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THROMBOELASTOGRAPHY MAY HELP TO DEFINE HAEMOSTATIC SAFETY ZONES FOR THE PRACTICE OF SPORT IN PATIENTS WITH SEVERE HAEMOPHILIA

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INTRODUCTION

Sport has multiple benefits in haemophilia patients but it may comprise variable bleeding risk (BRisk) in this population. Thromboelastography (TEG) is a potential tool for tailoring prophylactic treatment in haemophilia.

OBJECTIVES

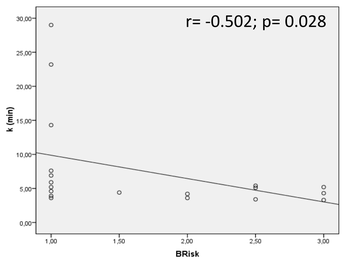
To determine value of the trough global-TEG profile for tailoring prophylaxis in patients < 18 years old (YO) with severe haemophilia A (SHA) subjected to activities with different BRisk.

METHODS

SHA patients< 18 YO, under prophylaxis were recruited. Samples before and at 4, 8, 24 and 48 h after prophylactic dose were collected. Factor VIII (FVIII) and kaolin-activated TEG profile were determined at each time-point. Substitutive treatment, physical activity (PhA) and annual joint bleed rate (AJBR) during the previous 12 months after inclusion were recorded retrospectively. Exercise-associated BRisk was categorized following the US-National Haemophilia Foundation guidelines (1= safe; 1.5= safe-moderate risk; 2= moderate risk; 2.5= moderate-dangerous risk; 3= dangerous risk of bleeding). Correlations between AJBR, BRisk, trough levels of FVIII and TEG-profile were calculated.

RESULTS

Twenty six patients, median age (min-max) 11.2 (2.5-16.2) YO were included. Twelve patients practiced sports with BRisk= 1; 1 patient with BRisk= 1.5; 2 patient with BRisk=2; 5 patients with BRisk= 2.5 and 6 patients with BRisk=3. Haemarthrosis were presented in 16% of patients with BRisk=1; 33% with BRisk= 2.5 and 40% in patients with BRisk= 3. In patients with AJBR=0 there was a clear correlation between the trough TEG-profile and Brisk (figure 1) for k-time (k-time vs. BRisk, r= - 0.502, p=0.028) and alpha angles (alpha angles vs. BRrisk, r=0.540; p=0.017) suggesting that the higher the exercise-associated BRisk the higher procoagulant state needed to keep a bleeding-free state. Though there was an strong correlation between trough levels of FVIII and r-time (r= -0.609; p= 0.006) we could not find any correlation between FVIII trough levels and the other TEG-parameters nor the BRisk.



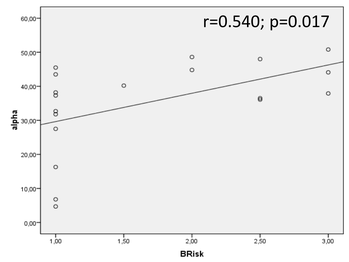


Figure 1: Correlation between TEG-parameters (k and alpha angles) and BRisk in patients with AJBR=0.

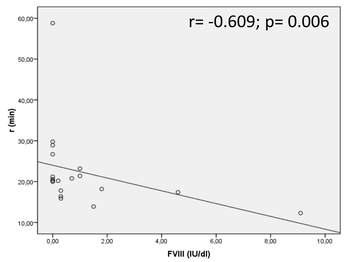


Figure 2: Correlation between r-time and FVIII trough levels in patients with AJBR=0

CONCLUSIONS

1- Kaolin-activated TEG assay may help to define safety zones to minimize bleedings in response to PhA in patients < 18 YO with SHA and may guide prophylaxis tailoring depending on BRisk of PhA.
2- Similar trough levels of FVIII may produce different TEG profiles which may explain previous data on poor correlation between AJBR and FVIII trough level in prophylaxis.

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