SMOKING AND FIBRINOLYSIS IN THE LUDWIGSHAFEN RISK AND CARDIOVASCULAR HEALTH (LURIC) STUDY

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Introduction: Cardiovascular diseases (CVD) are an important cause of morbidity and mortality worldwide. Parameters of coagulation and fibrinolysis are risk factors of CVD and might be affected by cigarette smoking. Aim of our study was to analyze the effect of cigarette smoking on parameters of fibrinolysis in active smokers (S) and life-time nonsmokers (NS) of the Ludwigshafen Risk and Cardiovascular Health (LURIC) Study as well as their use for risk prediction.

Materials and methods: We determined plasminogen activator inhibitor-1 (PAI-1), tissue plasminogen activator (t-PA), protein C activity (PCact) and d-dimers in 3316 LURIC patients. Smoking status was assessed by a questionnaire and measurement of plasma cotinine concentration. Cox regression was used to assess the effect of parameters on cardiovascular mortality (CVM).

Results: From 3316 LURIC patients 777 were S and 1178 NS. Within an observation period of 10 years (median) 221 S and 302 NS died. tPA was slightly increased in S (12.0(9.3-15.5) vs. 11.5(8.9-14.8) µg/L, p=0.020) while PCact was decreased (107±25.1 vs. 112±25.3 %; p=0.006). All parameters except for PCact were predictive for CVM. Hazard ratios were higher for S compared to NS with HR(95% CI) of 1.20(1.09-1.32), 1.40(1.20-1.64) and 1.24(1.08-1.42) per 1-SD increase for d-dimer, tPA and PAI-I, respectively.

Conclusions: We found an increase of tPA and a decrease in PCact in S compared to NS. PAI-1, t-PA and d-dimers were significant predictors of CVM in S in LURIC and should be included into the assessment of cardiovascular risk at least in patients at risk, e. g. smokers.