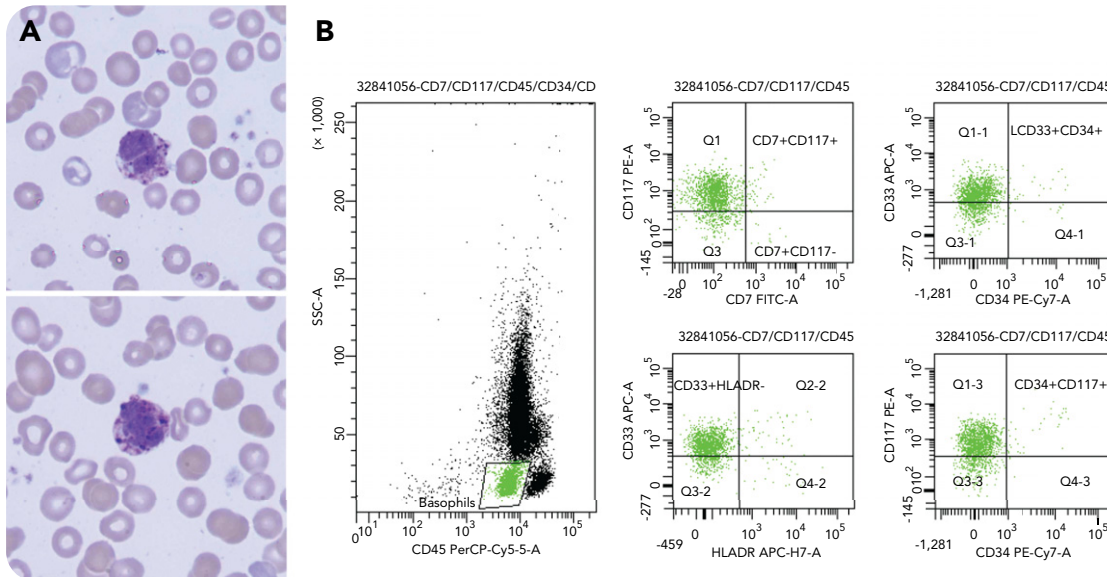


Morphology and flow cytometry of atypical basophils

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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.