CAPILLARY DIAMETER, PATHLENGTH AND DENSITY IN NORMOTENSIVE AND HYPERTENSIVE RATS
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Arteriolar rarefaction in hypertension is well documented but data on capillaries (CAP) are conflicting. To determine if differences are present, we measured CAP diameter (D, μm), length per unit tissue volume (Ld, mm/cu mm) as an index of number density, individual segment length (Ls, μm) and arteriole-venule capillary flow pathlengths (Lp, μm) in the cremaster of 9 hypertensive (SHR) and 10 normotensive (WKY) rats 6-7 wks of age. In vivo measurements were made in randomly chosen zones after making the vasculature fluorescent via an IV dose of Fluorescein Isothiocyanate-Dextran 150 (30 μg/g). Groups (WKY vs SHR) differed in mean blood pressure (95.4 vs 145.4 mmHg, P < 0.001, t-test) and differed in D and Ld (P < 0.001, analysis of variance), but no significant differences in Lp or Ls between groups were found. Group means ± SEM for measurements follow as WKY vs SHR: D, 5.9 ± 0.2 vs 6.5 ± 0.2; Ld, 194 ± 6 vs 153 ± 7; Ls, 108 ± 4 vs 128 ± 6; Lp, 406 ± 12 vs 460 ± 16. D and Ld values are greater than in previous reports, in part due to the use of fluorescence whereby diameter underestimation and uncounted vessels are less likely. The lower Ld in SHR vs WKY, together with the absence of group differences in Ls or Lp, suggests that the lower Ld reflects CAP rarefaction in SHR.

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Author's Signature: [Signature]

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