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The Role of the Nervous System in Hypertension

P-18

AGE-RELATED CHANGES OF PHASE-SPACE DISTRIBUTION OF AMBULATORY BLOOD PRESSURE MONITORING (ABPM) DATA IN NORMO- AND HYPERTENSIVE PATIENTS.

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Objective: In addition to time domain, the ABPM data may be studied in the phase-space of R-R interval and blood pressure¹.

Methods: The individual phase-space distribution of data may be quantified by the negative slope of the regression line through 24 hour values of R-R interval over systolic (SBP) and diastolic blood pressures (DBP). Results: In 170 normotensive (N, SBP: 118.0 ± 8.0 24 mean ± sd, DBP: 72.7 ± 6.8 mmHg) and 181 untreated hypertensive subjects (H, SBP: 137.0 ± 8.0, DBP: 87.2 ± 6.8) the average slope of R-R interval over SBP was -5.7 ± 2.5 and -4.4 ± 2.4 ms*mmHg⁻¹ respectively (p < 0.000). When distributed by decades of life the steepest slope occurred during the 20-29 decade (R-R/SBP, N: -7.7 ± 1.6; H: -6.3 ± 2.3) and the flattest in the 60-69 decade (R-R/SBP, N: -3.9 ± 2.0; H: -3.9 ± 1.4). The average slope was steeper from 20 to 59 years in normotensive than in hypertensive group and statistically significantly different at 40-49 (p < 0.01) and 50-59 (p < 0.05) years for R-R interval over both SBP and DBP. In the oldest subjects the regression slope was similar in both groups. The ambulatory arterial stiffness index (AASI) calculated on the same subjects from 20-29 to 60-69 decades increased linearly though similarly in both groups.

Conclusions: When seen in the context of the "Autonomic space" by G.G. Berntson these data indicate that cardiovagal function is maximal at 20-29 years, declining thereafter and leveling off to the minimum of 60-69 decade. From 20 to 59 years of age the cardiovagal tone of hypertensive subjects seems to be constrained not only by an age effect but also by a sympathetic prevalence. References: 1) Recordati G. & Zanchetti A., *Autonom. Neurosci. Basic & Clin.*: 139, 68-77, 2008.