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P14.427 THE AUTONOMIC PHASE-SPACE OF ARTERIAL BLOOD PRESSURE MONITORING

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Background: The phase-space distribution (PSD) of diastolic blood pressure (DBP, mmHg) and R-R intervals (RR, ms) values, has been used to study the relation between pressure and heart rate changes recorded by ambulatory blood pressure monitoring (ABPM).

Methods: ABPM was performed using Spacelabs monitors in 44 healthy young subjects (23 females and 21 males, 21.9 ± 1.1 y of age), with readings every 15 min (day) and 20 min (night). The collected variables were copied to a software program for statistics and graphics. To study reproducibility, in ten subjects the ABPM was repeated twice. The PSD of points for each individual was described by the values of night, day and 24 h means (indexes of stability), by the slopes of the regression of the means (b-means) and of the 24 h values (b-24 h), and by the standard deviations of the means (SD, indexes of variability around the means).

Results: In all subjects the nighttime set of values was positioned above and to the left of daytime set, as in all subjects nighttime was accompanied by a reduction in DBP and lengthening of RR. However the PSD of 24 h values and b-24 h, the position of the means and b-means, and the day and night SDs were different from subject to subject but, when tested twice, highly reproducibile.

Conclusions: These data indicate that the reciprocity between day prevalence of sympathetic and night prevalence of vagal drives is present in all subjects (Berntson GG et al., Psychol Rev, 1991). The extent of reciprocity is variable amongst individuals, but individually highly reproducible, suggesting that in healthy youngs the connections between the autonomic and innervated target organs are functionally stable. Given the well-known long-term potentiation between pre- and postganglionic neurons, a personalized and stable function indicates that the system may learn. This so-called implicit memory (LeDoux J, The Synaptic Self, Penguin, 2002) may be reorganized and eventually lost as a consequence of lifestyle changes, emotions and aging.