CASE STUDY

103. Acute Myeloid Leukemia in A Young Adult: Diagnostic Insights from a Case Report

Jainishkumar Morker[1], Dr. Pinal Shah, Dr. Mubin Patel, Dr. Rahul Modi, Dr. Deepshikha Dave, Dr. Krutika Patel

[1] Government Medical College, Surat, India.

Background: Acute myeloid leukemia (AML) is a clonal hematopoietic stem cell disorder. It predominantly affects older adults and is characterized by the proliferation of immature myeloid cells and bone marrow failure. Diagnosis can be made using peripheral smear, cytochemistry, immunophenotyping, and cytogenetics, as early recognition is crucial for management and prognosis.

The Case: 21 year old male presented with fever, leukocytosis, mild anemia, and 75% of the blasts were medium-to-large size, with an irregular nuclear membrane, finely granular chromatin, nucleoli in peripheral blood smear with the presence of Auer rods, normocytic normochromic RBCs, and reduced platelets. Special stains such as myeloperoxidase (MPO) positivity, Sudan Black stain positivity, Periodic Acid-Schiff (PAS) negativity, and multicolor flow cytometry using CD45 vs. side scatter gating confirmed the diagnosis of Acute Myeloid Leukemia. Moreover, cytogenetic and molecular studies are recommended to improve prognosis and guide targeted therapy.

Conclusion: This case demonstrates how a thorough morphological evaluation and specific cytochemical tests can swiftly guide the diagnostic considerations for AML. Multicolor flow cytometry confirms lineage and facilitates the classification necessary for treatment planning. In young adults, where early intervention can significantly impact outcomes, combining traditional and modern diagnostic methods reduces the time to diagnosis and expedites referrals to the hematology/oncology department. This case underscores the ongoing educational and practical importance of peripheral smears and cytochemistry, especially in environments where immediate access to cytogenetic or molecular testing is limited.

Table 1. Immunophenotyping showing Myeloid Monocytic Markers Maturation Markers

CD34	Bright	Positive
CD13	Bright	Positive
CD33	Moderate	Positive
CD117	Moderate	Positive
CD64	Dim	Positive
HLA-DR	Dim	Positive
CD45	Dim	Positive

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