

To clot or not to clot? A comparison between standard coagulation tests and rotational thromboelastometry in patients with End-Stage Liver Disease

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Abstract

Introduction: Haemostatic alterations are common in patients with End-Stage Liver Disease (ESLD) and vary among haemorrhagic and prothrombotic states. Defining the haemostatic profile of such patients undergoing liver transplantation (LT) remains a challenge for the anaesthesiologist. The aim of the present study is to evaluate coagulation in patients with ESLD by comparing standard coagulation tests (SCT) with rotational thrombo-elastometry.

Methods: We retrospectively analyzed 56 patients that underwent LT between May and October 2013. Preoperative data were collected: age, etiology, severity of liver disease (Model for End-Stage Liver Disease – MELD and MELD-sodium – MELD-Na) and paraclinical results. SCT and rotational thromboelastometry (ROTEM) were assessed 1-3 hours prior to surgery.

Results: The mean age in the study group was 53.5 years (SD 11.7). MELD score had a median value of 17.0 (range 7-32) and MELD-Na of 22.0 (range 8 - 35). Fibrinogen polymerization (FibTEM MCF) strongly correlated with the severity of liver disease, assessed by MELD score (correlation coefficient -0.330, p=0.05) and MELD-Na score (correlation coefficient -0.353, p=0.035), and low cholesterol levels (correlation coefficient 0.443, p=0.011). When compared with SCT, FibTEM MCF strongly correlated with fibrinogen values (correlation coefficient 0.796, p<0.001), but no statistical correlation was found between InTEM CT and InTEM CFT and INR (p=0.525), aPTT (p=0.108) and PT (p=0.406) values. Platelet count correlated with spleen size (correlation coefficient -0.551, p=0.009), but did not correlate with either ExTEM CT (p=0.345) or ExTEM CFT (p=0.254).

Conclusion: In patients with ESLD, SCT are imprecise in establishing the haemostatic profile. The severity of liver disease strongly correlates with fibrinogen production and polymerization. Abnormal SCT values (high INR value, prolonged PT/aPTT time) do not correlate with TEM findings.

Key words: standard coagulation tests, rotational thromboelastometry, liver cirrhosis, coagulopathy, liver transplantation

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