A399 - Agreement between the thromboelastography reaction time parameter using fresh and citrated whole blood during extracorporeal membrane oxygenation with teg®5000 and teg®6s

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Introduction:
The R (reaction time) parameter of kaolin-activated thromboelastography (TEG) may be used to assess the degree of heparinization of blood during ECMO. A TEG analysis is usually performed on two types of samples: fresh (F) or citrated-recalcified (C) whole blood. TEG®5000 can perform the analysis on C and F whole blood, the new TEG®6s (Haemonetics Corp., MA, USA) only on C whole blood. Aim of the study was to compare the response of R to heparin using the two types of samples and two TEG devices

Methods:
During a three months period at Fondazione IRCCS Ca’ Granda – Policlinico of Milan, TEG was performed (using TEG5000® and TEG 6s® with and without heparinase, an enzyme that degrades heparin) on 13 consecutive ECMO patients (as part of the GATRA study, NCT03208270) and in 8 consecutive non-ECMO patients in whom a TEG was requested for clinical purposes. Bland Altman analysis and Lin’s concordance correlation coefficient were used to assess agreement

Results:
A total of 84 paired samples were taken (74 in-ECMO and 10 off-ECMO). ECMO patients received 19.2 (12.6-25.8) IU/kg/h of heparin. Among non-ECMO patients, 5 of them did not receive any dose of heparin, two of them a very low prophylactic dose (1.6 and 2.9 IU/kg/h, respectively), and one of them 13.1 IU/kg/h of heparin. Using TEG®5000, R was -21.0 (-65.5; 23.4) min shorter on C compared to F blood in patients receiving heparin (this difference disappeared using heparinase) and only -1.58 (-8.70; 5.54) min shorter in patients not-receiving heparin. R was -26.6 (-77.3; 24.2) min shorter using TEG®6s (which performs the analysis only on C blood) than TEG®5000 on F blood (figure 1)

Conclusion:
When evaluating the effect of heparin using TEG, clinicians should be aware that results obtained using citrated-recalified or fresh whole blood are not interchangeable. Using citrated-recalified blood to perform TEG might lead to underestimation of the effect of heparin

Image :
Agreement between TEG®6s and R TEG®5000 on citrated recalcified and fresh whole blood