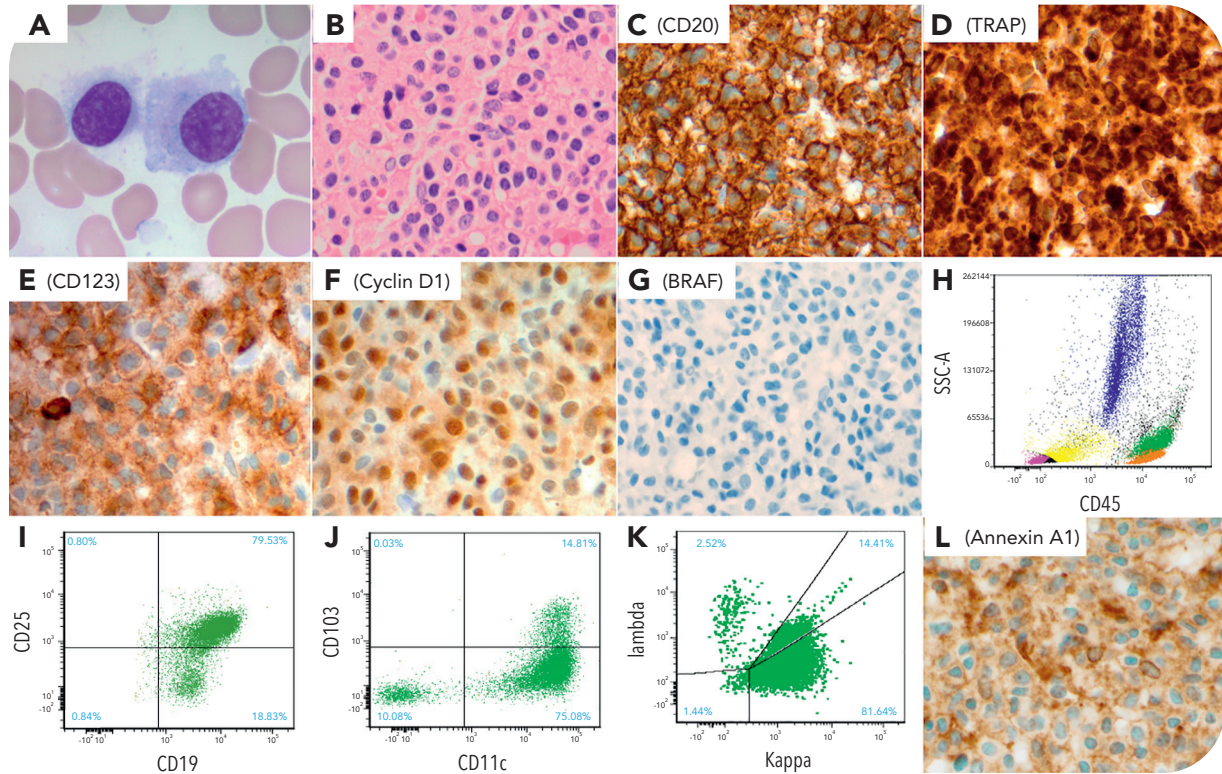


BRAF-negative, CD103-negative hairy cell leukemia

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A 54-year-old man who presented with left-upper-quadrant abdominal pain was found to have splenomegaly, peripheral blood neutropenia, lymphocytosis, and thrombocytopenia. Bone marrow biopsy revealed moderate fibrosis and a diffuse infiltrate of lymphoid cells with abundant cytoplasm, cytoplasmic projections, and small nucleoli (panels A and B: Wright and Giemsa stain, 100× objective, total magnification [TM] ×1000 [A]; hematoxylin and eosin stain, 40× objective, TM ×400 [B]). The lymphoid infiltrates expressed cluster of differentiation (CD)20, tartrate-resistant acid phosphatase (TRAP), CD123, and cyclin D1, but they were negative for BRAF by immunohistochemistry (panels C–G: 40× objective, TM ×400). Flow cytometry analysis showed an absence of monocytes and confirmed a kappa-

restricted B-cell population expressing CD19, CD25, and CD11c, but negative for CD103 (panels H–K). Chromosome analysis was normal. Real-time quantitative polymerase chain reaction did not detect a BRAF V600E mutation. Additional immunostaining for annexin A1 was positive in the lymphoma cells (panel L: 40× objective, TM ×400). The patient was diagnosed with hairy cell leukemia (HCL).

The lack of both BRAF and CD103 expression in HCL is extremely rare. It created a diagnostic challenge, as a TRAP immunostain is not 100% specific for HCL. A positive annexin A1 immunostain, which is the most specific marker for HCL, allowed confident confirmation of the diagnosis.