Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Sustained prothrombotic changes in convalescent patients with COVID-19

We read with great interest the Viewpoint by Leentjens and colleagues[1] on COVID-19-associated coagulopathy and optimal anticoagulant treatment strategies. The authors provide a comprehensive overview of the available evidence (particularly from clinical trials) and knowledge gaps on anticoagulant treatment for patients with COVID-19 at different stages of disease. The collaborative efforts that were started in early stages of the pandemic and the rapidly initiated clinical trials have resulted in a rapidly growing body of research on the need for anticoagulant treatment for patients with COVID-19 who are admitted to hospital. However, as Leentjens and colleagues[1] have stated, optimal dosing and duration of anticoagulant therapy are still debated, and while results from large clinical studies are awaited, data on anticoagulant treatment for out-patients and patients after hospital discharge are currently scarce. The authors described that coagulation markers in previously admitted patients with COVID-19 are restored after hospital discharge. However, recent studies[2,3] provide evidence for persistent haemostatic abnormalities even months after hospital discharge. One study[2] showed elevated D-dimer concentrations in approximately 25% of patients 4 months after primary SARS-CoV-2 infection. Notably, almost a third of patients with persistent elevations in D-dimer were fully managed as out-patients (disease stage 1). Whether these results are compatible with ongoing systemic or local (intrapulmonary) activation of coagulation in a proportion of convalescent patients with COVID-19 requires further investigation. Additionally, we recently showed elevated thrombin-generating capacity and a hypofibrinolytic state in patients that predominantly had moderate disease (stage 2) 4 months after hospital discharge.[3] Importantly, ex vivo hypercoagulability and hypofibrinolysis are associated with an increased risk of thrombotic events in the general population.[4,5] It is tempting to speculate that a persistent hypercoagulable state contributes to the post-acute sequelae of SARS-CoV-2 infection (PASC; also known as long COVID) by facilitating formation of microthrombi in the pulmonary vasculature, similar to the thrombotic events proposed in stage 1 disease.[1] In this scenario, post-discharge thromboprophylaxis might benefit some convalescent patients with COVID-19, and larger controlled trials, such as the ACTIV-4 trial (NCT04498273), will provide important information on this matter. We feel that studies investigating underlying mechanisms and potential clinical consequences of sustained prothrombotic changes in convalescent patients with COVID-19 are needed, because they might have therapeutic implications.

We declare no competing interests.

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