

DETERMINATION OF 24-HOUR BLOOD PRESSURE HOMEOSTASIS IN SUBJECTS WITH DIFFERENT DEGREES OF GLUCOSE TOLERANCE

Vanessa Piccoli, Alessandra Locatelli Smith, Amanda Rodrigues Fabbrin, Manoella Freitas Santos, Fernando Gerchman, Luis Henrique Santos Canani

Background and aims: Although it is well known that arterial blood pressure (BP) increases with deterioration of glucose tolerance (GT), it is poorly understood how progressive hyperglycemia determines BP behavior along the day. Materials and methods: In a cross sectional study, we analyzed if 24-h ABPM levels differ among 105 subjects (age 53.4 ± 12.6 years, females 79.0%) submitted to a 75-g OGTT and classified as normal glucose tolerance (NGT; n=26), prediabetes (PDM; n=47) and diabetes (DM; n=32). Body size (BMI), central obesity (waist circumference, WC), serum calcium and 24-h urinary albumin excretion (UAE) were evaluated. Insulin resistance (HOMA-IR), insulin sensitivity (Stumvoll index), β -cell function (insulinogenic index/HOMA-IR) and glomerular filtration rate (eGFR; CKD-EPI equation) were estimated. Results: By ABPM, 24-h systolic blood pressure (SBP) progressively increased from NGT to DM ($P=0.038$). The same pattern was found with day and nighttime ABPM. The day and night 24-h SBP by ABPM were not related to BMI, WC, HOMA-IR and insulinogenic index. 24-h UAE ($r=0.236$, $P=0.029$) and serum calcium ($r=0.201$, $P=0.046$) were positively related to 24-h SBP, whereas Stumvoll ISI ($r=-0.211$, $P=0.033$) and eGFR ($r=-0.261$, $P=0.009$) were inversely related to it. After adjusting for age, gender, UAE and serum calcium by repeated-measures ANOVA, BP rhythm significantly differs along the day ($P<0.001$) and in subjects with NGT, PDM and DM ($P=0.029$), with BP peak happening in awakening and late afternoon times. In addition to that, by generalized estimating equation analyses, 24-h BP levels increased with decreasing GT (NGT vs PDM; $P=0.046$ and NGT vs DM; $P=0.006$). Conclusion: Blood pressure differs along the day with progressive increase of its levels with decreasing GT.