26) Release of endothelin-1 from the mesenteric arteries of spontaneously hypertensive rats with streptozotocin-induced diabetes mellitus. Takashi Yoneda, Yoshivu Takeda, Isamu Miyamori, and Ryosuke Takeda. Second Department of Internal Medicine, School of Medicine, Kanazawa University, Kanazawa 920 Japan

Hypertension associated with diabetes mellitus causes vascular damage of various degrees. We previously reported that the mesenteric arteries of diabetic rats released greater amount of endothelin-1 (ET-1) than in controls, possibly as a result of damage to the endothelium associated with diabetes (Life Sci. 48. 1991). In the present study we have investigated the effects of diabetes and hypertension on the release of ET-1 from the mesenteric arteries of spontaneously hypertensive rats (SHR) with streptozotocin-induced diabetes mellitus.

Materials and Methods: To induce diabetes, 45mg/kg of streptozotocin (STZ) was injected intravenously to 8-week SHR. The control rats (non-diabetic SHR) received the vehicle alone. The experiment was carried out 8 weeks after STZ injection. With the animals under pentobarbital anesthesia, the mesenteric artery was immediately excised and perfused with Krebs-Ringer solution, pH 7.4 pre-warmed and oxygenated with a 95% O2 + 5% CO2 gas mixture at a constant flow rate of 4 ml/min. The perfusate for 1 hour was extracted using Sep-pak C18 column and measured with specific RIA. Plasma ET-1 concentration was also measured with the same method.

Results and Comments: After eight weeks of STZ treatment, the body weights in the diabetic SHR were significantly reduced as compared with non-diabetic SHR (257±14 vs 310±7, p<0.05). The systolic blood pressure of diabetic SHR was not different from non-diabetic SHR (197±8 vs 202±5 mmHg). STZ-induced diabetic SHR produced a significantly high levels of plasma ET-1 concentrations (14±1.7 vs 8.6±0.8 pg/ml) in non-diabetic SHR, p<0.05). Mesenteric artery from diabetic SHR also released greater amount of ET-1 compared with non-diabetic SHR (34±20 vs 21±3.8 pg/lhr, p<0.05). The present results demonstrate that diabetes mellitus enhanced the release of ET-1 from the vascular endothelium, confirming our previous results. The results may further support our notion that plasma ET-1 could serve as a marker for vascular damage.