

## **Abstract**

**Introduction:** Thrombophilic conditions may be accompanied by increased thrombin generation (TG), especially during pregnancy when the increase in thrombin generation results from a series of changes in the haemostatic system. During administration of anticoagulant treatment, it is desirable to reduce the increase in thrombin generation.

**Aims of the study:** The first aim of our study was to compare TG in individuals with a proven factor V Leiden mutation and individuals with elevated levels of factor VIII. Another aim was to compare patients with VTE and also with or without proven FV Leiden mutation that are taking different anticoagulation treatments. The final aim was to assess thrombin generation in pregnant women and their response to LMWH administration during severe thrombophilic conditions.

**Group of patients and methods:** There were included 170 healthy blood donors in the control group, the congenital and acquired thrombophilia group included 44 individuals with FV Leiden mutation and 38 individuals with factor VIII level >150 % without other proven thrombophilia. 347 subjects with VTE taking direct coagulation inhibitors were included in the anticoagulation group. Sixty women with a prophylactic dose of LMWH were included in the group of pregnant women. Kit Technothrombin® TGA RC Low and RC High and analyser Ceveron® Alpha were used to monitor the thrombin generation.

**Results:** Increased TG was found in the group with high factor VIII compared to the FV Leiden mutation group. In the group taking direct coagulation inhibitor, the rate of reduction in TG varied by drug type and differed in the minimum and maximum therapeutic effect. No significant difference in treatment response was found between FV Leiden negative and FV Leiden positive groups. No high correlation was also found between the level of used drug and the degree of reduction in thrombin generation. TG was significantly increased in pregnant women at thrombophilic risk and these women responded to prophylactic doses of LMWH with lesser reduction in thrombin generation than predicted.

**Conclusion:** Thrombophilic conditions associated with the risk of VTE should be accompanied with the monitoring of thrombin generation, especially in cases where the ineffectiveness of anticoagulant treatment is suspected. Consistent monitoring of TG in pregnant women at thrombophilic risk can improve the general condition of pregnant women and the quality of their care.