Evans syndrome (ES) is a rare condition characterised by the combination of autoimmune haemolytic anaemia and immune thrombocytopenia (ITP). While the precise pathophysiology is not entirely understood, it is thought that dysregulation of the immune system is a primary contributor to the condition. ES has been observed in viral infections including hepatitis C, cytomegalovirus, varicella zoster and Epstein–Barr viruses. Initial cases of coronavirus disease 2019 (COVID-19) were first described in early December 2019 and has now spread to a global pandemic. While knowledge about COVID-19 continues to evolve, clinicians have reported haematological complications associated with the virus. Presence of lymphopenia has been commonly reported in 35–40% of cases and appears to be associated with the development of acute respiratory distress syndrome. Thrombocytopenia and coagulopathies, including disseminated intravascular coagulation, have also been reported in cases of COVID-19, which were associated with more severe disease. Here, we present the first case, to our knowledge, of COVID-19-associated ES and discuss its unique management issues.

A 39-year-old man presented to the emergency department in late March 2020 with one day of haemoptysis and epistaxis in the setting of sore throat, productive cough, fevers, chills and dyspnoea lasting about 1 week. On evaluation, he was found to be febrile, tachycardic and tachypneic. Physical examination was notable for dried blood in the mouth. He had no petechiae, ecchymoses or rash. Laboratory assessments demonstrated a leucocyte count of 11 000 cells/µl, haemoglobin of 156 g/l and platelet count of 3000 cells/µl. The neutrophil count was 8700 cells/µl, haemoglobin level of 110 g/l and 505 platelets/µl. The pathogenesis and management of ES in the setting of the inflammatory milieu of COVID-19 has not been previously described and represents a unique challenge in clinical management. The exact pathophysiology of ES is not fully elucidated, but studies suggest the intersection of autoimmunity and predisposing immune dysregulation is involved. Several proposed mechanisms of autoimmunity have been described, including activation of Bruton tyrosine kinase and overexpression of cytokines.

Four days after discharge, the patient returned to the hospital with extreme weakness and fatigue, intermittent fever and cough without bleeding. Haemoglobin was 60 g/l with a normal platelet count. Laboratory assessments showed a reticulocyte count of 22%, lactate dehydrogenase (LDH) of 947 u/l, elevated fibrinogen, haptoglobin <20 g/l, and positive direct Coombs test (3+), concerning for new immune-mediated haemolytic anaemia. Peripheral blood smear was notable for microspherocytes, nucleated red blood cells, and reticulocytes. Coupled with his recent history of ITP, his clinical picture raised concern for ES versus immune haemolytic anaemia secondary to IVIG. Once again, corticosteroids were avoided in the setting of COVID-19 infection, and IVIG therapy was re-initiated. Meanwhile, the patient continued to have low-grade fevers with lower extremity weakness and hypoxaemia requiring 2 l of oxygen. After a second dose of IVIG, he developed a left popliteal deep venous thrombosis for which he was started on therapeutic heparin. His haemoglobin eventually stabilised at 70 g/l with a robust reticulocyte response. IVIG was discontinued with concern for its contribution to macrovascular thrombomobilism. At 4 weeks after discharge, blood counts showed a haemoglobin level of 110 g/l and 505 platelets/µl.

The mainstay therapy for ES is typically immunosuppression, including corticosteroids. However, the routine use of corticosteroids in patients with COVID-19 is not recommended outside another indication such as shock or obstructive lung disease, according to established guidelines from the WHO, CDC and Infectious Disease Society of America. The basis of this recommendation is founded on analysis from previous viral outbreaks. Retrospective data from the Middle East Respiratory Syndrome (MERS) outbreak have associated steroid therapy with increased mortality and delayed clearance of viral RNA. Meta-analysis of steroid use in Severe Acute
Fig 1. (A–C) Haematological cell line trends during the patient’s clinical course. (D) Peripheral blood smear showing microspherocytes, nucleated red blood cells and reticulocytes. Hgb, haemoglobin; RDW, red cell distribution width; Retic, reticulocyte count.
Thrombocytopenia is a risk factor for increased morbidity and mortality in patients infected with the new severe acute respiratory syndrome coronavirus 2, SARS-CoV-2 (COVID-19) infection.1 Thrombocytopenia in COVID-19 patients may be caused by disseminated intravascular coagulation (DIC), sepsis or be drug-induced. Recently a single case...