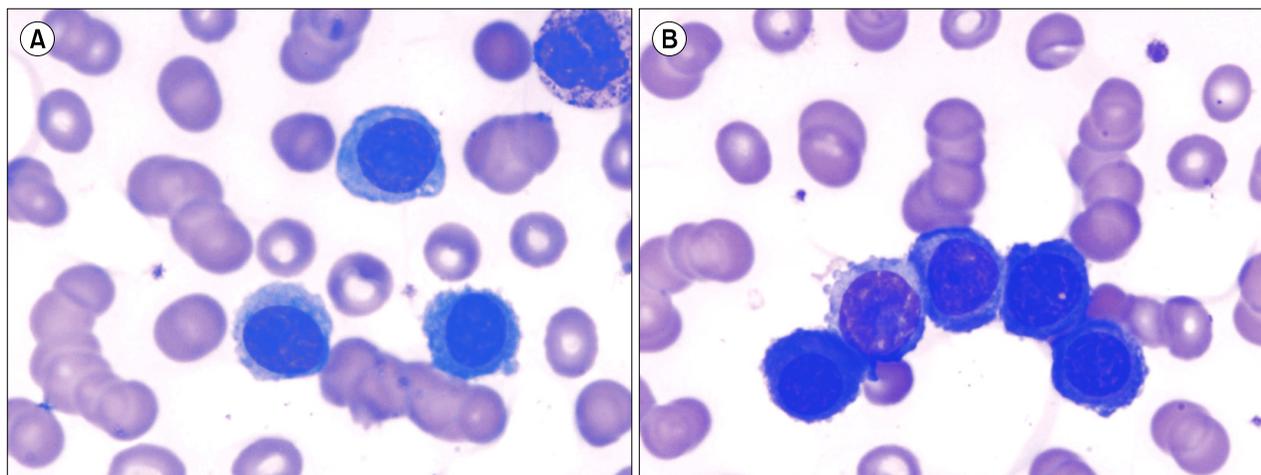


Plasma cell leukemia with rouleaux formation involving neoplastic cells and RBC

Sung Ran Cho, M.D., Ph.D.

Department of Laboratory Medicine, Ajou University School of Medicine, Suwon, Korea



A 77-year-old man visited our hospital complaining of fever, excessive sputum production, and dyspnea. On admission, the laboratory values were as follows: Hb, 9.6 g/dL; WBC, $24.7 \times 10^9/L$; platelets, $181.0 \times 10^9/L$; calcium, 10.4 mg/dL; total protein, 11.6 g/dL; albumin, 2.3 g/dL; and creatinine 1.1 mg/dL. Peripheral blood smear showed immature plasma cells (plasmablasts), accounting for 58% of the leukocytes, and marked rouleaux formation (A). Interestingly, rouleaux formation of the neoplastic cells was also noted (B). Bone marrow study showed plasmablasts, accounting for 93% of all nucleated cells. Serum protein electrophoresis and immunotyping revealed a monoclonal peak of IgG and lambda light chain type. The amount of M-protein was 6.0 g/dL. High-resolution computed tomography of both lungs revealed multifocal consolidations with fuzzy marginated centrilobular pattern nodules, which were consistent with the findings in multifocal bronchopneumonia. Plasma cell leukemia is a variant of plasma cell myeloma with clonal plasma cell numbers in peripheral blood exceeding $2.0 \times 10^9/L$ or 20% of the leukocyte differential count. Rouleaux formation, involving the stacking of RBCs upon one another so that they resemble a stack of coins, is particularly marked in paraproteinemia. The patient showed a rouleaux formation involving not only RBCs but also neoplastic cells.