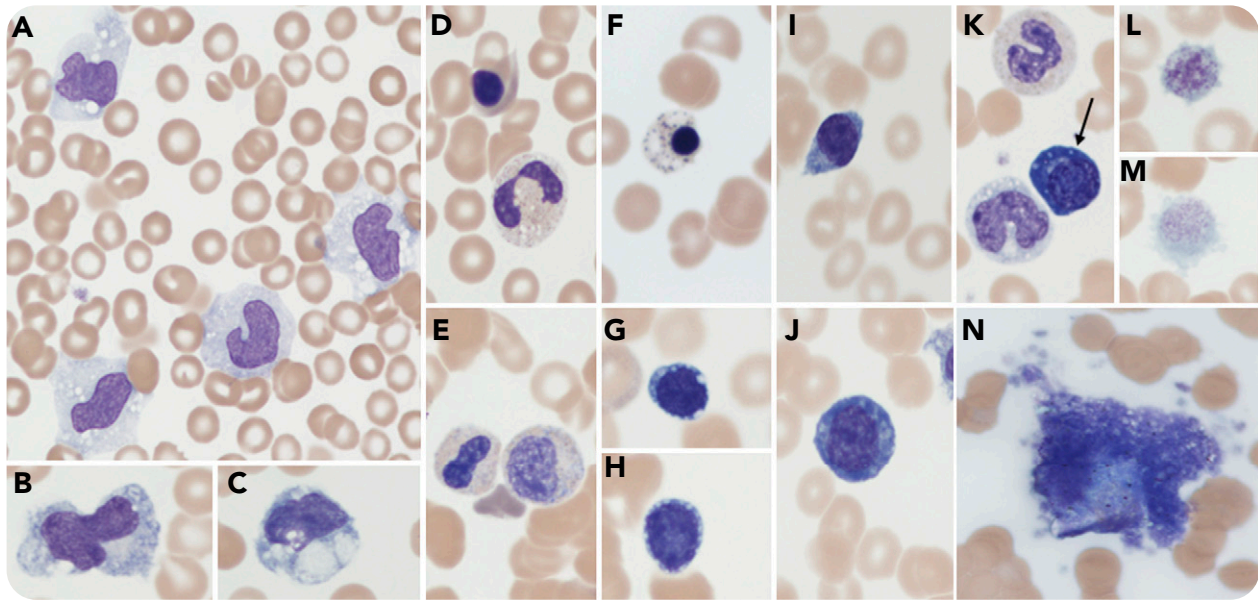


Morphological changes in a case of SARS-CoV-2 infection

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An 81-year-old man presented with shortness of breath, fever, hypoxia, and widespread diffuse infiltrates on a chest radiograph. Oral swab testing was positive for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; RNA reverse transcriptase–polymerase chain reaction RdRp gene). Despite therapy with oxygen and antibiotics, the patient deteriorated and required ventilator support. Comorbidities included hypertension, chronic renal disease, and restrictive lung disease. A blood film was prepared upon transfer to intensive care, 48 hours prior to death. Laboratory parameters at that time were: hemoglobin, 90 g/L; neutrophils, $2.78 \times 10^9/L$; lymphocytes, $1.06 \times 10^9/L$; monocytes, $2.5 \times 10^9/L$; and platelets, $44 \times 10^9/L$. Inflammatory markers linked to poor outcome rose during the admission with C-reactive protein reaching 406 mg/L and troponin reaching 1852 ng/L. The blood film (panels A-N; original magnification $\times 1000$ for all panels; May-Grünwald–Giemsa

stain) revealed: increased pleomorphic (panel A) and vacuolated monocytes (panels B-C); leukoerythroblastic features (panels D-E); nucleated red cells with dyserythropoiesis/basophilic stippling (panel F); lymphopenia, some with cytoplasmic vacuolation (panels G-H); lymphoplasmacytoid lymphocytes (panels I-J); an occasional plasma cell (panel K arrow); thrombocytopenia, giant platelets (panels L-M); and a circulating megakaryocyte (panel N).

None of these features is pathognomonic of SARS-CoV-2 infection but, in addition to previously reported lymphopenia and left-shifted granulopoiesis, we also note monocytosis, giant platelets, dyserythropoiesis, lymphoplasmacytoid lymphocytes, and leukoerythroblastic features commonly seen in patients requiring intensive support.