2 weeks; Group 4 - both trandolapril and LU135252 added the last 2 weeks. Systolic blood pressure (BP) was measured weekly in conscious rats by the indirect tail-cuff method with electrophysgomanometer and pneumatic pulse transducer. Blood samples were taken at the beginning of the experiment and after 3 and 5 weeks. Samples were assayed for insulin and triglycerides (TG) concentrations. BP fell in Group 2 (trandolapril) from 148.8 ± 9.8 mmHg at 3 weeks to 138.3 ± 8.7 after 5 weeks; in Group 3 (ET antagonist) from 155.1 ± 5.5 to 142.5 ± 10.6; and in Group 4 (combination) from 154.6 ± 10.9 to 121.2 ± 8.9. Insulin rose in Group 2 from 4.2 ± 1.8 ng/ml to 9.4 ± 4.8; in Group 3 remained steady around 10.6; and fell in Group 4 from 7.4 ± 3.6 to 5.3 ± 3.8. TG rose in Group 2 from 177.6 ± 61.4 mg/dl after 3 weeks to 324.3 ± 102.8 after 5 weeks; rose in Group 3 from 173.6 ± 61.6 to 210.0 ± 97.7; and fell in Group 4 from 187.6 ± 55.3 to 134.9 ± 53.7. The BP decrease was over-additive compared with the respective individual substances. The TG changed direction on combined treatment and insulin also fell markedly on combined treatment. The trandolapril-ET antagonist combination appears to offer a rational fixed-dose antihypertensive therapy which is superior to that of either drug alone.

Key Words: trandolapril, ET antagonist - LU135252, combination therapy

E010
DIABETES MELLITUS AND INSULIN TOLERANCE COMPROMISE GLOBAL LEFT VENTRICULAR FUNCTION IN ARTERIAL HYPERTENSION
G.P. Vyssoulis*, E.A. Karpanou*, A.E. Giannakopoulou, S.S. Castellanos, M.A. Toutouza, K.P. Tsilias, and P.K. Toutouzas. Cardiology Dept. of Athens University, Hippokration Hospital, Athens, Greece

Arterial hypertension compromises both diastolic and systolic left ventricular (LV) performance. The effect of hyperglycemia on global LV function according to age, has not been studied.

The index of combined systolic/diastolic myocardial performance (IMP) was calculated from echocardiographic tracings (Q to mitral valve opening—ET/ET, where ET = LV ejection time) in 8000 untreated patients with uncomplicated essential hypertension, according to age and gender. Diabetic mellitus was present in 1167 patients, insulin tolerance in 1206, while 5627 patients were normoglycemics.

The IMP deteriorated with advancing age (F = 378, p < .00001) in all patients, both sexes and all glucose subgroups. Overall, diabetics had higher IMP, patients with insulin tolerance had lower values, and normoglycemic patients the lowest (.602 vs .584 vs .571, F = 147, p < .00001). These differences were more prominent in younger patients (p < .00001), while they tended to minimize (p < .04) in men over 60 years old and where nullified in elderly women (p = NS).

It is concluded that hyperglycemia has an additive deleterious effect on global LV function in hypertensive patients, especially in younger ones.

Key Words: LV function, diabetes mellitus, essential hypertension

E011
INCREASED PULSE PRESSURE IS ASSOCIATED WITH MICROALBUMINURIA IN DIABETIC AND NON-DIABETIC HYPERTENSIVE PATIENTS

Increased pulse pressure (PP) has been proposed as an independent risk factor in arterial hypertension, while albuminuria is an established one. The relationship of PP to microalbuminuria (ALB) has not been clarified in a high risk group as the hypertensive diabetic patients. To this end we studied 2000 consecutive untreated patients with uncomplicated essential hypertension, with ALB and a1 microglobulin (GLO) measurements in 24 h urine collection. Patients were grouped according to glucose metabolism as normoglycemics (NG, n = 1369), patients with insulin tolerance (IT, n = 302) and patients with diabetes mellitus (DM, n = 329) and PP levels:

<table>
<thead>
<tr>
<th>PP</th>
<th>&lt;50</th>
<th>50–65</th>
<th>&gt;65</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALB DM</td>
<td>40 ± 36</td>
<td>48 ± 46</td>
<td>77 ± 118</td>
<td>.006</td>
</tr>
<tr>
<td>IT</td>
<td>28 ± 30</td>
<td>46 ± 97</td>
<td>51 ± 75</td>
<td>NS</td>
</tr>
<tr>
<td>NG</td>
<td>25 ± 37</td>
<td>27 ± 30</td>
<td>38 ± 90</td>
<td>.006</td>
</tr>
<tr>
<td>GLO DM</td>
<td>9.3 ± 3.8</td>
<td>11.2 ± 5.2</td>
<td>12.8 ± 6.8</td>
<td>.0001</td>
</tr>
<tr>
<td>IT</td>
<td>7.5 ± 4.2</td>
<td>9.1 ± 8.1</td>
<td>10.3 ± 7.1</td>
<td>.02</td>
</tr>
<tr>
<td>NG</td>
<td>6.9 ± 4.3</td>
<td>7.5 ± 4.5</td>
<td>9.1 ± 7.7</td>
<td>.00001</td>
</tr>
</tbody>
</table>

It is concluded that in hypertension increased PP is associated with high urinary ALB and GLO excretion, for every level of glucose metabolism abnormalities.

Key Words: Microalbuminuria, pulse pressure

E012
OBESITY EFFECTS ON GLOBAL LEFT VENTRICULAR FUNCTION IN ESSENTIAL HYPERTENSION
G.P. Vyssoulis*, K.P. Tsilias, E.A. Karpanou*, J.D. Barbetseas, A.A. Paleologos, and P.K. Toutouzas. Cardiology Dept. of Athens University, Hippokration Hospital, Athens, Greece

Obesity is a powerful, although not independent risk factor, affecting left ventricular (LV) structure and function, inducing both volume and pressure overload. Its effects on global LV function in arterial hypertension have not been clarified.

The index of combined systolic/diastolic myocardial performance (IMP) was calculated from echocardiographic tracings (Q to mitral valve opening - ET/ET, where ET = LV ejection time) in 8000 untreated patients with uncomplicated essential hypertension, according to age and gender.

Obese with body mass index >27 kg/m², were 4567 patients, while abdominal obesity, with high waist to hips ratio (W/H > .9 for males and > .8 for females) was present in 5201 patients as well.

Obese patients had higher IMP (.583 vs .571, p < .00001), as did patients with high W/H (.584 vs .567, p < .00001). These differences were more obvious in the younger age
groups, in both sexes. Obesity influenced IMP in men (0.579 vs. 0.570, p = 0.0002) and more in women (0.586 vs. 0.571, p < 0.0001), while abdominal obesity did not play a significant role in men (p = NS), but did so in women (0.593 vs. 0.556, p < 0.0001).

It is concluded that obesity compromises global LV function and its effects are more prominent in women and younger hypertensives.

Key Words: Obesity, LV function, essential hypertension

E013
THE CONTRIBUTION OF DIET TO BLOOD PRESSURE (BP) AND INSULIN SENSITIVITY IN YOUNG AFRICAN AMERICANS
K. Sherif*, H. Kushner, and B. Falkner.* Dept. of Medicine, MCP Hahnemann University, Philadelphia

In young African Americans, BP correlates inversely with insulin sensitivity (M) and BP increases as glucose tolerance deteriorates. We examined data on usual nutrient intake in a cohort of young adult (X age = 32.5 yrs) African Americans. Analyses were performed to determine if dietary components contributed to BP, M, or glucose tolerance. Subject assessments included BP, anthropometrics, glucose tolerance, and insulin clamp. Diet was analyzed by Nutritionist III, a soft ware package to quantitate data from a 24-hour diet recall. Males (N = 108) and females (N = 199) were stratified by glucose tolerance to normal (NGT) and impaired (IGT). Statistical analyses included 2-way ANOVA (with BMI as covariate) and step-wise multiple regression analyses. Overall, 27% of these young adults met criteria for IGT. BP was higher in IGT vs NGT (SBP; 130 vs 123 mmHg, P < 0.02). In males only, the IGT group intake was higher in total carbohydrate (CHO) (398 vs 331 g, P < 0.04), CHO/Kg body weight (BW) (2.3 vs 1.9 g/Kg, P < 0.02), and sugar/KgBW (1.05 vs .78 g/Kg, P = 0.013). In multiple regression analysis, no dietary components contributed to the variance of M in males. In females, protein intake/KgBW had a small but significant effect on M, contributing 1.2% to the variance on insulin sensitivity. The major significant variables in the regression models for M were insulin, body fat, and central obesity in both sexes. In conclusion, BP is linked with glucose tolerance and insulin sensitivity in this young cohort. CHO and sugar intake may have some effect on glucose tolerance in males. However the major contributors to insulin sensitivity are plasma insulin levels and adiposity. Dietary interventions which prevent or reduce excess adiposity would provide benefit to both BP and glucose metabolism.

Key Words: Blood pressure, insulin, African Americans, diet

E014
PERIPHERAL INSULIN SENSITIVITY AND LEFT VENTRICULAR HYPERTROPHY
L.A. Ferrara, L. Guida, M. Ciroarro, F. Lionello, and A. Celentano. Department of Clinical and Experimental Medicine, Federico II University, Naples, Italy

There is worldwide evidence that insulin and peripheral insulin sensitivity interfere with blood pressure regulation. More recently it has been suggested that serum insulin is an independent determinant of left ventricular mass. Aim of the present study was to evaluate whether fasting insulin and peripheral insulin sensitivity, expressed as homeostasis model assessment (HOMA) are able to predict left ventricular mass (LVM) independently of blood pressure (BP) levels. In a group of 60 patients (42 M, 18 F), mean age 40.2 ± 8 yrs (age range 25–56), with arterial hypertension never treated before, we have measured clinic and 24h ambulatory BP, serum insulin and HOMA, echocardiographic LVM. Clinic SBP and DBP were 147/97 ± 12/4, 24h SBP and DBP were 130/85 ± 12/10. Serum insulin was 12.2 ± 4.3 µU/ml and HOMA 2.9 ± 1.5; posterior wall thickness (PWT) of the left ventricle was 1.0 ± 0.1 cm, septal thickness (ST) was 1.1 ± 0.1 cm, LVM and LVMi were 187.0 ± 43.7 g and 45.4 ± 11.6 g/m² 1.7. Linear correlation analysis showed that HOMA and serum insulin were significantly related to PWT (r = 0.324, p < 0.01 and r = 0.287, p < 0.05) and to LVM (r = 0.329, p < 0.01 and r = 0.274, p < 0.05), but not to LVM(i) (r = 0.145, n.s. and r = 0.110, n.s.). Despite that, patients with LV hypertrophy (LVM < 51 g/m² 2.7) were more frequently found in the group with higher HOMA (12.5% vs 36%, in the 1st and 3rd tertile of HOMA, respectively). Despite present data in a group of hypertensive patients never treated before not unanimously support the hypothesis of the relationship between HOMA and LVM, it can be concluded that hypertensive patients with reduced insulin sensitivity are at higher risk of developing LV hypertrophy.

Key Words: Hypertension, insulin resistance, homeostasis model assessment, left ventricular mass

E015
THE BLOOD PRESSURE DECREASES AFTER A COMPREHENSIVE, COMPUTER ASSISTED PROGRAM OF WEIGHT LOSS

In obese and hypertensive patients (pts) the weight loss leads to a blood pressure (BP) decrease. For this reason we performed ambulatory blood pressure monitoring (ABPM) in 164 pts, 134 female and 30 men (age 42 ± 15 years) apparently with normal BP and body mass index (BMI) of 29 ± 2.7 Kg/m². We studied the pts before and after a comprehensive assisted computer program of multidisciplinary approach to overweight (OW). In one year the program get to a physical and comportamental rehabilitation through different steps: 1- physical, antropometric valuation and study of the body composition using STA-BIA® bioimpedenzimetry 2- computer-assisted assessment of OW in relation to normal parameters in healthy subjects. 3- aerobic exercise two-three times in a week using a supine cycloergometer with dinamic resistance cardiofrequenzimetry drive. 4- dietary rehabilitation using alimentary diary and basal metabolism to plan new dietary behaviour. 5- psycologic-comportamental consuelling able to enhanched...