

Although it is well known that office arterial blood pressure (BP) increases with deterioration of glucose tolerance (GT), this finding has not been demonstrated by 24-h ambulatory blood pressure monitoring (ABPM). We analyzed if 24-h ambulatory BP levels differs by glucose tolerance in a cross-sectional analysis of Brazilians (n=86, age 54.3±12.3 years, females 80.2%) with normal glucose tolerance (NGT; n=18), pre-diabetes (pre-DM; n=41) and diabetes (DM; n=27). By a 75g oral glucose tolerance test, the insulin sensitivity (Matsuda index) and beta cell function (insulinogenic index/HOMA-IR) were estimated. Body size (BMI; body mass index) and abdominal obesity (WHR; waist to hip ratio) were measured. By ABPM, 24-h systolic blood pressure (SBP) progressively increased from NGT to DM (NGT 123.2±15.3 vs Pre-DM 129.3±14.5 vs DM 137.6±18.8; P=0.013). The same pattern was found with daytime (NGT 126.6±15.8 vs Pre-DM 132.1±14.9 vs DM 141.1±18.6; P=0.012) and nighttime (NGT 116.1±14.5 vs Pre-DM 123.1±15.7 vs DM 129.8±20.7; P=0.035) ABPM. Although the office systolic and diastolic arterial blood pressures and 24-h daytime and nighttime diastolic blood pressure (DBP) by ABPM progressively increased with decreasing GT, these differences were not significant. Hypertension rates by 24-h ABPM (NGT 38.9 vs Pre-DM 53.7 vs DM 70.4%; P for trend 0.035) were significantly greater from NGT to DM. The 24-h SBP was inversely related with Matsuda ( $r=-0.231$ , P=0.033) and insulinogenic ( $r=-0.312$ , P=0.006) indexes adjusted by HOMA-IR while positively related with WHR ( $r=0.218$ , P=0.043). The 24-h DBP was related with WHR ( $r=0.218$ , P=0.043) but not with Matsuda index ( $r=-0.075$ , P=0.495) and with the insulinogenic index ( $r=-0.142$ , P=0.220). BMI was not related with ABPM. Using ABPM we were able to show that BP progressively increased with deterioration of GT, being decreased insulin sensitivity, beta-cell dysfunction and central obesity possible main determinants of this association.