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CATECHOLAMINE HYPERSENSITIVITY IN THE SPONTANEOUSLY HYPERTENSIVE RAT (SHR) CREMASTER MUSCLE MICROVASCULATURE AS ASSESSED BY CHANGES IN VASCULAR RESISTANCE. J. Roy* and H.N. Mayrovitz. Miami Heart Institute, Miami Beach, Florida 33140

Changes in vascular resistance (VR) of the microvasculature distal to first order arteries induced by norepinephrine (NE) superfusion were used to determine the presence and extent of augmented catecholamine sensitivity in the SHR. VR was calculated in 8 SHR and 8 normotensive (WKY) animals as the ratio of second order microvessel blood pressure (servo-null method) to flow (dual-slit method) in the absence and presence of a maximally dilating concentration (10^{-5}M) of nitroprusside (NP).

VASCULAR INPUT RESISTANCE (mm Hg/nl/sec)

NE x 10^{-8}M	0.0	0.2	0.5	1.0	2.0	5.0	10.0	20.0	50.0
WKY-NE	0.4	0.4	0.4	0.5	0.7	2.2	-	-	-
SHR-NE	1.5	2.2	3.4	5.0	7.6	9.3	-	-	-
WKY-NE&NP	0.3	-	-	-	0.3	0.4	0.6	0.9	1.6
SHR-NE&NP	0.5	-	-	-	0.9	1.4	1.9	3.8	6.7

All WKY-SHR differences are significant at 0.05 level

From the results summarized in the table we conclude that (1) the increased vascular resistance in hypertension resides to a large extent at the microvascular level, (2) the elevated sensitivity of the SHR to NE plays a significant role in the extent of this heightened VR, but (3) it cannot fully account for the increased VR, since maximum dilatation with NP failed to eliminate VR differences. (Supported by The American Heart Association of Greater Miami, Inc.)

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