Effect of Stress on Plasma Catecholamine and Blood Pressure in SHR.
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To observe the effect of stress on sympathetic activity and hemodynamics, we reported the usefulness of the continuous monitoring of plasma norepinephrine(NE) using in vivo microdialysis method and continuous measuring of blood pressure(BP) and heart rate(HR). Results suggested that the magnitude of the NE response to stress was affected by various factors.

The purpose of this paper is to know the effect of several factors, such as 1) species or age of rat, 2) animal condition on the recovery phase of surgical intervention, and the anesthetic condition on the magnitude of plasma NE response to foot shock stress. An attempt is made to know 1) the role of NE amount at the pre-stress stage in the magnitude of NE response to stress and 2) what is the suitable anesthetic condition for these experiment.

[Material and Method] SHR and WKY rats of 16 weeks and 40-50 weeks old were used in this experiment. The rats were anesthetized with halothane(0.7-2.0% in air). The polyethylene catheter was cannulated into the carotid artery for the recording BP and HR. For the measurement of plasma NE, the microdialysis probe was inserted into the jugular vein and the dialysates were collected continuously every 20 minutes into sample tubes. The concentration of NE in the dialysate were measured by the HPLC-ECD system. For foot shock stress, a bipolar stimulating needle electrode was inserted into the foot pad to a depth of 1 mm and constant current pulses(1 ms, 5 mA) at 1 Hz were applied bilaterally for 20 min.

[Results and Conclusion] Plasma NE, BP and HR responses to stress was greater in SHR than WKY, and also in young SHR than aged one. These responses were also different according to the phase after the surgical intervention. The magnitude of these responses to stress showed greatest and the most stable in late phase of recovery period. The magnitude of NE response to stress was correlated to the NE level at pre-stress period, but not correlated to the depth of halothane anesthesia. From these finding, it was concluded that the continuous monitoring of NE was necessary to investigate the effect of stress on NE, and that the stress stimulation should apply after the confirmation of NE levels keeping stable.