

**Assessment of Hyperfibrinolysis in Cirrhotic Patients Undergoing Orthotopic Liver Transplantation. A Retrospective Observational Study**

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**Abstract**

**Introduction:** Prophylactic antifibrinolytics are recommended for patients at risk to develop significant hyperfibrinolysis during liver transplantation, identified by the preoperative thromboelastometry. Even with this approach, postreperfusion hyperfibrinolysis is frequent, often leading to increased bleeding and transfusion requirements. The aim of this study was to assess hyperfibrinolysis and to predict postreperfusion hyperfibrinolysis based on pre-operative standard coagulation tests (SCTs) and thromboelastometry in liver transplant patients without an indication for antifibrinolytic prophylaxis and/or therapy until graft reperfusion.

**Methods:** The study group included cirrhotic patients undergoing orthotopic liver transplantation. Preoperative and at 10 minutes after graft reperfusion, the following data were recorded for each patient: SCTs, complete blood counts and rotation thromboelastometry (ROTEM<sup>®</sup>, TEM International GmbH, Munich, Germany). From ROTEM measurements we used standard parameters and indices calculated from the first derivative of the clot firmness curve. Hyperfibrinolysis was defined as maximum lysis >15% in EXTEM or by an increase in MCF in APTEM compared to EXTEM (DMCF) more than 7% of EXTEM MCF.

**Results:** Using ML>15% preoperative and postreperfusion hyperfibrinolysis were identified in 20% and 22 % of the patients and were not correlated with SCTs, fibrinogen levels, platelet number, with clot amplitude or thrombus formation on ROTEM. Using DMCF criteria, pre-operative hyperfibrinolysis was present in 34% of the patients and was associated with decreased thrombus formation (AUC, p=0.021) and decreased clot elasticity in EXTEM (p=0.01). When DMCF criteria was used postreperfusion, hyperfibrinolysis was present in 42% of the patients, could not be correlated with preoperative ROTEM standard or derived parameters and was associated with decreased MCF in EXTEM and FIBTEM (p= 0.04 and 0.006) and delayed and decreased thrombus formation.

**Conclusions:** The reported incidence of hyperfibrinolysis in cirrhotic patients before and during liver transplantation depends on the ROTEM-based definition used. The difference between APTEM and EXTEM identifies more patients with hyperfibrinolysis than ML>15% criteria and was associated with a decrease in thrombus formation and elasticity both preoperative and post graft reperfusion.

**Key words:** liver transplant, hyperfibrinolysis, bleeding