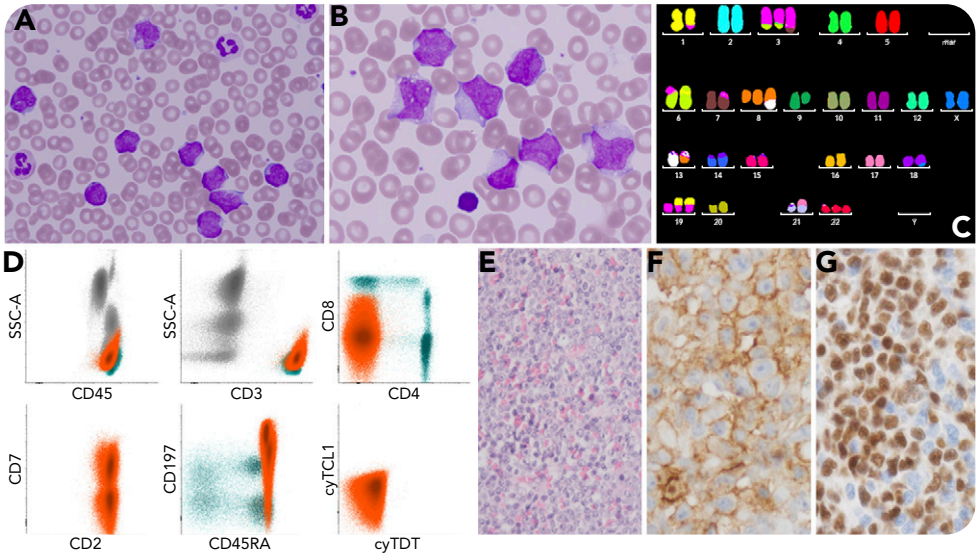
bloodwork
images in hematology

Peripheral T-cell lymphoma, NOS, with rapidly progressing leukocytosis mimicking acute lymphoblastic leukemia

Tomas Jelinek and Jana Zuchnicka, University Hospital Ostrava



A 71-year-old woman presented with a history of peripheral lymphadenopathy progressing over several weeks. A complete blood count showed mild leukocytosis (14.5 × 10^9/L) without anemia or thrombocytopenia. During diagnostic workup, peripheral leukocytosis had rapidly progressed and reached 106 × 10^9/L in 24 days after the initial visit. The peripheral blood smear showed the presence of 43% of medium- or large-sized atypical lymphocytes with mostly irregularly shaped nuclei, higher nuclear/cytoplasmic ratio, and immature, almost blastic chromatin structure with ≥1 prominent nucleoli (panels A and B, May-Grünwald-Giemsa staining, original magnification ×1000). Flow cytometry detected pathological population of double-negative ($CD4^-$/$CD8^-$) T cells representing 58% of leukocytes with the following immunophenotype: $CD1a^-$/$CD2^+$/cy$CD3^+$/s$CD3^+$/$CD5^+$/CD7het (40%)/$CD26^+$/$CD28^+$/$CD30^-$/$CD34^-$/$CD45^+$/$CD45RA^+$/$CD45RO^-$/$CD57^+$ (31%)/ $CD99^+$/$CD197^+$/HLADR$^-$/cyTCL1$^-$/TCRab$^+$/TCRgd$^-$/cyTdT$^-$. This suggested a mature T-lymphoproliferative disorder (peripheral T-cell lymphoma [PTCL], not otherwise specified [NOS] type) rather than acute lymphoblastic leukemia (panel D; cyTDT, cytoplasmic terminal deoxynucleotidyl transferase; SSC-A, side scatter area). Cytogenetics revealed a complex karyotype with gains of 1q, 3p, 8q24 (CMYC gene) 17q, 19q, and 22q and interstitial deletion of 9q (panel C, multicolor fluorescence in situ hybridization). Histological assessment of the cervical lymph node confirmed the PTCL, NOS diagnosis (panel E, hematoxylin and eosin staining, original magnification ×200; panel F, CD3 staining, original magnification ×400; panel G, KI67 staining, original magnification ×200).

After the first cycle of cyclophosphamide, doxorubicin, vincristine, and prednisone (CHOP) chemotherapy, the peripheral blood count normalized and pathological lymph nodes promptly regressed.

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