

REFERENCE VALUES OF CENTRAL BLOOD PRESSURE AND PULSE WAVE VELOCITY IN RELATION WITH 24 HOURS AMBULATORY BLOOD PRESSURE MONITORING IN BELGIAN HEALTHY YOUNG SUBJECTS.

A. Saint-Remy, F. Caruso, JM Krzesinski

Nephrology-Hypertension Unit- CHU Sart-Tilman, Liege, Belgium

Aim

Twenty-four hours Ambulatory Blood Pressure Monitoring (ABPM) and more recently Central Blood Pressure (cBP) and Pulse Wave Velocity (PWV) have been proposed as highly useful tools to improve diagnosis and treatment of hypertension (HT) and cardiovascular disease (CVD). The aim of our study was to define reference values of cBP and PWV and 24H ABPM in healthy young adults before starting a follow-up of their CV profile modifications over time.

Method

During one visit, office BP (OPB), heart rate (HR), cBP and PWV (SphygmoCor) and 24h ABPM (Spacelabs 90207) were measured in 94 healthy young Caucasian adults (mean age: 22.5±2.8 y, range:19-30; M/W:47/47). Height, weight, family and personal health history, medications, smoking and physical activity were recorded. None of the participants were treated by antihypertensive medications; 86% of women were on oral contraceptives.

Results

Mean BMI was 21.6±3 Kg/m², none were obese. Twelve % were smokers, 26% and 21% had a family history of HT and Diabetes, respectively. Fifty-five % practised regular physical activity. With a mean OBP of 117-72 mmHg (±10/±9) and HR at 68±12 b/min, mean Central Systolic Blood Pressure (cSBP) was 101±9 mmHg (85-122) with P90th at 112 mmHg. Boys, who were taller and heavier, had significantly higher OBP, cBP, Pulse Pressure (PP) and Systolic Ambulatory Blood Pressure (SABP) than girls. PWV mean was 5.8±0.9 m/s (4-9) with a P90th at 7 m/s. No difference appears between genders. PWV was moderately related to cBP (r=0.27, P=0.01). All the 24H ABPM parameters confirmed the absence of hypertension. Whatever the technique used to measure BP, girls had systematically higher HR than boys. cSBP was correlated to 24h ABP (0.44, P<0.0001), to 24h MAP (0.51, P<0.0001) and moderately to the dipping amplitude of SBP but only in boys. A positive relation was observed between cBP and Office PP (in boys) but not with day or night ambulatory PP.

Conclusions

Observed in a healthy population, our data provide reference values of cBP and PWV for a 20-30 y. range of age. It was interesting to note some significant relationships between the three techniques of BP measurement (office, central, ABPM). This gives opportunity to follow up this population in view first to explore the evolution of these BP measurements according to age and secondly to compare these relations in different pathologies and treatment related to high blood pressure.