Perioperative Hemostatic Management of Cardiohepatic Transplant with Rotational Thromboelastometry (ROTEM)

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Introduction: Why is this case important?

- A double challenge: the coagulopathy of the end stage liver disease (ESLD) and the alteration of the extracorporeal circulation (ECC).
- Algorithms for haemostatic management of multiorgan transplants have not been published.

Case Report: The Hemostatic Approach

- Patient: 60 year old male.
- Diagnosis: 1. Cardiac Insufficiency → Viral Myocarditis
2. Liver Cirrhosis → Unknown Etiology

. $T^{\circ}\text{C} > 36$ Hb > 8 g/L $\text{Ca}_i > 1$ mmol/L pH 7.35 – 7.45
. Cell Salvage +1 gr TXA then guided by ROTEM
. Treat only if it bleeds in a stepwise approach

THROMBOELASTOMETRY	TRANSPLANT	EXTEM	INTEM	FIBTEM	APTEM	HEPTEM
PRE ECC	HEART	X	X	X		
INTRA ECC		X		X		
POSTPROTAMINE		X	X	X		X
BASAL HEPATIC	LIVER	X	X	X	X	
ANHEPATIC		X	X	X	X	
REPERFUSION		X	X	X	X	X

STEP: Post-Protamine / Basal

8 U PLTs
Presumably platelet dysfunction due to ECC

4g FC
FIBTEM A₁₀ threshold and Fib < 1.5 g/L

END OF SURGERY

ROTEM	SLTs
Normal	PT 22% aPTT 56s

STEP: Anhepatic

Discussion

- Standard laboratory tests (SLTs) were not designed to guide transfusion therapy in this kind of setting.
- SLTs do not show the whole thrombin formation, neither clot strength nor the presence of hyperfibrinolysis. Therefore, they do not provide a physiologic view of the hemostatic system.
- Current studies indicate that hemostatic therapy guided by viscoelastic test reduces allogeneic transfusions and their adverse events.

Learning Points and Future Research Directions

- ✓ There is a poor correlation between SLTs and ROTEM. SLTs overestimate transfusion requirements.
- ✓ ROTEM guided algorithm based on factor concentrates therapy allows the reduction of allogeneic transfusions in cardiohepatic transplant.
- ✓ Can we reduce mortality ?

1. K. Görlinger et al. Coagulation management in patients undergoing mechanical circulatory support. Best Pract Res Clin Anaesthesiol (2012) Jun; 26(2): 179–98
2. Kirchner, et al. Coagulation management with factor concentrates in liver transplantation: a single center experience. Transfusion (2014) Oct; 54 (10 Pt2): 2760-8.