manometry on the left arm; the first value was deleted and last five were averaged.

Compared to the usual diet, BP did not decline significantly in either group when the usual diet was supplemented with −2000 mg K+ and 300 mg Mg++ daily to match DASH but declined on DASH in metabolic syndrome (−5.3/−4.6 mmHg, p=0.02/0.03) but not control subjects (−3.2/−2.2 mmHg, NS/NS). The data suggest the DASH Eating Plan lowers BP more effectively in obese, metabolic syndrome patients than supplementing the usual diet with K+, Mg++ and fiber to match DASH. These findings raise the possibility that other components of the diet, e.g., antioxidant / bioflavonoids, contribute to the BP benefits of the DASH Eating Plan.

<table>
<thead>
<tr>
<th></th>
<th>Usual Diet</th>
<th>Usual + Supplements</th>
<th>DASH Eating Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lean Controls</td>
<td>106.6 ± 3.082/9.9 ± 1.4</td>
<td>105.0 ± 2.280/4.4 ± 1.2</td>
<td>103.4 ± 1.780/6.7 ± 1.6</td>
</tr>
<tr>
<td>Metabolic Syndrome</td>
<td>128.0 ± 2.6/78.5 ± 3.6</td>
<td>126.3 ± 3.4/77.3 ± 3.7</td>
<td>122.7 ± 3.0/73.9 ± 3.2</td>
</tr>
</tbody>
</table>

Key Words: DASH Eating Plan, Lowering Blood Pressure, Metabolic Syndrome

P-525
EFFECTS OF SMOKING ON ALBUMINURIA IN HYPERTENSIVES WITH METABOLIC SYNDROME
Eva A Karpanou, Alexandra I Zervoudaki, Gregory P Vyssoulis, Konstantinos A Aznouridis, Panagiotia A Pietri, Ioannis Patsias, Aris Pashalis, Christodoulos I Stefanadis, Dennis V Kokkinos. 1st Cardiology Department, Onassis Cardiac Surgery Centre, Athens, Greece; Hypertension Unit, 1st Cardiology Department of Athens University, Hippokration Hospital, Athens, Greece.

Metabolic syndrome (MS) is associated with insulin resistance and increased cardiovascular risk. The incidence of endothelial dysfunction as assessed by microalbuminuria and the role of smoking in hypertensive patients (pts) with MS have not been investigated.

We studied retrospectively 6013 consecutive pts with chronic uncomplicated essential hypertension. MS was diagnosed according to Adult Treatment Panel III criteria, and smoking status was noted. After a two-week wash-out period, office blood pressure (BP) was determined and full biochemical evaluation performed. Microalbumin, alpha-, microglobulin and creatinine were measured and the albumin/creatinine ratio (ACR) was calculated after a 24-hour urine collection.

Pts with MS (n=2183) had significantly (p<0.00001) increased values of microalbumin, alpha-,microglobulin and ACR (39.0 vs 24.2 mg/dL, 8.80 vs 6.72 mg/dL and 85.5 vs 47.3 respectively) and higher incidence of smoking (44.0 vs 30.0%, p<0.00001) when compared with hypertensives without MS. Smokers without MS (n=1146) had significantly increased microalbumin, alpha-,microglobulin and ACR than non-smokers without MS (27.2 vs 22.9 mg/dL, p<0.00001, 7.28 vs 6.49 mg/dL, p<0.00001 and 49.0 vs 46.5, p=0.006 respectively). Respectively, in the MS group, smokers (n=958) had increased levels of microalbumin (42.3 vs 36.5 mg/L, p=0.006), alpha-,microglobulin (9.11 vs 8.55 mg/L, p=0.009) and ACR (96.5 vs 76.1 mg/L, p<0.00001) when compared to the 1224 non-smokers with MS.

The metabolic syndrome is associated with a higher degree of endothelial dysfunction in hypertensive pts, since microalbuminuria is a marker of endothelial performance. It seems that smoking is accompanied by further endothelial derangement, even in hypertensives with MS.

Key Words: Metabolic Syndrome, Microalbuminuria, Smoking

P-526
EFFECT OF LOW-FAT HIGH-FIBER DIET AND EXERCISE PROGRAM ON HYPERTENSION AND METABOLIC SYNDROME
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Background: Metabolic Syndrome represents a host of metabolic disturbances associated with the development of Type 2 diabetes mellitus (DM) and cardiovascular disease (CVD). Three of five criteria must be present to characterize a patient as having Metabolic Syndrome. These include a blood pressure >130/85 mm Hg, HDL-C < 40 mg/dl in men <50 mg/dl in women, triglycerides > 150 mg/dl, fasting blood sugar > 110 mg/dl, and a waist > 35 inches in women or > 40 inches in men. With about 2/3 of American adults overweight, interventions to reduce the morbidity associated with the Metabolic Syndrome are needed.

Objective: To assess the short-term impact of a low sodium, low-fat, high-fiber diet fed ad libitum combined with daily exercise in subjects characterized as having Metabolic Syndrome.

Outcome Measures: Primary outcome measure was the presence of Metabolic Syndrome. Other outcomes were measures of total and LDL-C, Total/HDL-C, Triglyceride/HDL, systolic and diastolic blood pressure and weight.

Methodology: A retrospective chart review (n = 115) of two weeks participants at the Pritikin Center between January and June of 2003 found 37 participants (22 males, 15 females) with Metabolic Syndrome. The diet consisting largely of unrefined whole grains, fruits and vegetables.

Results: By reviewing the 5 criteria for Metabolic Syndrome, 49% no longer had 3 or more criteria for the Metabolic Syndrome, 14% showed improvement, 24% had no change and 13% got worse by the time of discharge. Total cholesterol was reduced by 33mg/dL, LDL by 19 mg/dL (p<0.001), total-C/HDL-C by 0.52 (ns), and triglyceride/HDL by 1.24 (p<0.016). Body weight was reduced 3.5 Kg (p<0.001). Systolic blood pressure was reduced from 136.2 to 119.2 (p<0.001). Diastolic blood pressure was reduced from 78.8 to 73.0 (p<0.001).

Conclusion: Dramatic changes in diet and activity level can quickly and favorably alter the metabolic abnormalities characteristic of the Metabolic Syndrome, including elevated blood pressure. Long-term studies of the effectiveness of these changes are indicated.

Key Words: Diet, Exercise, Metabolic Syndrome

P-527
THE IMPACT OF GLUCOSE-LOADING ON ENDOTHELIAL FUNCTION AND INFLAMMATORY PROCESS IN PATIENTS DIABETES MELLITUS TYPE 2: EFFECTS OF DIET AND HYPOGLYCEMIC AGENTS
Katerina Konniari, Dimitris Toussoulis, Charalampos Antoniades, Vasilios Karamanos, Christos Panthiou, Carmou Vasiliadou, Marina Toutouza, Aggeliki Nikolopoulou, Apostolos Drolias, Christodoulos Stefanadis. Cardiology, Athens University Medical School, Athens, Greece.

Background: The role of glucose alterations in the pathogenesis of endothelial dysfunction and inflammatory process in diabetic patients remains unclear. We examined the effect of diet or metformin on endothelial function and inflammatory process during glucose loading, in patients with newly diagnosed diabetes mellitus.

Methods: The study consisted of 20 patients with newly diagnosed diabetes mellitus type 2, mean age 60.2±2.7, who underwent glucose loading (75gr sugar) at baseline and 3 months after dietary instructions