A 9-year-old boy was diagnosed with stage III ALK-positive anaplastic large cell lymphoma (ALCL) with no evidence of bone marrow and central nervous system disease.

Seven months later he had a normocytic anemia (hemoglobin 79 g/L), severe thrombocytopenia (platelets $15 \times 10^9/L$), and leukocytosis (white blood cell count $50.8 \times 10^9/L$). The automated differential showed neutrophils $28.5 \times 10^9/L$, monocytes $13.2 \times 10^9/L$, and “other” cells $4.6 \times 10^9/L$. The peripheral blood smear (shown) contained large immature cells with basophilic cytoplasm and prominent cytoplasmic vacuolation. Karyorrhexis, pyknosis, and karyolysis were also seen in the large immature cells. Red blood cell morphology showed numerous echinocytes (also known as burr cells), which were likely a consequence of renal failure (creatinine 162 lmol/L, urea 12.9 mmol/L).

Flow cytometric immunophenotyping on the peripheral blood showed that 55% of the cells expressed CD30, HLA-DR, and partial CD13. The cells expressing bright CD30 also expressed CD25. A diagnosis of leukemic transformation of ALCL was made. Microscopic review of the peripheral smear clarified the “automated differential” that was inaccurately reported.
Leukemic transformation of anaplastic large-cell lymphoma

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