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The purpose of this clinical study is to investigate changes in left ventricular (LV) function and reflex sympathetic response after drip infusion of nitroglycerine (DIVTNG).

In 15 patients without abnormal LV wall motion, LV pressure, LV volume, right ventricular (RV) pressure, coronary sinus flow (CSF) and norepinephrine (NE) concentration in aorta and coronary sinus were measured in constant heart rate by atrial pacing before and after DIVTNG.

After DIVTNG (1.5mg during 20 minutes), positive dp/dt , $dp/dt/P40$ and V_{max} significantly increased by +9.1%, +8.7% and +13.9% despite a decrease of LV systolic and end-diastolic pressure and RV end-diastolic pressure by -11.8%, -21.8% and -38.5%. CSF, arterial NE concentration and transmyocardial NE release remained unchanged. Time constant and chamber stiffness calculated from diastolic pressure-volume (P-V) curves as parameters of LV diastolic relaxation, were unchanged, but diastolic P-V curves were displaced leftward and downward after DIVTNG.

Conclusion; 1) DIVTNG has a mild but definite positive inotropic effect and it is not associated with reflex sympathetic response.

2) DIVTNG dose not influence the intrinsic relaxation of LV myocardium or chamber.

3) Downward displacement of diastolic P-V curves after DIVTNG appears to be dependent upon reduction of RV filling dynamics or external constraints due to a decrease of preload.

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THE NOREPINEPHRINE-SENSITIVE CALCIUM STORAGE SITE DIFFERS FROM THE CAFFEINE-SENSITIVE CALCIUM STORAGE SITE IN CULTURED VASCULAR SMOOTH MUSCLE CELLS OF THE RAT AORTA

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Using the microfluorometry of quin 2, we have compared the characteristics of norepinephrine (NE)- and caffeine-sensitive intracellular Ca^{2+} storage sites in rat aorta vascular smooth muscle cells (VSMC) in primary culture. When the VSMC were exposed to NE or caffeine in Ca^{2+} -free media containing 2mM EGTA, there was a transient and dose-dependent elevation of the intracellular Ca^{2+} concentration ($[Ca^{2+}]_i$). The longer the duration of exposure to Ca^{2+} -free media, the lesser was the extent of the NE-induced Ca^{2+} release from the NE-sensitive Ca^{2+} storage site, while the extent of the caffeine induced Ca^{2+} release from the caffeine-sensitive Ca^{2+} storage site was unaffected by the exposure to Ca^{2+} -free solution after 10 min. The transient $[Ca^{2+}]_i$ elevation induced by caffeine was observed when the NE-sensitive stored Ca^{2+} was depleted by repetitive treatment with NE prior to the application of caffeine. Conversely, NE-induced transient $[Ca^{2+}]_i$ elevation was also observed when the caffeine-sensitive stored Ca^{2+} was depleted by the repetitive application of

caffeine. These results suggest that the NE-sensitive Ca^{2+} storage site is different from the caffeine-sensitive Ca^{2+} storage site in cultured VSMC of the rat aorta.

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EFFECTS OF INSULIN ON THE PRESSOR AND VASOCONSTRICTOR RESPONSES TO α -AGONIST

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The purpose of this study is to assess the effects of insulin on the pressor and vasoconstrictor responses and baroreflex sensitivity in diabetics without autonomic neuropathy. Arterial pressure (AP), venous pressure and heart rate (HR) were continuously recorded. Forearm blood flow (FBF), forearm vascular resistance (FVR) and venous tone (VT) were measured using strain-gauge plethysmograph with a venous occlusion method. To evaluate the pressor response to α -agonist, pressor dose of phenylephrine (P) required to increase systolic pressure by 25 mmHg (PD25) was measured in accordance with Kotchen's method. The increases of FVR (ΔFVR) and VT (ΔVT) in response to P at a rate of 0.8 $\mu g/kg/min$ were measured for evaluation of vasoconstrictor responses to α -agonist. Baroreflex sensitivity (BS) was measured by Oxford phenylephrine method. Measurements were repeated at rest and 30 min after an IV injection of actrapid insulin (N=19) or saline (N=18). AP, HR, FBF, VT and BS were unchanged after insulin. Insulin significantly increased PD25 from 38 ± 7 to $62 \pm 9 \mu g$ ($p < 0.05$). After insulin, ΔFVR ($-40.7 \pm 15.7\%$) and ΔVT ($-49.3 \pm 10.4\%$) were significantly decreased ($p < 0.05$, $p < 0.05$, respectively). There was a significant fall in blood glucose after insulin. No patients developed hypoglycemia. All indices remained unchanged by saline. We conclude that insulin may have the inhibitory effects on pressor and vasoconstrictor responses to α -agonist, which may be one of mechanisms contributing to insulin-induced hypotension (vasodilation).

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ESTIMATION OF THE PRESENCE OF α -ADRENOCEPTOR SUBTYPES IN THE SYSTEMIC CAPACITANCE VESSELS IN DOGS -A STUDY WITH THE MEASUREMENT OF MEAN CIRCULATORY PRESSURE(MCP)-

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We estimated the presence of α -adrenoceptor subtypes (α_1, α_2) in the systemic capacitance vessels from the changes of MCP before and after intra