high tertile, Chi-square=7.95, p=0.02) with estimated 10-years CV risk : 30(15-40)%, 45(30-60)% and 60(40-75)% respectively. Logistic analysis likewise demonstrated high independent prognostic significance of ABP. Odds ratio increased with each 10-mmHg change by 1.45(1.12-1.89) for 24-h SBP and 1.49(0.99-2.27) for 24-h DBP.

This study demonstrates that ABP is strong predictor of CV complications allowing effective stratification of CV risk in hypertensive patients by ABP level and provides working ABP classification prospectively verified by the statistically significant differences in CV events rate.

Key Words: Ambulatory Blood Pressure, Hypertension, Risk Stratification

P-96

A PATTERN-RECOGNITION ALGORITHM OF OSCILLOMETRIC BP MEASUREMENT WITH PRIMARY DETECTION OF SYSTOLIC/DIASTOLIC ARTERIAL PRESSURE FROM ACTUAL PHYSIOLOGICAL PHENOMENA OCCURRED DURING ARM DECOMPRESSION

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Potentially high accuracy of BP evaluation by ABPM due to numerous ambulatory measurements is substantially neutralized by insufficient accuracy of automatic measurements. The prevalent oscillometric technique of automatic BP measurements is currently based on abstract algorithms of indirect calculating systolic/diastolic pressures from pulse amplitudes using empirical criteria.

To create new pattern-recognition algorithm of oscillometric BP measurement based on physical principles of blood flow.

Pattern-recognition analysis of cuff pressure during the deflation phase of automatic BP measurement was performed.

The algorithm has been developed that evaluates pattern of cuff pressure at every deflation step. Systolic pressure is qualitatively identified as the reverse of trend of cuff pressure values during deflation steps from negative to positive while diastolic - as change of cuff pressure pulse waveform. Both phenomena caused by valvular effect of the cuff on arm circulation causing blood pooling distally to the cuff. To test new algorithm 22 native cuff pressure records were obtained with sampling frequency 200 Hz during automatic BP measurements and processed by traditional technique and alternatively by the new algorithm. Then the two alternative sets of BP values were compared. While mean values did not differ significantly between the methods 132,7/78,6 vs 135,5/77,8 variability of the values produced by pattern-recognition algorithm was significantly lower 17,6/18,7 vs 24,8/26,2 (new vs old, SBP/DBP respectively) obviously indicating less random error of measurement. New pattern-recognition algorithm was also effective with motion artifacts when traditional technique failed.

Presented pattern-recognition algorithm may significantly improve accuracy of oscillometric BP measurement devices.

Key Words: Algorithm, Ambulatory, Measurement

P-97

CARDIOVASCULAR OUTCOME IN TREATED HYPERTENSIVE PATIENTS WITH TRUE AND FALSE RESPONDER HYPERTENSION

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The aim of this study was to evaluate cardiovascular outcome in treated hypertensive patients with true responder hypertension, i.e normal clinic and ambulatory blood pressure, and false responder hypertension, i.e, normal clinic but high ambulatory blood pressure.

The occurrence of fatal and nonfatal cardiovascular events was evaluated in 340 patients (129 M and 211 W, age 59±10 yrs) with true responder hypertension (clinic BP < 140/90 mmHg and daytime BP < 135/85 mmHg) and 126 patients (70 M and 56 W, age 59±12 yrs) with false responder hypertension (clinic blood pressure < 140/90 mmHg and daytime blood pressure > 135/85 mmHg).

During follow-up period (5.2±3 yrs, range 0.5-11.6 yrs) 16 patients with true responder hypertension and 15 with false responder hypertension developed a cardiovascular event. The event-rate per 100 patient-yrs was 0.87 in subjects with true responder hypertension and 2.42 in those with false responder hypertension. The probability of event-free survival was significantly different among the groups (Log-rank test, P=0.004). After adjustment for several covariates, including clinic blood pressure, Cox regression analysis showed that false responder hypertension was an independent predictor of cardiovascular events (false responder hypertension vs true responder hypertension, RR 2.19, 95% CI 1.04-4.6, P < 0.05). Other independent predictors of outcome were age, smoking habit, low-density lipoprotein cholesterol, and left ventricular hypertrophy (all P < 0.05).

The present study shows that treated hypertensive patients with false responder hypertension are at higher risk than those with true responder hypertension. Ambulatory blood pressure monitoring should be also considered in treated hypertensive patients with apparently responder hypertension.

Key Words: Ambulatory Blood Pressure, Clinic Blood Pressure, Prognosis

P-98

BLOOD PRESSURE MEASUREMENT AND CONTROL OF HYPERTENSION WERE INFLUENCED BY THE OBSERVER AND THE ENVIRONMENT

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Background: Blood pressure measured in the office by healthcare professionals is the most common source for hypertension diagnosis and treatment. But, blood pressure measurement is influenced by the observer and the environment what could influence on hypertension control evaluation.

Objectives: 1) Compare office blood pressure measurements (OBPM) taken by the physician, nurse, and patient by Ambulatory Blood Pressure Monitoring (ABPM) and Home Blood Pressure Monitoring (HBPM). 2) Evaluate the control (BP < 140/90 mm Hg) according to the observer's measurement, ABPM and HBPM.

Population and Methods: OBPM was performed by an oscillometric device (DIXTAL DX2710) in 318 hipertensives, in a randomized sequence, by the physician, nurse, and patients, by themselves, in the private room in the sitting position with arm at heart level after a 5-to10-minute rest. HBPM performed by an automatic device (OMRON 705 CP) was taken in the morning, afternoon and night over 7 days. A 24h-ABPM was performed by an oscillometric device (Spacelabs 90205). The measurements were compared by ANOVA, showing significance to p<0.05.

Results:

Blood pressure measurement and control of hypertension by observers HBPM and ABPM

Observer	Systolic B P (mm Hg, mean ± SD)	Diastolic B P (mm Hg, mean ± SD)	Control %
Physician	160 ± 19 α β φ	97 ± 14 μ	9.8
Nurse	157 ± 19 α	96 ± 14 μ	15.4
Patient	158 ± 22 α	96 ± 15 μ	15.6
HBPM	150 ± 19	92 ± 11	26.9
ABPM	152 ± 17	96 ± 11 μ	15.6

α p < 0.05 vs. ABPM, HBPM; β p < 0.05 vs. nurse; φ p < 0.05 vs. Patient; μ p < 0.05 vs. HBPM

For systolic blood pressure, the physician's value was significantly higher (p<0.05) than the nurse's and patient's values, ABPM and HBPM. Measurements taken by the nurse and the patient were similar. HBPM and ABPM were significantly lower (p<0.05). For diastolic blood pressure, HBPM was significantly lower (p<0.05) than the other measurements taken by the observers as well as ABPM. The control percentage by HBPM was the highest. The patient's and nurse's measurements and ABPM were similar whereas the physician's measurement was the lowest.

Conclusion: The measurement taken by the patient alone in the room or by the nurse can be useful to reduce the increase in blood pressure caused by the observer.

Key Words: Blood Pressure Measurement, Home Blood Pressure Measurement, Hypertension

P-99   MP-18

NONDIPPERS HAVE HIGHER INCIDENCE OF ABNORMAL EXERCISE BLOOD PRESSURE RESPONSE LEFT VENTRICULAR HYPERTROPHY AND DIASTOLIC DYSFUNCTION IN PRE-HYPERTENSIVE AND HYPERTENSIVE MEN

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Background: The increasing use of ambulatory blood pressure (BP) monitoring (ABPM) has uncovered the people with abnormal sleep-waking BP patterns called as nondippers. Nondipper data related to exercise BP profile, structural changes and diastolic dysfunction in hypertensive and especially in pre-hypertensive men is limited.

Methods: We assessed left ventricular structure and diastolic function by echo, measuring left ventricular mass index (LVMI), left ventricle, aorta and left atrium dimensions and additionally mitral valve flow parameters as E/A ratio and decceleration time (DT). We also assessed exercise BP response by treadmill test (Bruce) and day-night BP variation by ABPM. We included 663 middle-aged men (51±11yrs) free from heart disease, medication and smoking. Men who had less than a 10% drop in BP at night are referred to as nondippers (n=220).Men with SBP:120-139mmHg or DBP:80-89mmHg are referred as pre-hypertensives (n=316).

Results: After statistical analysis for dippers and nondippers, the nondippers were older (54±8 vs 50±11, p=0.000), had greater LVMI (130±25 vs 122±29, p=0.015) including cavity dimensions and wall thickness. They also had increased the size of aortic root (p=0.000) and left atrium (p=0.05). Exercise BP response was higher in nondippers including resting, 3min, 6min, and max SBP (p=0.000) and additionally 3min, 6min and max DBP (p=0.001). Nondippers had worse diastolic function according to the A wave (p=0.000), E/A ratio (p=0.001) and DT (p=0.05). Analyzing the pre-hypertensives (n=316), again, all the above variables were different significantly for the nondippers (p=0.000). The relative risk (RR) of having an abnormal E/A ratio in pre-hypertensive men was 2.5 times higher in nondippers (CI:1.3-4.9; p=0.007) and the RR of an abnormal DT was 2.04 times higher in the nondippers vs dippers (CI:1.04-3.9; p=0.03).

Conclusion: Nondippers in pre-hypertensive and hypertensive men have higher incidence of abnormal exercise BP response, increased LV mass and diastolic dysfunction. This group represents a high risk for target organ damage and important clinical information especially in the pre-hypertensive population.

Key Words: BP Response-Cardiac Structure, NonDippers, Pre-Hypertension

P-100

COMPARATIVE EVALUATION OF ANTIHYPERTENSIVE EFFICACY BY VARIOUS METHODS OF BLOOD PRESSURE MEASUREMENT IN HYPERTENSIVE MENOPAUSAL WOMEN

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The aim of study was to compare 3 methods of blood pressure (BP) measurement (office, home and ambulatory) used for evaluation of antihypertensive efficacy of enalapril and diltiazem-retard in hypertensive menopausal women.

Menopausal women aged 45-59 with office systolic BP 140-179 mm Hg and diastolic BP 90-109 mm Hg were included in open randomized cross-over trial. During 2 weeks of run-in period previous antihypertensive therapy was discontinued. Ambulatory BP measurement (ABPM) was preformed by Spacelabs 90207 device. Pts with stable ambulatory hypertension according to ABPM data at the end of run-in period were eligible. Self measured BP monitoring was performed using validated electronic device (AND-767 PC) with memory for 126 measurements. Pts were instructed by physician now to perform home BP. The shedule for pts was 3 readings with 1 minute intervals in the morning within 2 hours between awakeness and drug intake and 3 readings in the evening. Pts were randomized to receive either enalapril 5-20 mg or diltiazem-retard 180-360 mg daily. Home BP monitoring was carried out through the trial. Office BP measurement and ABPM were performed at baseline and after each treatment arm. ABPM was srarted between 9-10 a.m. All pts were studied on a typical workday and encouraged to follow their normal diet and activity.

Results are available for 9 pts, mean age 55.6±3.9 (M±SD). Office sistolic BP was 155.7±13.5 mm Hg, diastolic 96.7±8.6 in enalapril arm and 155.0±14.3/93.4±9.0 mm Hg in diltiazem arm. Mean reading calculated for morning home BP values and ABPM during day-time obtained at baseline were similar.Mean dose of enalapril was 15±6 mg, diltiazem-retard -300±90 mg.

Dynamics of BP during antihypertensive therapy according to ABPM and home BP

Drug Methods	Enalapril ABPM	Diltiazem	Enalapril Home BP	Diltiazem
Systolic BP				
Baseline	148.5 ± 7.1	150.2 ± 11.4	160.4 ± 13.4	155.2 ± 14.3
Treatment	135.9 ± 9.5*	138.8 ± 8.5*	147.1 ± 12.5*	151.7 ± 14.0
Diastolic BP				
Baseline	92.1 ± 5.1	94.0 ± 7.2	103.3 ± 10.0	98.7 ± 10.0
Treatment	86.5 ± 7.4*	86.2 ± 8.0*	94.8 ± 8.0*	96.0 ± 8.0*

*$p < 0.05$

Thus, monotherapy with enalaplril or diltiazem-retard effectevely reduced BP in menopausal women. In our trial ABPM was superior to standardized self-measured home BP in assessment of antihypertensive efficacy of both drugs.

Key Words: Ambulatory Blood Pressure Monitoring, Antihypertensive Therapy, Home Blood pressure

P-101

AMBULATORY BLOOD PRESSURE IN PATIENTS WITH SIGNIFICANT CORONARY ARTERIOSCLEROSIS CONFIRMED IN ELECTIVE ANGIOGRAPHY

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Several clinical studies confirmed that 24-hour blood pressure monitoring is superior to office blood pressure in evaluation of hypertension and blood pressure control.