P3.37 **THE PHASE SPACE OF ARTERIAL BLOOD PRESSURE MONITORING**

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Background: Arterial blood pressure and heart rate changes recorded by ambulatory blood pressure monitoring (ABPM) may be graphically represented in the phase space (PS) of diastolic and systolic blood pressures (DBP, SBP), and of RR intervals.

Methods: ABPM was performed using Spacelabs 90207 monitors in 10 healthy normotensive and 30 hypertensive subjects, with readings every 15 min (day) and 20 min (night). Stored variables were copied to a software program for statistical analysis, and graphic representation. In the PS all the BP and RR values were connected by line segments to highlight 1) phase relationships between values, 2) order of recording, and 3) transients between sleep and wakefulness.
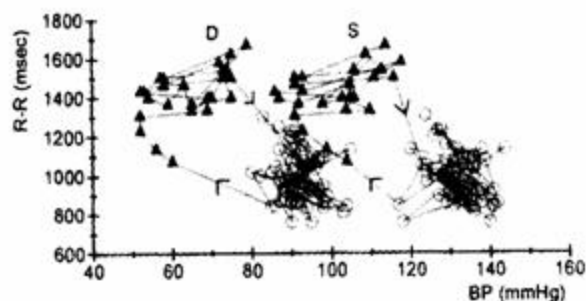
Results: the figure shows the PS of 24h values of D and SBP and RR interval of an extreme dipper, hypertensive, subject. Nighttime values (filled triangles) are always positioned above and to the left of daytime values (open circles). The sets of points are connected by line segments, the transients, corresponding to nighttime dipping, (upward arrowheads), and morning surge (downward arrowheads). While the distribution of nightime values is consistent with the prevalence of baroreceptor constraint, the daytime values are distributed in an irregular circular region indicating a complex interaction between vagal and sympathetic drives.

Conclusions: 1) Each PS representation is characteristic for a given subject; 2) the 24h relation is oriented from top left to bottom right, indicating a prevalence of sympathetic drive; 3) the nighttime period appears as the more stable state under parasympathetic control; 4) trajectories indicate that the baroreflex may be ineffective during transients.