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MORPHOLOGY UPDATE

Plasmacytoid lymphocytes in SARS-CoV-2 infection (Covid-19)

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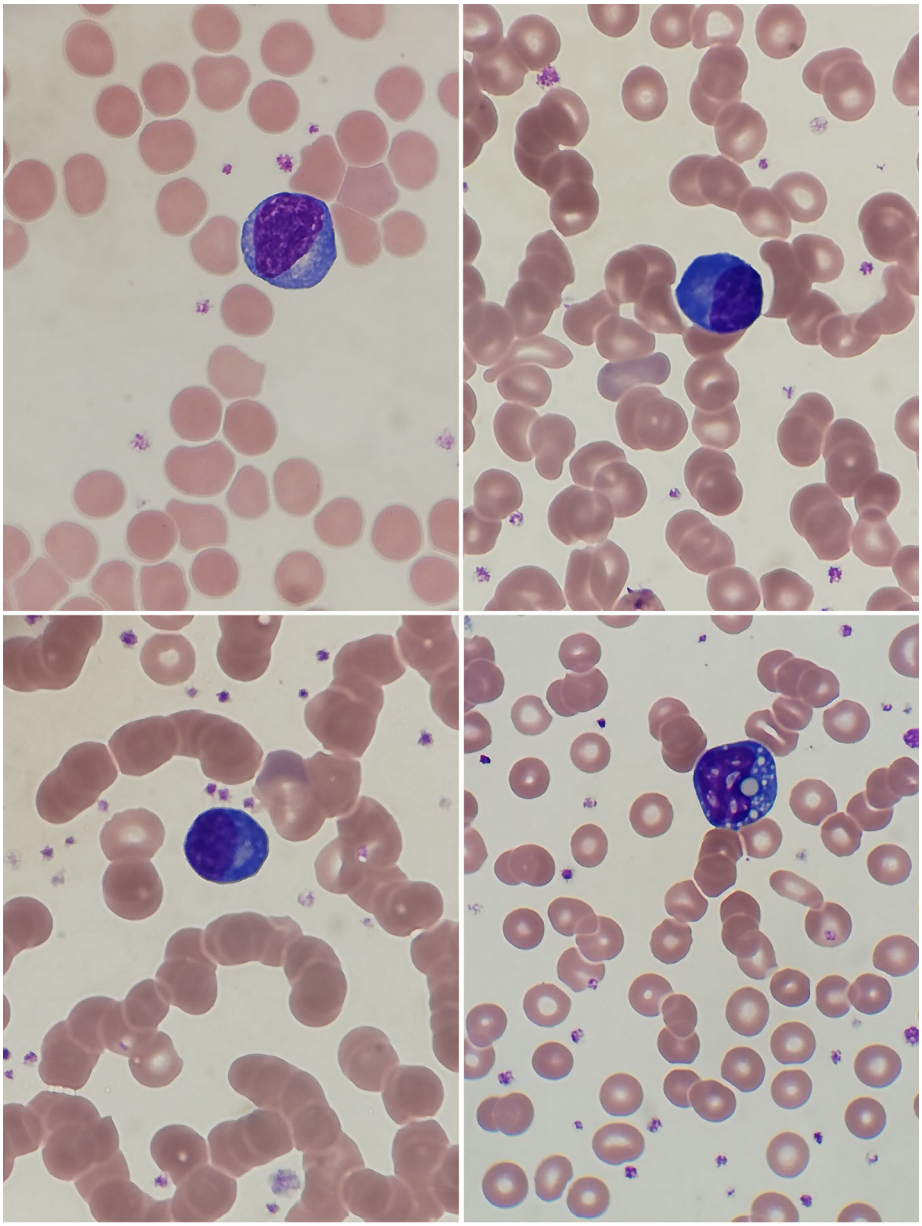

A 59-year-old man with no known past medical history presented to the emergency department with dyspnea, abdominal pain and malaise. Clinical assessment revealed hypoxia with bibasal crepitations on chest auscultation. A chest radiograph showed extensive bilateral air space opacification involving all zones. He was hospitalized with suspicion of infection with the novel coronavirus, SARS-CoV-2, later proven by positive RT-PCR. Blood tests showed multi-organ failure with deranged liver function tests (alkaline phosphatase 611 IU/L, alanine aminotransferase 208 IU/L, gamma-glutamyl transferase 435 IU/L), acute kidney injury (serum creatinine 197 μmol/L), and raised inflammatory markers (C-reactive protein 137 mg/L, ferritin 3303 μg/L). His blood count showed a hemoglobin concentration of 109 g/L, platelet count of 921×10^9/L and total white cell count of 9.8×10^9/L with a neutrophil count of 8.5×10^9/L, and a lymphopenia of 0.9×10^9/L. His blood film showed atypical lymphocytes that appeared reactive. Prominent among these were lymphoplasmacytoid lymphocytes with an eccentric nucleus, deeply basophilic cytoplasm and a prominent paranuclear hof (top and bottom left, ×100 objective). Lymphocytes with prominent cytoplasmic inclusions (Mott cells) were also seen (bottom right).

The patient was treated with supplementary high-flow oxygen, intravenous antibiotics and intravenous fluids. He recovered and became oxygen-independent on day 9 post-admission, and was discharged on day 10.

The newly emerged pandemic caused by this novel coronavirus presents a challenge to health services across the world. In studies reported from China, lymphopenia was observed in 72 and 85% of patients[1,2] with reduced numbers of T cells (CD4-positive and CD8-positive), B cells and natural killer (NK) cells.[1] A favorable clinical course correlated with an increasing lymphocyte count and improvements in B cell numbers and CD8-positive T cell numbers; multivariate analysis showed an adverse significance of reduced B cells, reduced CD8-positive T cells and an increased CD4/CD8 ratio during the course of the illness.[1]

Northwick Park Hospital has so far admitted more than 300 patients with Covid-19. In our experience, the lymphocyte features illustrated above are common in blood films of patients presenting to hospital with clinically significant Covid-19. The observation of plasmacytoid lymphocytes supports a provisional clinical diagnosis of this condition.

CONFLICT OF INTERESTS

The authors state there are no conflicts of interest.

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