

ALTERATION OF PLASMA COAGULATION PARAMETERS IN SMOKERS AND NONSMOKERS OF THE LUDWIGSHAFEN RISK AND CARDIOVASCULAR HEALTH (LURIC) STUDY

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Abstract

Cardiovascular disease (CVD) is an important cause of morbidity and smoking is an established risk factor. We determined the endogenous thrombin potential (ETP), plasma concentrations/-activities of fibrinogen (FB), soluble fibrinogen (sFB), prothrombin fragment 1 and 2 (PF1+2), factors II, V, VII, VIII, XII and XIII (FII, FV, FVII, FVIII, FXII and FXIII), von Willebrand factor (vWF), thrombomodulin (TM), antithrombin III (AT3) and Tissue Factor Pathway Inhibitor (TFPI) in 3316 LURIC patients with coronary angiography. 777 were active smokers (S) and 1178 life-time nonsmokers (NS). Within 10 years (median) 995 died (221 S, 302 NS). Compared to NS S had an increased ETP resembling a higher thrombotic risk. Higher values of FB (417 ± 114 vs 384 ± 100 mg/dl), sFB (63.3 (41.5-95.8) vs 55.8 (34.6-83.9) U/ml), FXIII (124 (109-141) vs 115 (100-131) U/dl) and TFPI (1.30 ± 0.37 vs 1.23 ± 0.37 µg/l) were found in S vs NS whereas values of FVII (120 (105-135) vs 125 (108-139) U/dl, FVIII (154 (116-204) vs 172 (132-220) U/dl), FXII (94.0 (80.0-131.0) vs 118 (87.0-145) U/dl) and TM (43.0 (33.0-56.0) vs 46.0 (35.0-59.0) µg/l) were lower. No differences were observed for FII, FV, activated FVII, PF1+2 and AT3. Cox regression analysis showed FB (HR 1.16 (95% CI: 1.02-1.31), FVIII (HR 1.482 (1.31-1.68), vWF (HR 1.50 (1.34-1.68), TM (HR 1.20 (1.09-1.32) and TFPI (HR 1.25 (1.09-1.43) to be independent risk factors whereas AT3 was protective (HR 0.77 (0.67-0.88)). The data demonstrate an increased thrombogenic potential in smokers. Some parameters are independent predictors of mortality underlining their inclusion into individual risk assessment.