Title: Relationship of Ambulatory Blood Pressure Patterns with Left Ventricular Hypertrophy, Ventriculo-Vascular Stiffness, Microalbuminuria and Vascular Inflammation in Essential Hypertension

Category: Prevention

Abstract

Background: While ambulatory blood pressure(ABPM) is the gold standard for diagnosis of sustained hypertension, the use is still limited in the Middle-East with no published data. T aim of our study was to investigate the prevalence and clinical characteristics of ABPM patterns in a Middle-Eastern(ME) adult population.

Methods: ABPM records of adult patients referred to Hypertension Clinic at King Abdul Aziz Cardiac Center between January 2016 and December 2018 were studied. Masked hypertension(MH) and masked uncontrolled hypertension(MUCH) were defined as office BP<140/90 and daytime ABPM≥135/85; white coat (WC) as office BP>140/90 and daytime ABPM<135/85 (mmHg); non-dipping as <10% reduction in nightime BP. All patients underwent Echocardiography, pulse wave velocity(PWV), wave reflection(AIx), high-sensitivity C-reactive protein and albumin-to-creatinine ratio. Results analysed using JMP Version 13, p<0.05 considered significant.

Results: Among the 450 subjects, mean age 54±12 years, 8% of patients had MH, 27% had MUCH, while WC was observed in 15%, 50% non-dippers. Table shows the clinical characteristics stratified by BP pattern.

Variables	Masked	Masked Uncontrolled	Sustained	White-coat effect	P for trend
Age(years)	44±16	54±15	57±14	59 ±16	P<0.01
Gender(M)%	37	67	52	45	P<0.05
BMI>30 kg/m^2(%)	40	39	50	54	P<0.05
Smoking(%)	11.7	26	14	20	P<0.05
Diabetes(%)	25	51.7	53	59	P<0.01
Dyslipidemia (%)	37	66	60	47	P<0.01
No of antihypertensive drugs	0.3±0.1	2.1±1.2	2.6±2	1.6±1.6	P<0.0001
Nocturnal hypertension(%)	10	70	43	40	P<0.0001
Left ventricular hypertrophy(%)	10	60.5	55.7	35	P<0.0001
Albumin creatinine ratio(mg/mmol)	1.5±1.6	5.2±2.1	3.9±1.9	2.4±2.1	P<0.0001

High sensitivity C reactive protein(mg/dl)	0.62±0.1	7.4±0.2	5.9±0.1	1.5±0.1	P<0.0001
Pulse wave velocity(m/s)	8.6±0.1	11.5±0.2	11.9±0.1	9.1±0.2	P<0.0001
Augmentation index(%)	25±9	35±10	38±6	29±8	P<0.0001

Conclusions: Our study shows that in 50% of patients, office BP measurement yields an inaccurate diagnosis. Furthermore, MUCH, only detectable by ABPM, is associated with similar cardiovascular risk and target organ damage as sustained hypertension, indicating that office BP alone should not be used for the managment of hypertension.