Potential applicability of perioperative thromboelastography to access the coagulopathies in live related renal transplantation: a prospective observational pilot study

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Background: Organ transplantation is associated with ischemic and reperfusion injury. Ischemic reperfusion injury (IRI) during liver transplantation results in coagulopathy caused by the release of heparin like substances and platelet trapping. During renal transplantation IRI may be associated with a similar phenomenon, and thromboelastography (TEG) can be used to detect and manage coagulopathy in renal transplantation surgeries.

Methods: TEG was done on pre-operative, immediate post-reperfusion and post-operative day 1 (POD1), for 25 consecutive cases of live related renal transplantation. Coagulopathy was defined as deranged and abnormal TEG variables and supported by the clinical presence of non-surgical oozing and bleeding in the surgical field.

Results: The post reperfusion TEG values showed coagulopathic changes. The 64% patients had R-time (RT) more than 12 minutes, 64% patients showed maximum amplitude (MA) less than 55 mm, and 76% patients had alpha angle less than 55°. The pre-operative TEG coagulation index (CI) was 2.45 ± 1.25 , post-reperfusion CI was -1.96 ± 4.54 and POD1 CI was 4.02 ± 1.35 . Univariate analysis revealed anti-thymocyte globulin (ATG) and etiology other than chronic glomerulonephritis, as risk factors for the hypocoagulable CI in the post reperfusion phase. Changes in CI did not translate into symptomatic non-surgical bleeding in the surgical field ($\chi^2=0.17$; $P=0.67$).

Conclusions: Ischemic reperfusion injury in renal transplantation is associated with transient self-limiting coagulopathy as detected by TEG. CI values in POD1 indicate a hypercoagulable or prothrombotic state. Whereas immediate post-reperfusion CI values show hypocoagulable state. Magnitude of changes shown by TEG did not translate into requirement of blood product transfusion.

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