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A matter of time: duration and choice of venous thromboprophylaxis in patients diagnosed with COVID-19

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In light of increasing evidence of a significantly prothrombotic state in patients diagnosed with COVID-19 (Klok et al, 2020; Middeldorp et al, 2020), the authors read with interest the *Journal of the American College of Cardiology* (JACC) guidance (Bikdeli et al, 2020), and the American Venous Forum white paper (The COVID-19 Sub-Committee of the American Venous Forum, 2020) covering, among other issues, inpatient and postdischarge thromboprophylaxis. In the authors' centre, 41 out of 119 patients (34.5%) with confirmed SARS-CoV-2 infection who had computed tomography pulmonary angiogram imaging were diagnosed with pulmonary thromboembolism (Barnet Hospital, unpublished data, 2020), alongside an increasing number of discharged patients being readmitted with thrombosis. While a number of studies (Klok et al, 2020; Middeldorp et al, 2020) advocate inpatient thromboprophylaxis, until now, apart from these documents (The COVID-19 Sub-Committee of the American Venous Forum, 2020; Bikdeli et al, 2020), no recommendations have been made for discharged patients.

The National Institute for Health and Care Excellence guidance NG89 for venous thromboembolism in over 16-year-olds (National Institute for Health and Care Excellence, 2018) recommends thromboprophylaxis, after risk assessment, for acutely ill medical patients for at least 7 days. The primary agent of choice is low molecular weight heparin with fondaparinux as a second choice. A maximum duration of anticoagulation was not delineated in this group of patients. In orthopaedic patients, consideration of chemical thromboprophylaxis is recommended when there is lower limb immobilisation and resulting reduction in mobility, where risk of thrombosis outweighs the risk of bleeding, for up to 42 days (6 weeks). In the authors' experience, the time to recovery in patients discharged from the hospital setting after treatment for SARS-CoV-2 infection is often significantly longer than initially might have been expected. Additionally, these patients have been on bed rest and are at risk of dehydration for considerable periods during their hospital stay, and social distancing while both recuperating and rehabilitating will dramatically reduce their mobility.

Extrapolating from the National Institute for Health and Care Excellence guidance and in line with both the JACC guidance (Bikdeli et al, 2020), and the The COVID-19 Sub-Committee of the American Venous Forum's (2020) white paper, the authors' strategy is to initiate chemical thromboprophylaxis in risk-assessed patients for 2–6 weeks post discharge. In the authors' hospital, the longer duration of thromboprophylaxis (6 weeks) is favoured to prevent venous thromboembolism in view of experience with patients requiring prolonged time to reasonable recovery and also re-attendances with venous thromboembolism. As the pandemic has impacted on the availability of district nurses to attend to patients who cannot self-treat or receive low molecular weight heparin injections from family members, and extrapolating from the results of the trials of thromboprophylaxis in patients undergoing elective orthopaedic surgery (Erikkson et al, 2009; Lassen et al, 2010a, 2010b), the recommendation is that patients are treated with a direct oral anticoagulant; the authors recognise that this is outside licencing. The primary agents of choice are either apixaban 2.5 mg twice daily or rivaroxaban 10 mg once daily, together with a proton pump inhibitor to reduce the risk of clinically relevant non-major gastrointestinal bleeding (Ray et al, 2018). If a direct oral anticoagulant is unsuitable, or if injection of low molecular weight heparin is preferred, then thromboprophylactic dose low molecular weight heparin is advised. Where the risk of bleeding is significant, mechanical thromboprophylaxis with anti-embolism stockings is recommended.

After implementation of this guideline, the authors intend to review the incidence of venous thrombosis in the post-discharge period in patients with SARS-CoV-2 infection.

Key points

- SARS-CoV-2 infection causes a hypercoagulable state.
- Recovery after discharge from hospital to baseline is prolonged.
- Extended thromboprophylaxis (2–6 weeks) should be considered to reduce the risk of venous thromboembolism caused by the hypercoagulable state and reduced mobility during the prolonged convalescent period, after a risk assessment is undertaken.
- Chemical thromboprophylaxis with a direct oral anticoagulant (such as rivaroxaban or apixaban), although outside of licensing, is easier to administer than injecting low molecular weight heparin in the community setting.
- If chemical thromboprophylaxis is contraindicated, mechanical thromboprophylaxis with anti-embolism stockings should be considered.

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