In acute myocardial infarction (AMI), increased Tissue Factor (TF) expression on circulating monocytes and microparticles (MP) may contribute to thrombotic events. Because surfacebound Tissue Factor Pathway Inhibitor-1 (TFPI) inhibits TF activity on monocytes and endothelial cells decreased TFPI expression may reinforce the procoagulant activity of circulating MP. Aim of the study was to analyze TFPI expression and TF activity after stenting and thrombolysis in AMI. Thirty-nine patients of a randomized study comparing intravenous thrombolysis (n=19) and stenting (n=20) were included. Before and after therapy blood samples for analysis of MPs, TF antigen and activity, prothrombin fragment F1+2 and D-dimer were obtained. TFPI expression on TF positive MPs was decreased after thrombolysis but not after stenting. In contrast, TF plasma levels and TF positive MP remained unchanged in both treatment groups. After thrombolysis increased D-dimer and F1+2 plasma concentrations indicated activation of fibrinolysis and coagulation. Significance of MPTFPI for inhibition of TF activity was measured using inhibitory TFPI antibodies. Membrane-associated TFPI inhibited TF activity on circulating MPs. After thrombolysis inhibition of TF activity by TFPI was decreased as compared to stenting. Correlation of circulating TF with F1+2 only after thrombolysis, suggests a role for TF-induced activation of coagulation after thrombolysis.
Enhanced TF activity on circulating MPs in AMI is inhibited by endogenous surface-bound TFPI. After thrombolysis but not after stenting MPTFPI is degraded and may induce thrombin generation due to unopposed tissue factor activity. Anti-TF therapies during thrombolysis may reduce thrombin generation in AMI.