CHARACTERIZATION OF TISSUE FACTOR EXPRESSION IN PLATELETS, LEUKOCYTES AND AGGREGATES OF PATIENTS WITH CORONARY ARTERY DISEASE

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Introduction. Tissue Factor(TF), the cellular initiator of blood coagulation, plays a key role in the thrombotic complications of the atherosclerotic disease. Studies on patients with acute coronary syndrome (ACS) show that TF plasma levels, monocyte- and platelet-associated TF are higher than in stable angina patients (SA). We recently showed that human platelets from healthy subjects (HS) contain TF. In the present study we examined TF protein and mRNA expression in platelets, lymphomonocytes (LM) and platelet-leukocyte aggregates (PLA) of patients with ACS and with SA compared to HS. The expression of the alternative spliced form of human TF (asTF) has also been evaluated. **Methods**. 26 ACS, 29 SA and 25 HS were studied. TF on platelets, monocytes and PLA was assessed by flow cytometry. TF and asTF mRNA levels in LM and in platelets were assessed by real time PCR. **Results**. TF-positive platelets and monocytes from ACS were almost 4 and 2 fold the amount found in SA ($P<0.05$). Compared to SA, ACS had also higher levels of monocyte-platelet aggregates (MPA) (+230%, $P<0.01$) as well as of TF positive MPA (+341%, $P<0.001$).
When statistical analysis was performed after adjustment for drug treatment, it appeared that aspirin and calcium antagonists were attenuating the increase in circulating PLA and in TF positive PLA and monocytes in SA, all values becoming similar to those found in ACS patients and statistically significantly higher than those of controls ($p<0.002$ for all comparisons). Conversely, adjustment for drug treatment did not influence the percentages of TF positive platelets.
TF mRNA expression in resting LM was barely detectable in all subjects. Conversely, a consistent expression of asTF mRNA was observed in ACS (rel. exp: 0.38 ± 0.06, $p<0.05$) compared to SA (0.19 ± 0.04) and HS (0.12 ± 0.05). Platelet associated TF mRNA levels were significantly higher in ACS (3.11 ± 0.51, $p<0.05$) compared to SA (2.5 ± 0.87) and HS (0.7 ± 0.1). No asTF mRNA was detectable in any platelet sample.
Conclusions. Our data indicate that in ACS patients expression of TF associated to platelets and to PLA is significantly higher than in SA. Moreover, the different TF mRNA isoforms present in LM and platelets of CAD patients may contribute to the hypercoagulability associated with the disease.