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EDITORIAL

Covid and Clots in Veins: What's Best to do

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Severe acute respiratory syndrome coronavirus 2(SARS-CoV-2) infection is associated with increased risk of arterial and venous thrombotic complications. In a US registry of patients with coronavirus disease 2019 (COVID-19), thrombotic complications occurred in 2.6% of 229 non–critically ill hospitalized patients and in 35.3% of 170 hospitalized critically ill patients.[1] The risk of thromboembolism in SARS-CoV-2 infection in nonhospitalized patients is not known.

Although the pathophysiology behind increased thromboembolism is not fully defined, COVID-19 infection is associated with abnormalities in all 3 parts of Virchow's triad and hence there exists a pathophysiological rationale for an increased risk of VTE.

•First, endothelial dysfunction may develop due to direct viral invasion of endothelial cells via Angiotensin Converting Enzyme-2 (ACE2), or as a result of the subsequent marked inflammatory response and tissue hypoxia.[2, 3]

•Second, COVID-19 induces a pro-coagulant state with an increase in factors V, VII, VIII and X and von Willebrand factor and a reduction in ADAMTS13 levels.[4,5] High levels of antiphospholipid antibodies have also been reported, although their clinical significance is uncertain.[6,7] Furthermore, reduced fibrinolysis resulting from increased plasminogen activator inhibitor 1 has been observed in intensive care unit (ICU) and non-ICU patients.[8,9] In addition, platelet activation may also increase the risk of VTE.[10]

•Third, immobility and resultant venous stasis is common, especially in more severe COVID-19 disease.

D-Dimers levels are frequently elevated in patients with COVID-19 and are prognostic. High levels may arise as a result of thrombosis or inflammation. Current data do not support the routine use of high D-Dimer levels in isolation to guide decisions regarding investigation and anticoagulation; levels should be assessed within the overall clinical context.[11]

Pulmonary thromboembolic disease should be considered in patients with hypoxaemia disproportionate to X-Ray changes or sudden worsening of blood pressure, heart rate or oxygen requirements.

All patients admitted with COVID-19 should be assessed for, and the majority receive, thromboprophylaxis. Although multiple trials testing interventions to prevent thrombotic complications in COVID-19 are underway, current clinical guide-lines have relied on previous studies of VTE prophylaxis in acute non–COVID-19 medical illness. Therapeutic LMWH should be considered for in-patients with Covid-19 disease who are managed on general wards and require supplemental oxygen.[11] Patients with no evidence of VTE or other indication for therapeutic anticoagulation who require high-flow oxygen, CPAP, NIV for severe ventilatory failure or invasive ventilation should receive less than therapeutic dosing.[11] The published evidence would suggest no benefit of intermediate over standard dose thromboprophylaxis in these patients. Bleeding risk should be considered when making decisions regarding intensity of anticoagulation.[11]

There are no specific RCT data to guide the optimal duration of thromboprophylaxis in patients recovering from moderate or severe COVID-19.[11] A number of observational studies have reported low incidences of acute VTE following hospital discharge of 0-0.6% which do not appear to be greater than in non-Covid-19 patients.[12,13]ACCP does not recommend post discharge thromboprophylaxis.[14] In contrast, the ISTH recommends post discharge thromboprophylaxis with LMWH or a DOAC for all high-risk hospitalized patients with COVID-19 who have a low risk of bleeding.[15] The ISTH suggests a duration of 14 to 30 days for post discharge thromboprophylaxis, although optimal duration remains unclear.[15] Thromboprophylaxis for patients who do not require hospitalization is not currently recommended.

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