

## 論 文 要 旨

Effects of glycemic control and hypoglycemia on Thrombus formation assessed using automated microchip flow chamber system: an exploratory observational study

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Background: Thrombus formation is an important factor affecting cardiovascular events and venous thromboembolism in type 2 diabetes. However, it is unclear whether glycemic control reduces thrombogenicity. We investigated the effect of short-term glycemic control (STUDY 1) and hypoglycemia (STUDY 2) on thrombus formation using an automated microchip flow chamber system.

Methods: For STUDY 1, we recruited 10 patients with type 2 diabetes. Before and after 2 weeks of treatment, blood glucose was analyzed with a continuous glucose monitoring system, and thrombogenicity was analyzed with an automated microchip flow chamber system. For STUDY 2, we recruited 10 subjects without diabetes who underwent an insulin tolerance test. We evaluated the change in thrombogenic potential with hypoglycemia.

Results: STUDY1: The mean blood glucose level reduced from  $10.1 \pm 2.6$  to  $6.9 \pm 0.97$  mM ( $P < 0.01$ ). T10, an indicator of thrombogenicity, significantly attenuated after glycemic control ( $338 \pm 65$  vs.  $425 \pm 117$  s,  $P < 0.05$ ). The attenuation in T10 was significantly correlated with changes in mean blood glucose level after treatment ( $r = -0.718$ ,  $P < 0.05$ ). STUDY 2: Platelet function was enhanced with decreasing blood glucose; increased platelet function was strongly correlated with an increase in epinephrine.

Conclusions: We demonstrated attenuation in thrombogenicity with short-term comprehensive diabetes care and enhancement in thrombogenicity with hypoglycemia, using a new flow chamber system.