

Patients in the intensive care unit are in critical condition which is often accompanied by a coagulation disorder. Sepsis as a leading cause of death in critically ill patients may be associated with both hypercoagulable state with microthrombi formation in microcirculation and with increased production of endogenous heparinoids with inhibitory effects on blood clotting. Central venous catheter and arterial catheter are established in patients for hemodynamic monitoring and these are flushed with heparin to prevent their closure. Both inputs are used for blood sampling for laboratory tests such as blood count and coagulation parameters, including thromboelastography (TEG).

In the first step of the work, arterio-venous differences in coagulation parameters were investigated in patients with sepsis. Higher concentration of D-dimers and lower antithrombin activity were found in venous blood. This finding can be explained by increased antithrombin consumption in hypercoagulable state and reactive hyperfibrinolysis. Inconsistency in the site of blood sampling may then lead to misinterpretation of the pathophysiological processes in the body. No significant differences were found in TEG parameters.

In the second step of the work we examined how heparin commonly used for catheter flushing affects TEG-assessed blood clotting. Its influence on TEG results depends in direct proportion on its residual concentration in the blood sample. With the increasing volume of blood withdrawn and discarded before blood sample collection, the concentration of heparin in the sample is decreasing together with its hypocoagulable effect on coagulation. In samples obtained after discarding more than 4 ml of blood (five times the volume of the catheter) no significant differences in monitored TEG parameters were noticed and therefore we can say that the sample contained residual heparin in such small quantities that it did not affect the clotting process.