APC-PCI complex as a new tool for the evaluation of anticoagulant response to endogenous thrombin formation and its sequel in fibrinolysis.


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Background
Baseline levels of APC-PCI complex in plasma report on the continuous formation of APC and indirect on thrombin formation and its anticoagulant vector. We evaluated the relationship of this marker with prothrombin fragment F 1+2, and also with FbDP (fibrin degradation products).

Methods
24 young and 24 elderly healthy volunteers were studied in the early morning, twice, several weeks apart. Eight were followed for 24 hours (7 time points). F 1+2, FbDP and APC-PCI were analysed with immunological methods.

Results
a) Diurnal

There is a peak in the morning and trough between 14-20 h in APC-PCI: amplitude 25%. The area under the curve was largest for APC-PCI (429 AU), compared to F 1+2 (258 AU) and FbDP (157 AU). The diurnal time patterns are slightly different.

b) Longitudinal stability

APC-PCI shows an habitual level with a groups CV=37% and a longitudinal CV=17%.

c) Correlations

Figure 3: Correlation in early morning samples (r=0.631; p=0.001)
F 1+2 also correlates with FbDP (r=0.589; p=0.002)

d) Ratio’s

The APC-PCI ratio showed a narrow distribution (CV%=34) as did FbDP/F 1+2 (CV%=39).

Discussion
It is observed that among thrombin formation indices APC-PCI shows the largest diurnal fluctuation.

Thrombin generation (F1+2) is a co-determinant of APC formation on average for 40% and fibrin formation/lysis for 35%.

Other co-determinants causing variation between individuals in APC-PCI, are rather stable in apparently healthy individuals over time.

Conclusions
- The ratio of APC-PCI/F 1+2 may be a useful tool to establish an individual set points (and its deviations) in the balance between coagulation and anticoagulation.
- Similarly FbDP/F 1+2 can be used to establish the balance fibrinolysis and coagulation.