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Hospital-based use of thromboprophylaxis in patients with COVID-19

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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.

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Physicians are receiving a great deal of information regarding how to care for patients with coronavirus disease 2019 (COVID-19). We would like to offer further information about thromboprophylaxis that we believe is worth considering when treating patients who have been admitted to hospital with COVID-19.

Tang and colleagues[1] described a consecutive series of 183 patients who had been admitted to hospital with COVID-19 in China. Activation of the coagulation system was found in many patients, and the degree of activation (defined as, for example, increased D-dimer concentrations at time of admission) was significantly higher in patients who did not survive than those who did survive. Overall, 21 (11%) of 183 patients died. 15 (71%) of 21 non-survivors and only one (1%) of 162 survivors met criteria for disseminated intravascular coagulation during their hospital stay. In a case series from China,[2] increased D-dimer concentration at time of admission to hospital (>1 μg/mL) was associated with a risk of in-hospital mortality that was 18 times higher than among those with normal D-dimer concentrations, and the authors highlighted that "inadequate adherence to standard supportive therapy", among other things, might have led to poor outcomes in some patients.[2]

Acutely ill patients with severe viral pneumonia and acute respiratory distress syndrome (ARDS), such as those with H1N1 infection, who have been admitted to hospital have a 23-times increased risk for pulmonary embolism,[3] and guidelines support routine thromboprophylaxis in these patients.[4] Increased D-dimer concentrations of more than double the upper limit of normal has emerged as a new biomarker to predict risk of venous thromboembolism in all patients in hospitals. Trial subgroup analyses, in which increased D-dimer concentration or admission to hospital with infection (particularly pneumonia) were incorporated as variables, show that extended thromboprophylaxis with direct oral anticoagulants has benefit compared with routine in-hospital thromboprophylaxis with low molecular weight heparin.[5] Finally, empirical anticoagulation has been associated with improved thrombotic event-free survival in critically ill patients with ARDS due to influenza A H1N1.[3]

In light of this evidence, and the fact that hospitals might soon have a large number of patients with COVID-19 who might meet guideline requirements for thromboprophylaxis, we believe it seems prudent to use thromboprophylaxis in such patients, particularly those with evidence of activation of the coagulation system (eg, increased D-dimer concentrations) on admission.

Of utmost importance will be the prospective, real-time data collection to assess whether use of thromboprophylaxis in patients with COVID-19 leads to improved outcomes, including improved survival, without clinically important bleeding.

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