nuchal cord. Induction therapy according to the AIDA protocol was initiated: idarubicin 12 mg/m² on days 2, 4, 6, and 8, combined with ATRA 45 mg/m² per day until remission.

At 37 weeks (on 18th day of chemotherapy), the patient delivered a healthy female neonate weighing 2446 g and measuring 46 cm, with Apgar scores of 7/8. No congenital malformations were identified. Neonatal laboratory findings: WBC 4.15×10^9/L, platelets 189×10^9/L, hemoglobin 162 g/L, RBC 4.51×10^{12}/L.

By 38th day of chemotherapy, bone marrow evaluation showed 1.8% blasts, with negative FISH for t(15;17), confirming both hematologic and molecular remission.

Results

The patient subsequently completed three consolidation courses of AIDA-based chemotherapy. She remains for 2,5 years on maintenance therapy, consisting of ATRA 45 mg/m² for 15 days every 3 months, in combination with mercaptopurine 50 mg/m² and methotrexate 15 mg/m² daily (excluding ATRA days). Monitoring of molecular and bone marrow remission is performed every three months in accordance with clinical guidelines.

The most recent assessment from May 2025 demonstrated persistence of both hematologic and molecular remission. Follow-up of the child demonstrated normal hematologic parameters: WBC 11.4×10^9/L, hemoglobin 112 g/L, platelets 452×10^9/L.

Discussion

Idarubicin crosses the placental barrier and may theoretically exert adverse effects on the fetus."

In a prospective cohort of 58 infants exposed to chemotherapy during the first trimester, no congenital anomalies were observed, and subsequent physical, neurological, and cognitive development remained within normal limits. Similarly, French studies assessing chemotherapy during the later stages of gestation reported no congenital abnormalities.

Conclusion

This clinical case describes the successful treatment of acute leukemia during pregnancy.

Through an integrated multidisciplinary effort, complete remission was achieved and a healthy infant was delivered. Such cases are of particular relevance in countries with high birth rates, where similar clinical cases may be encountered more frequently. A coordinated approach involving hemato-oncologists, obstetricians and other specialists is the key determinant of successful management of acute promyelocytic leukemia in pregnancy.

The safety of both the mother and the fetus can only be ensured through close interdisciplinary collaboration.