

SCA 61
CLOT RETRACTION AND FIBRINOLYSIS ON THROMBELASTOGRAPHY®

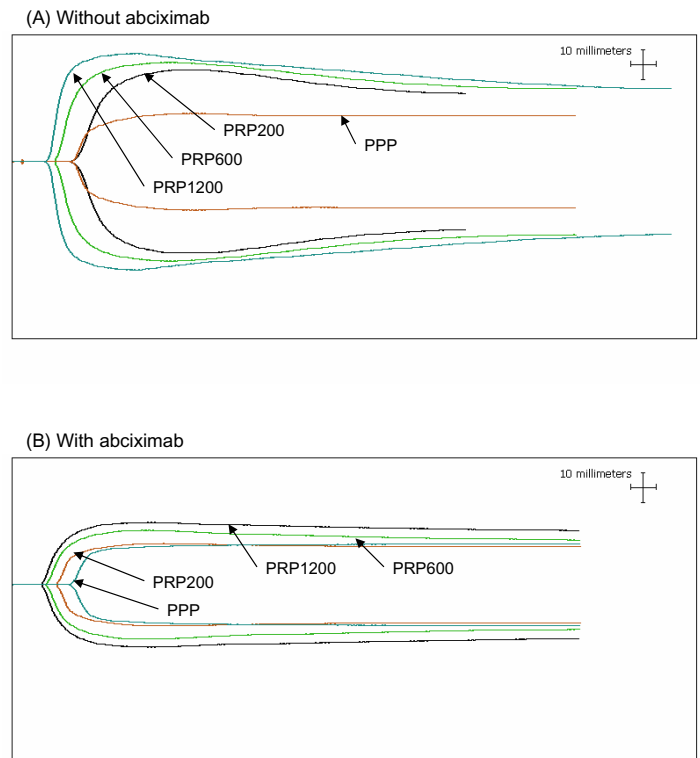
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Background: Thrombelastograph® (TEG®) measures the strength of fibrin-platelet bonds that link a rotating cup to a pin that is suspended in the cup. Platelet-mediated clot retraction causes a disruption of the linkage between the cup and the pin. This may be represented as decreased amplitude after maximum amplitude (MA), whereas fibrinolysis (breakdown of fibrin) also reduces amplitudes. We hereby studied if clot retraction and fibrinolysis could be distinguished on TEG.

Methods: With approval of institutional review board and written informed consent, blood from 12 healthy volunteers was collected into 3.2% citrate tube (volume ratio 1:9). After incubation with prostaglandin E1 (final concentration 500 ng/ml) to minimize platelet activation by centrifugation, platelet rich plasma (PRP) was prepared by centrifuging whole blood. Then PRP was centrifuged to obtain platelet poor plasma (PPP) and concentrated platelet. The concentrated platelet was diluted with PPP to make PRPs with increasing counts of platelet (50, 100, 200, 600, and 1200×10³/l). TEG® was performed with PPP and PRP with increasing platelet counts, with or without addition of abciximab (40g/ml). Maximum amplitude (MA) and %decrease of amplitude at 30 and 60 min after MA were examined for each sample. All data were expressed as mean ± standard deviation. Kruskal Wallis H-test followed by Mann-Whitney U-test with Bonferroni correction was used to compare MA and % decrease in amplitude among samples in each group. Mann-Whitney U-test was used to examine inter-group difference. Statistical significance was accepted at p < 0.05.

Results: TEG traces are shown in figure 1. With higher platelet count, % decrease in amplitude without abciximab was more prominent at 60 min (p<0.01) (figure 2). In abciximab group, there was no significant difference between PPP and PRP at 30 and 60 min. {Conclusions} With the higher platelet concentration, there were more prominent decreases in amplitude especially at 60 min after MA. By abrogating platelet-fibrin interaction with abciximab, the extent of decrease in amplitude lessened, and changes were essentially comparable among different platelet concentrations. We have shown that platelet-mediated clot retraction could mimic fibrinolysis which is shown as decreased amplitude after MA on TEG®. It is important to distinguish clot retraction from fibrinolysis because the treatment for each condition is different, and abciximab can be useful to distinguish clot retraction from fibrinolysis on TEG.

Figure 1. TEG traces



Abbreviations: PPP; platelet poor plasma, PRP200; platelet rich plasma (platelet count 200×10³ /μl), PRP600; platelet count 600×10³ /μl, PRP1200; platelet count 1200×10³ /μl.

Figure 2. %decrease in amplitude on TEG

