

## Deep vein thrombosis prophylaxis is routine for all COVID-19 positive patients

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To the Editor,

I have recently read with great excitement and interest the article written by Gunerem and the leading board members of the Turkish Journal of Vascular Surgery.<sup>[1]</sup> I admire and am truly grateful for their utmost important effort to enlighten us, vascular surgeons, on this topic which we frequently encounter in our clinical practice in these hard times of pandemic. In these difficult days, a plenty number of data is accumulating from many countries and new recommendations have emerged everyday. I would like to add the latest data summarizing the algorithm of the World Health Organization (WHO)<sup>[2]</sup> and Turkish national treatment algorithm of COVID-19<sup>[3]</sup> announced after this valuable paper.

In section “Deep vein thrombosis treatment and prophylaxis in hospitalized patients with COVID-19”, the authors suggested to perform risk analysis for deep vein thrombosis and start thromboprophylaxis accordingly only in cases who were susceptible to deep vein thrombosis.<sup>[1]</sup> However, in the latest algorithms provided by both WHO and Turkish Ministry of Health for clinicians, the routine use of anticoagulants either as low-molecular-weight heparins (LMWHs) or unfractionated heparin without performing any risk stratification has been recommended.<sup>[2,3]</sup>

The latest guidance published by the WHO on the date of 13<sup>th</sup> of March, 2020 advised to use pharmacological prophylaxis to reduce incidence of venous thromboembolism either as LMWH or

unfractionated heparin of 5,000 units subcutaneously, both twice daily in adolescents and adults without contraindications where LMWH is preferred, where applicable. In patients with contraindications, intermittent pneumatic compression devices are suggested.<sup>[2]</sup>

In accordance with the guidance of the WHO, the Turkish Ministry of Health revised the national COVID-19 algorithm on the date of April 14<sup>th</sup>, 2020. The national guidance gives detailed information regarding the possible pathophysiology of the thromboembolic events and the prophylaxis of venous thromboembolism in COVID-19-positive cases. The guidance states that there may be three possible mechanisms related to the clinical entity:

1. Binding of the virus to the ACE2 receptor, causing direct endothelial damage
2. Vascular micro-thrombotic disease observed in septicemia (i.e., complement activation-induced endothelial damage and inflammatory and micro-thrombotic pathway activation)
3. Immobility/hospitalization-induced stasis-related thrombosis

The guidance also advices to initiate monitoring the coagulopathic state of the patients after COVID-19 diagnosis and calculate the disseminated intravascular coagulation scoring according to International Society on Thrombosis and Haemostasis (ISTH) criteria for Disseminated Intravascular Coagulation Scoring System daily or every other day.<sup>[4]</sup>

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The guidance divides COVID-19 diagnosed patients into main three subgroups and describes thrombosis prophylaxis accordingly:

1. Patients with D-dimer <1,000 ng/mL
2. Patients with D-dimer >1,000 ng/mL or with severe symptoms
3. Patients with a history of atrial fibrillation or venous thrombosis

In the first group, the use of LMWHs is recommended in patients with normal renal function (creatinine clearance >30 mL/min). Subcutaneous use of enoxaparin 40 mg is recommended in a single dose in patients with a body mass index (BMI) of <40 kg/m<sup>2</sup> and in two doses in patients with a BMI of >40 kg/m<sup>2</sup> daily. Enoxaparin in reduced dosage or subcutaneous injection of 5,000 IU unfractionated heparin twice or thrice daily is recommended in patients with renal disease (creatinine clearance <30 mL/min).

In the second group, enoxaparin is recommended in standard treatment dosage of 0.5 mg/kg twice daily. In patients with renal disease (creatinine clearance <30 mL/min), enoxaparin in reduced dosage or subcutaneous injection of 5,000 IU unfractionated heparin twice or thrice daily is recommended.

In the third group, if the onset of atrial fibrillation and the venous thrombosis is older than 90 days, the aforementioned prophylaxis regimen is followed; otherwise (history of onset <90 days), the anticoagulation prophylaxis is performed with standard thrombosis treatment dosages.<sup>[3]</sup>

In their report, the authors stated that the use of mechanical thromboprophylaxis might be beneficial in immobilized patients by referring to the National Institute for Health and Care Excellence guideline. Likewise, the national guidance also suggests that the use of intermittent pneumatic compression in

every immobile patient can be advantageous and recommends prophylactic use of these devices in patients with a platelet count less than 30,000/ $\mu$ L.

In conclusion, this manuscript was well written and informative. It is highly acceptable for one to skip the contemporary approach through manuscript preparation and publishing period due to ongoing input of vast scientific data from all over the world; therefore, the timely renewal of the guidelines is crucial.

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