Global coagulation & endothelial biomarkers in normal controls

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RESEARCH WEEK
5-9 OCTOBER 2020
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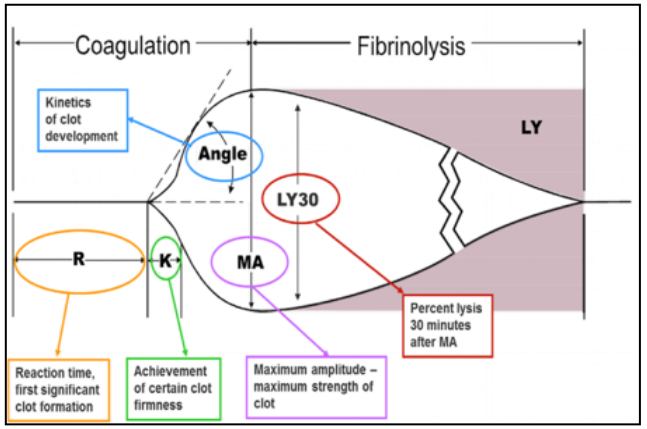
Introduction & Methods

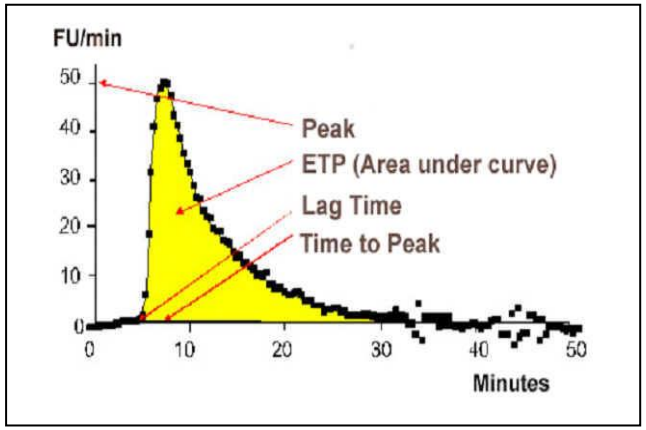
- Limited role for traditional coagulation studies in predicting bleeding and thrombotic risks
- Aim: to explore how global coagulation assays and endothelial markers may vary in normal controls
- Methods:
  - Healthy controls (>18 years) not on anticoagulant/antiplatelet agents were recruited
  - Experimental assays include:

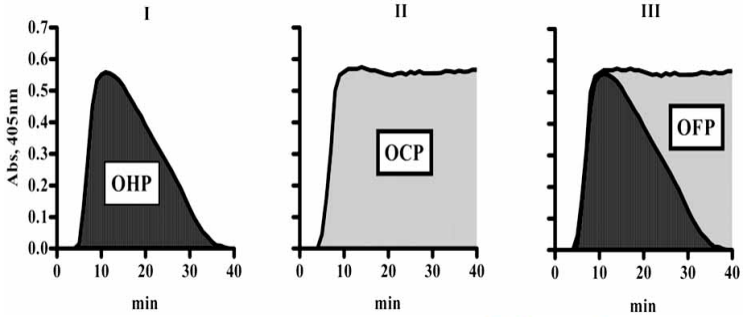
Thromboelastography (TEG)

Calibrated automated thrombogram (CAT)

Overall haemostatic potential (OHP)







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Results: Age & Gender effect

153 normal controls were recruited:

- Female controls (n=98)
  - Hypercoagulable TEG
    - Increased maximum amplitude (clot strength)
  - Increased thrombin generation
    - Increased endogenous thrombin potential (total thrombin)
    - Increased peak thrombin
  - Reduced endothelial markers
    - Lower P-selectin
    - Comparable TFPI
- Older controls (>50 years) (n=59)
  - Hypercoagulable TEG
    - Increased maximum amplitude (clot strength)
  - No difference in thrombin potential
  - Increased endothelial markers
    - Increased P-selectin
    - Increased TFPI

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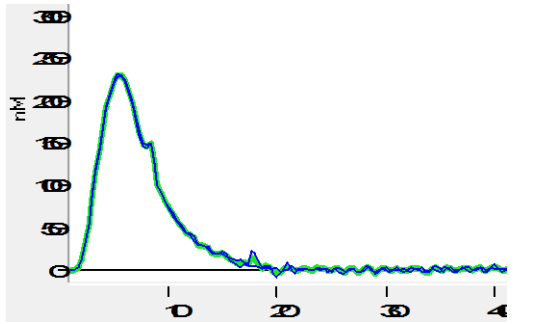
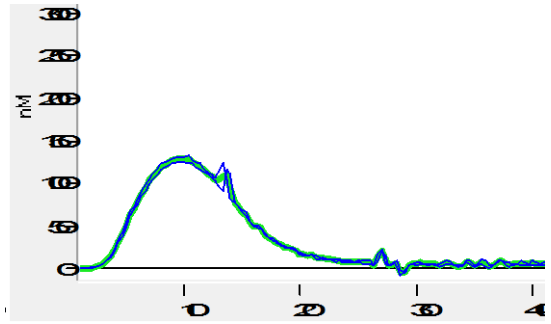
Results: Paradoxical reduction in thrombin generation & Conclusions



Standard Peak Curve



Flattened Curve

- More likely to be male (49% vs 20%, p=0.002)
- Higher total cholesterol (5.4 vs 5.0 mmol/L, p=0.009)
- Higher LDL-C (3.3 vs 2.7 mmol/L, p=0.001)
- Increased endothelial markers
  - Higher P-selectin (54.2 vs 47.2 ng/mL, p=0.038)
  - Higher TFPI (27.7 vs 16.6 ng/mL, p=0.033)

Conclusion

- GCA can detect subtle changes of the haemostatic profile
- Reduced thrombin generation was paradoxically associated with “silent” cardiovascular risk factors
  - ?due to increased TFPI
  - ?compensation within the coagulation system in response to endothelial activation
- Role of GCA as a biomarker for early cardiovascular disease

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