**Introduction:**
Tranexamic acid (TXA) is the gold standard to prevent or treat hyperfibrinolysis [1]. Effective plasma concentrations are still under discussion [2]. In this prospective, observational trial using modified viscoelastometry we evaluated the time-course of the antifibrinolytic activity of TXA in patients undergoing cardiac surgery.

**Methods:**
25 patients were included. Modified viscoelastometry (TPA-test) was performed and TXA-plasma-concentration, plasminogen-activator-inhibitor-1 (PAI-1) and PAI-antigen-plasma-concentrations were measured over 96h. Additionally, in vitro dose-effect-curves from blood of healthy volunteers were performed. Data presented as median with interquartile range (Q1/Q3).

**Results:**
TXA plasma-concentration was increased compared to baseline (T1:0µg ml\(^{-1}\)) at every time-point with a peak concentration 30min (T2) after application (p<0.0001; see Fig.1A). Lysis was inhibited from 30min (LysisTime\(_{\text{TPA-test}}\):p<0.01; LysisOnsetTime\(_{\text{TPA-test}}\):p<0.0001). MaximumLysis\(_{\text{TPA-test}}\) was decreased at T2 (T1:97% (96/97) vs. T2: 9% (6/11);p<0.0001). Of note, after 24h some patients (n=17) had normalized lysis whereas others (n=8) had strong lysis inhibition (ML<30%;p<0.05) up to 96h. High and low lysis groups differed regarding kidney function (cystatin C:1.64mg l\(^{-1}\)(1.42/2.02) vs. 1.28mg l\(^{-1}\)(1.01/1.52);p=0.002) and active PAI-1 (93.05ng ml\(^{-1}\)(33.15/9100.0) vs. 16.13ng ml\(^{-1}\)(6.62/79.98);p=0.047). In vitro, TXA concentrations >10µg ml\(^{-1}\) were effective to inhibit fibrinolysis.

**Conclusion:**
In our trial, after 24h there was still completely blocked lysis in patients with moderate renal impairment. This could be critical with respect to postoperative thromboembolic events [3]. Here modified viscoelastometry could be helpful to detect the individual fibrinolytic capacity.

**References:**

**Image:**
Figure 1: Viscoelastometric variables (TPA-test) (median + IQR; n=25) over time. A) Tranexamic acid plasma concentrations (TXA). B) Lysis Time = time span between CT and 50% lysis. C) Lysis Onset Time = time span from Clotting Time to 15% lysis. D) Maximum Lysis = difference between MCF and lowest amplitude in % of MCF; * p<0.05 vs. baseline (before tranexamic acid (TXA)); ** p<0.01 vs. baseline; *** p<0.001 vs. baseline; **** p<0.0001 vs. baseline