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Illustration: Thromboelastography – A useful tool to monitor COVID-19-associated coagulopathy

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Abstract:

COVID 19 is caused by Severe Acute Respiratory Syndrome Corona Virus-2 which results in wide range of manifestations. Systemic hypercoagulation is a typical feature of COVID-19. We present a case of COVID-19 in whom TEG was performed on admission and hypercoagulability was diagnosed and hence patient was started on Enoxaparin sodium 6000 IU twice daily. TEG was repeated after 5 days which showed normal coagulation status and the patient was discharged without any thrombotic complications.

Keywords:

Coagulopathy, COVID19, Haemostasis, TEG

Introduction

Severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) causes COVID-19 infection which is characterized by acute respiratory distress like clinical picture with a profound predilection for hypercoagulation. Hypercoagulability leads to an increased risk of thromboembolic events such as deep vein thrombosis, pulmonary thromboembolism, acute stroke, and acute myocardial infarction.^[1] Hence, the guidelines recommend the use of anticoagulation of patients upon hospital admission.^[2]

Short Report

A 68-year-old female presented with fever, easy fatiguability, cough, and dyspnea. On examination, SpO₂ was 82% at room air, blood pressure was 104/62 mmHg, and

pulse rate was 73 beats/min. The routine laboratory testing was sent along with thromboelastography (TEG; TEG 5000, Haemonetics). Her laboratory parameters on admission were hemoglobin of 7.3 g/dl (12–15), platelet count of $280 \times 10^3/\mu\text{l}$ (150–400), prothrombin time (PT) –11.9 s (9.6–12.5), activated partial thromboplastin time (aPTT) –28.5 s (26.8–33.2), and D-dimer of $>9 \mu\text{g}/\text{ml}$ ($<0.5 \mu\text{g}/\text{mL}$). The patient was diagnosed with severe COVID-19 and was put on a mechanical ventilator with inotropic support. The first TEG was done on the day of admission [Figure 1] which clearly showed features of hypercoagulable state in clot initiation (R time), amplification (K time and alpha angle), and progression (MA [Maximum amplitude] and CI [Coagulation Index]). Based on TEG, the patient was started on injection enoxaparin sodium 6000 IU twice daily for 5 days.

A normal TEG tracing was obtained when repeated after 5 days while the patient was

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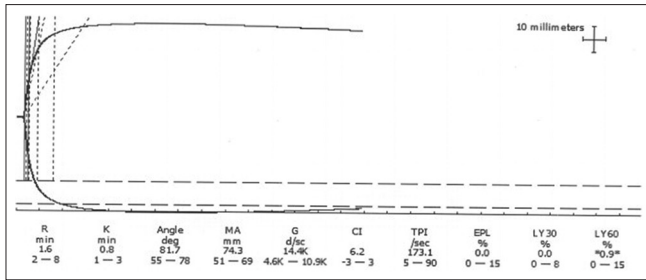


Figure 1: Thromboelastography showing hypercoagulable state on admission

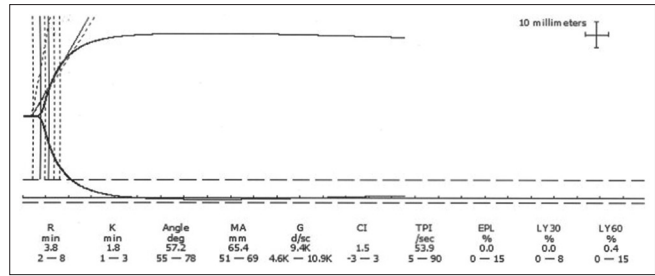


Figure 2: Repeat thromboelastography on day 5

still in intensive care unit [Figure 2]. The patient improved without developing any thromboembolic events and was discharged on day 9 from hospital. Even though D-dimer is specific for an ongoing thromboembolism, it is highly elevated in COVID-19 infections or severe inflammatory response even without a thromboembolic complication.^[3] Early identification of hypercoagulable state can be done using TEG, which otherwise might be difficult to diagnose using conventional coagulation screens such as PT, aPTT, fibrinogen, and D-dimer.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will

be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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