



Editorial

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Emerging role of the point-of-care coagulation test in sepsis

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Sepsis is a life-threatening medical emergency in which extreme immune response is produced against an infection. Only the initiation of prompt and appropriate treatment can lower the mortality rate of sepsis. Although the mechanism underlying coagulation abnormality caused by sepsis has not been clarified, the proinflammatory response of sepsis activates the coagulation system and simultaneously suppresses anticoagulation and fibrinolysis, indicating various clinical aspects of coagulation disorders, ranging from microvascular thrombosis to disseminated intravascular coagulation [1]. Platelets are a cellular mediator of thrombosis and play a pivotal role in coagulation. Recently, many studies have proved that platelets play a role in immunity and inflammation [2]. Conventional clinical tests for coagulation include the platelet count, international normalized ratio (INR), prothrombin time, and activated thromboplastin time. Therefore, many studies have been conducted on the relationship between coagulation tests and the diagnosis of sepsis. INR moderates the predictive values for the diagnosis and prognosis of severe sepsis, such as procalcitonin, interleukin, and C-reactive protein, which are used as biomarkers of sepsis [3]. These findings have increased the possibility of coagulation tests playing a role in predicting the prognosis as a biomarker of the inflammatory process and sepsis. In the June 2020 issue of the *Korean Journal of Anesthesiology*, Boscolo et al. [4] reported an association between sepsis-induced hypocoagulability and early mortality. They compared the mortality rates up to the first 28 days and from 29 to 90 days of sepsis in terms of hypocoagulability, using point-of-care (POC) coagulation tests, such as ROTEM® (Tem International GmbH, Germany) thromboelastometry or MULTIPLE® (Roche Diagnostics GmbH, Germany) impedance aggregation between non-survivor groups. In the present study, the samples of the early non-survivors showed higher tendency to hypocoagulate in POC coagulation tests than those of the late non-survivors. However, more studies are needed to reveal the correlation between POC coagulation tests and sepsis-related mortality.

ROTEM® thromboelastometry is a hemostatic test that measures the shear elasticity and dynamics of clot formation and the strength and stability of clots. It is widely used in cardiac and transplant surgeries and trauma cases. MULTIPLE® is a platelet function analyzer based on impedance aggregation using whole blood. The principle of MULTIPLE® is to measure the increased impedance of platelets aggregated on metal electrodes. It predicts early mortality or stent thrombosis after percutaneous coronary intervention in cardiology [5] and stent thrombosis and adverse events in neuroradiology [6].

Unlike traditional coagulation tests, which are laboratory-based and require preanalytical processes, such as centrifugation of blood samples, these POC coagulation tests have the advantage of providing results of sepsis-induced coagulopathy as quickly as possible and to continuously observe its trend. In addition, the conventional coagulation test measures only the final stage of coagulation while thromboelastometry has the advantage of differentiating and diagnosing which is the problem process during the initiation of the

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clot formation, clot firmness, and fibrinolysis. Since early diagnosis and treatment initiation are the most important management guidelines for sepsis, we look forward to the discovery of a POC test that can easily and quickly predict the progress of sepsis bedside.

Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

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