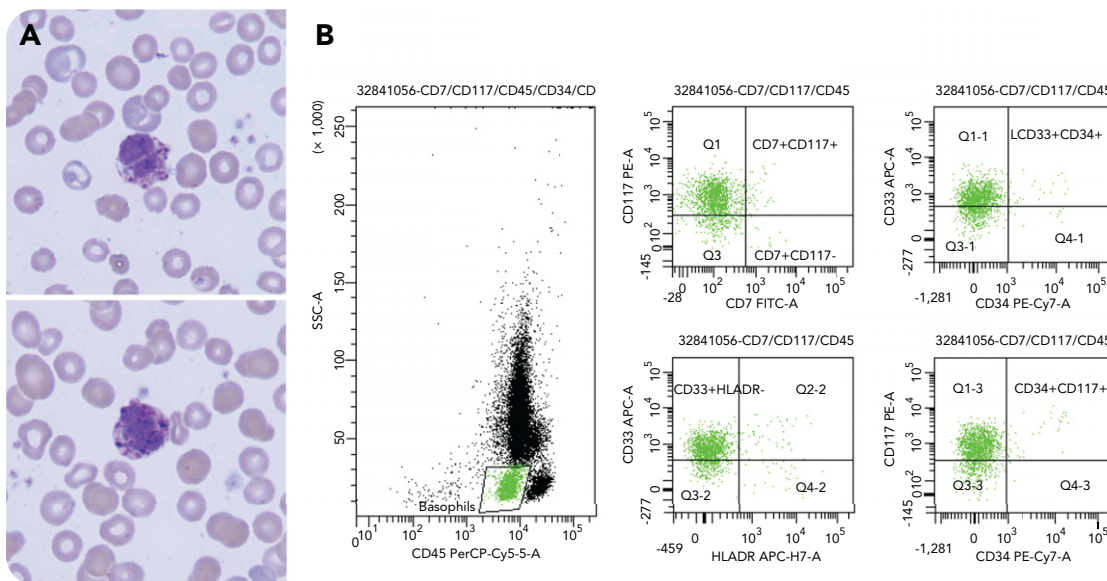




Morphology and flow cytometry of atypical basophils

Christopher A. Tormey and Alexa J. Siddon, Yale School of Medicine



A 74-year-old man was admitted following a syncopal episode and was incidentally found to have leukocytosis with basophilia. A peripheral smear evaluation revealed basophils with atypical nuclear lobation and decreased granularity (panel A; modified Wright's stain, original magnification $\times 100$). A bone marrow biopsy revealed a hypercellular, myeloid-predominant marrow with megakaryocyte clustering and dysplasia but no increase in blasts. Flow cytometry of both the blood and marrow revealed an increased population of CD45^{mod+}, atypical-immunophenotype basophils that were dimly positive for CD33 (atypically decreased) and CD117 (atypically increased) and negative for CD34 (panel B). Molecular studies were notable for a *JAK2* V617F mutation and negative for *BCR-ABL*. Next-generation sequencing identified oncogenic variants in *IDH2*, *SRSF2*, and *ASXL1*. Karyotype was normal, as were

fluorescence in situ hybridization studies. The patient was ultimately diagnosed with a myelodysplastic/myeloproliferative neoplasm.

This case is an illustrative example of atypical basophilia in myeloid neoplasms. Classically, chronic myeloid leukemia with t(9;22) presents with basophilia; notably, however, it can be seen in other myeloproliferative and myelodysplastic/myeloproliferative neoplasms. Normal basophils have segmented nuclei (often obscured by coarse basophilic granules) and are CD45^{mod+}/CD34⁻/CD33⁺/CD117⁻/CD38⁺⁺/HLA-DR⁻/CD64⁻/CD123⁺⁺. It has been shown that in myeloid neoplasms, basophils are increased and often have decreased CD38 expression and variable expression of CD34/HLA-DR/CD117/CD64/CD123, which can be easily mistaken for blasts.



For additional images, visit the ASH Image Bank, a reference and teaching tool that is continually updated with new atlas and case study images. For more information, visit <http://imagebank.hematology.org>.



blood[®]

2018 132: 552

doi:10.1182/blood-2018-05-850073

Morphology and flow cytometry of atypical basophils

Christopher A. Tormey and Alexa J. Siddon

Updated information and services can be found at:

<http://www.bloodjournal.org/content/132/5/552.full.html>

Articles on similar topics can be found in the following Blood collections

[BloodWork](#) (637 articles)

[Free Research Articles](#) (5123 articles)

[Myeloid Neoplasia](#) (1857 articles)

[Phagocytes, Granulocytes, and Myelopoiesis](#) (664 articles)

Information about reproducing this article in parts or in its entirety may be found online at:

http://www.bloodjournal.org/site/misc/rights.xhtml#repub_requests

Information about ordering reprints may be found online at:

<http://www.bloodjournal.org/site/misc/rights.xhtml#reprints>

Information about subscriptions and ASH membership may be found online at:

<http://www.bloodjournal.org/site/subscriptions/index.xhtml>