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Acute Promyelocytic Leukemia with Basophilic Differentiation A Rare Variant

Arias A.F.P. et al.: Acute Promyelocytic Leukemia with Basophilic Differentiation A Rare Variant

Andrés Felipe Melo Arias, Silvia Escribano Serrat, Marta Polo Zarzuela, Cristina García Sánchez, Miguel Gómez Álvarez, Eduardo Anguita, Celina Benavente Cuesta, Fernando Ataúlfo González Fernández

Department of Hematology and Hemotherapy, Hospital Clínico San Carlos, IdiSSC, Madrid, Spain

Silvia Escribano Serrat M.D., Department of Hematology and Hemotherapy, Hospital Clínico San Carlos, IdiSSC, Madrid, Spain

0000-0001-9499-8999
+34 666 95 99 25
silvia.escribano.serrat@gmail.com

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A 46-year-old man presented after a colon surgery with hemoglobin, neutrophils and platelet counts of 106g/L, $0.63x10^9$/L, and $102x10^9$/L, respectively. Coagulation tests showed aPTT, PT, Clauss fibrinogen and D-dimer of 26.9s, 15.4s, 164mg/dL, and 36,727ng/mL. Peripheral blood smear revealed anisopoikilocytosis, leukoerythroblastic reaction, and blasts with azurophilic granules, without Auer rods. Bone marrow aspirates showed 60% cells being abnormal promyelocytes with azurophilic granules peroxidase-staining positive (Figure 1). Inmunophenotyping detected 76% of CD117+, CD13+(dim), CD33+(bright), CD56+, CD123+(dim), CD9+(dim), MPO+, CD34-, HLA-DR-, and CD203c- abnormal promyelocytes, 4% of these cells showed CD34+(10%), CD35+, CD22+, CD203c+, CD9+, CD123+(bright), MPO+, CD117-, and HLA-DR- (Figure 2). Tryptase levels were 7.55µg/L. RT-PCR demonstrated a bcr3 PML/RARA transcript without additional alterations in conventional karyotype or FISH. An acute promyelocytic leukemia (APL) with basophilic-differentiation was diagnosed. Treatment with ATRA and ATO was initiated, reaching morphologic CR, negative MRD, and 0.1% PML/RARA gene rearrangement. No bleeding complications or hyperhistaminemia-related symptoms occurred during treatment.

APL with basophil-maturation represents one-third of APL. Basophil-associated markers, CD203c and CD22, have predictive ability for increased bleeding risk and reduced overall survival. Severe bleedings are still the main cause of treatment failure and early mortality in APL patients, making the diagnosis of this variant important[1-5].

Ethics

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent: Informed consent was obtained from the participant included in the study.

Authorship Contributions

AFMA and SES contributed equally as co-first authors. AFMA, SES and FAGF designed the research, analyzed the data and wrote the paper. MPZ and CBC requested the studies. CGS and MAG performed the flow cytometry analysis. EA accomplished the molecular and genetic studies. All authors read and approved the manuscript.

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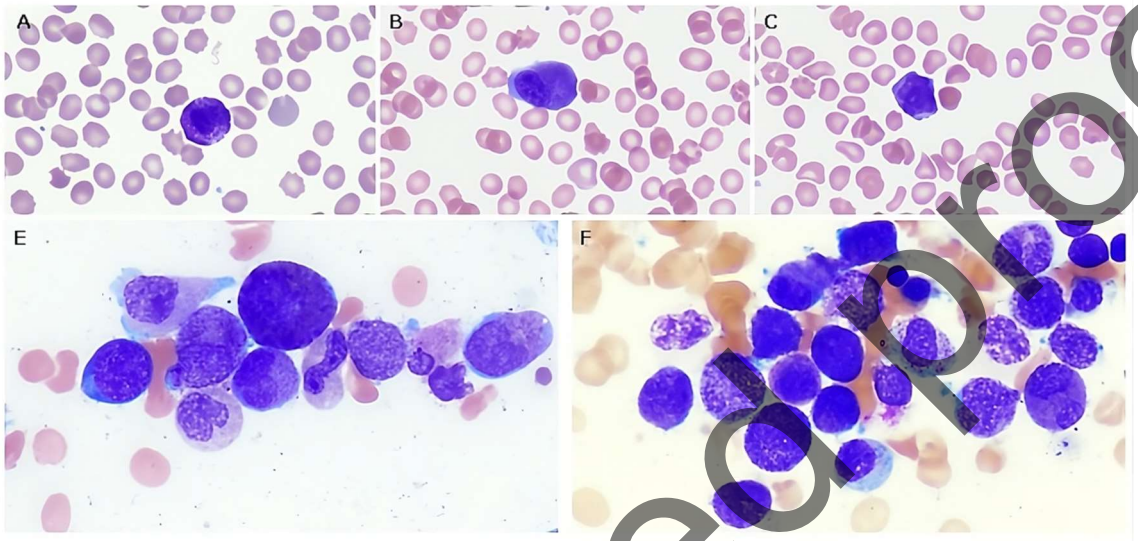

Figure 1. Panels A-C: Wright-Giemsa stain; x100 objective, original magnification x1000. Peripheral blood smear showing blasts with intense azurophilic granules. Panels E-F: Wright-Giemsa stain; x100 objective, original magnification x1000. Bone marrow smear revealing blasts with irregular nuclei, some of them binucleated, dispersed chromatin, prominent nucleoli, and frequent cytoplasmatic azurophilic granules.

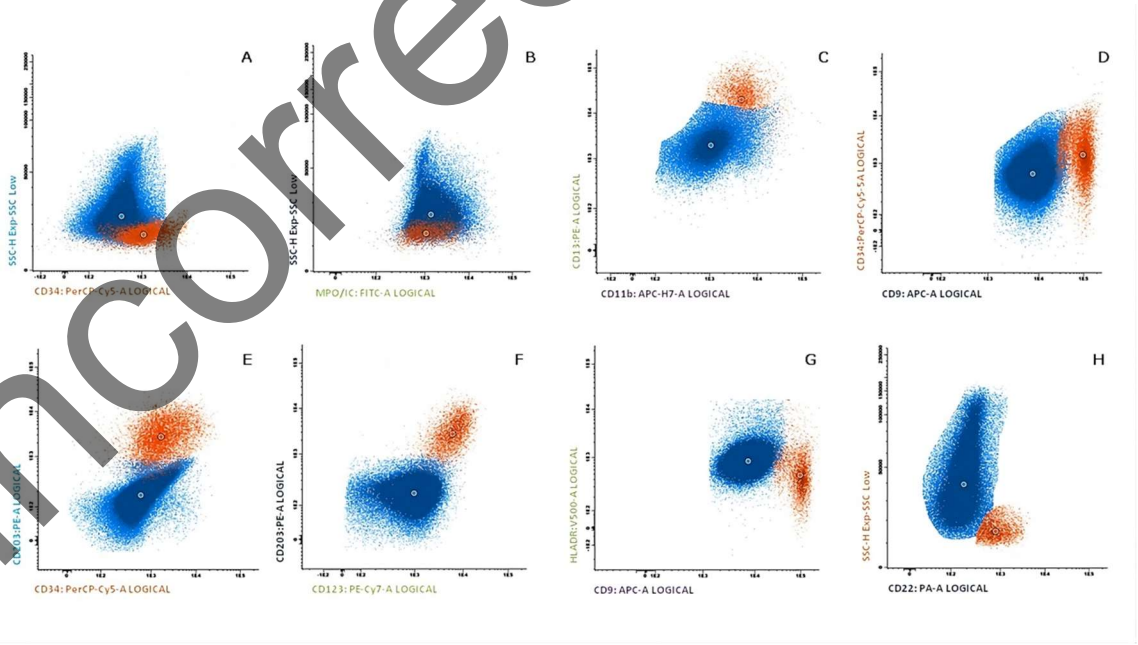

Figure 2. Panels A-H. Bone marrow flow cytometry analysis. Two populations are identified, which are marked with blue and orange. The blue population shows abnormal promyelocytes positive for CD117, CD13 (dim), CD33, CD56, and MPO which represents the 76% of the total cellularity. The orange population reveals 4% of abnormal cells with basophilic differentiation positive for CD34, CD35, CD22, CD203c, CD9, CD123 (bright), and MPO.