COVID and coagulation: Bleeding and thrombotic manifestations of SARS-CoV2 infection

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Patients with coronavirus 2019 (COVID-19) disease have elevated D-dimer levels. Early reports describe high rates of venous thromboembolism (VTE) and disseminated intravascular coagulation (DIC), but data are limited. In this multicentre, retrospective study, the authors describe the rate and severity of haemostatic and thrombotic complications in 400 patients with COVID-19 admitted to hospital (144 were critically ill), who primarily received prophylaxis with standard doses of anticoagulation. Laboratory studies of coagulation and inflammatory parameters were compared between patients with and without complications associated with coagulation. The authors also performed multivariable logistic models to examine the utility of these markers in predicting complications associated with coagulation, critical illness, and death. The radiographically confirmed VTE rate was 4.8% (CI 95%, 2.9–7.3%) and the overall thrombotic complication rate was 9.5% (6.8–12.8%). The overall and major bleeding rates were 4.8% (2.9–7.3%) and 2.3% (1.0–4.2%), respectively. In patients who were critically ill, radiographically confirmed VTE and bleeding rates were 7.6% (3.9–13.3%) and 5.6% (2.4–10.7%), respectively. Elevated D-dimer levels at initial presentation were predictive of complications associated with coagulation during hospitalisation [D-dimer >2,500 ng/mL, adjusted OR for thrombosis, 6.79 (2.39–19.30), adjusted OR for bleeding, 3.56 (1.01–12.66)], critical illness, and death. Additional markers at initial presentation were predictive of thrombosis during hospitalisation: platelet count >450×109/L [adjusted OR, 3.56 (1.27–9.97)], C-reactive protein (CRP) >100 mg/L [adjusted odds ratio, OR, 2.71 (1.26–5.86)], and erythrocyte sedimentation rate (ESR) >40 mm/h [adjusted OR, 2.64 (1.07–6.51)]. ESR, CRP, fibrinogen, ferritin, and procalcitonin were higher in patients with thrombotic complications compared with those without. DIC, clinically relevant thrombocytopenia, and reduced fibrinogen were rare and associated with significant bleeding manifestations. Following the review of the data presented, the authors conclude that given the observed bleeding rates, randomised clinical trials are needed to determine any potential benefit of intensified anticoagulant prophylaxis in patients with COVID-19.