Microvascular Effects of Chronic Verapamil Treatment in Spontaneously Hypertensive Rat
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Verapamil was given via subcutaneously implanted osmotic minipumps for 2 weeks at a continuous dose of 0.85 mg/100 gm/day. Thereafter, direct observation and measurements in the rat cremaster microvasculature of the verapamil treated group (VERAP, n=11, 6-7 wks) were compared with a sham implanted group (SHAM, n=11). Arteriolar diameter (D), blood flow (Q), and micropressure (P) were determined in 3 branching orders (A1, A2, A3), under control conditions (CC), maximal dilation (MD), and after graded doses (2-1000 nM) of topically applied norepinephrine (NE). The VERAP group had a lower heart rate (333 vs 370/min, p<0.01), and lower mean systemic blood pressure (111 vs 124 mmHg, p<0.01), but the fraction of this pressure transmitted to A2 in the VERAP group was greater (44 vs 37%, p<0.01) as were the VERAP A1 diameters under CC (71 µm vs 64 µm, p<0.05). These were the only differences between groups under CC. With MD, Q increases and P decreases were noted at all branching levels, but no further differences between groups were found. There were no differences in the responses of any parameter to NE challenge. The results suggest that the main vascular component of the antihypertensive action of verapamil resides in vessels upstream from the microvasculature.

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The undersigned certifies that all authors named in this abstract have agreed to its submission for presentation at the AHA Scientific Sessions.

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