Obese individuals manifest a clustering of metabolic and hormonal abnormalities that increase the risk of cardiovascular diseases and events. To evaluate whether obesity is associated with early markers of kidney and vascular damage independent of blood pressure (BP), we studied 129 patients with essential hypertension (HTN) and 41 non-MS patients. BMI was correlated with UAE (12.9 vs. 19.6 mg/24h, P < 0.001), and globular sedimentation (15.0 vs. 11.6 mm, P < 0.001) as compared to subjects without metabolic syndrome. Regarding ambulatory BP, the larger difference between groups were found for the nocturnal BP mean and the day/night BP ratio, indicating a tendency towards a more non-dipper profile in patients with metabolic syndrome.

Key Words: Globular Sedimentation, Leukocyte Count, Metabolic Syndrome

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DO CURRENT CLINICAL MANAGEMENT PROVIDE ENOUGH PROTECTION IN HYPERTENSIVE PATIENTS WITH METABOLIC SYNDROME?
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It is widely accepted that patients with metabolic syndrome (MS) have worse cardiovascular (CV) prognosis, however no specific risk factor goals has been established in these patients.

Our aim was to analyze the influence of MS in the evolution of uncomplicated essential hypertensive patients under usual care.

We included essential hypertensive patients with a follow-up longer than two years, consecutively attended at our hypertension unit. We excluded patients with diabetes mellitus or previous CV disease All patients were classified according NCP-ATPIII criteria at the baseline visit. 549 patients (mean age 54.5±13.5 y; 44.3% males) with a mean follow-up of 3.8±1.2 y were included. At baseline, 231 (42.1%) patients with MS showed significant higher values of blood pressure (BP), fasting plasma glucose (FPG), serum levels of total and LDL-cholesterol and triglycerides, and lower levels of HDL cholesterol than non-MS patients, as expected. Positive microalbuminuria (MA) (>20 mg/day) was more prevalent in MS than in non-MS patients (43.2% vs 28.8%, P = 0.05). During follow-up, aggressive antihypertensive treatment reduced differences in systolic and diastolic BP to a non-significant level. Strict BP control improved both in MS and non-MS patients (50.6% vs. 56.9% respectively, P = NS). Overall lipid profile improved in MS patients, and LDL reached the same level that in non-MS patients (133.5±32 vs. 134.5±31, mg/dl, P = NS). FPG levels remained unchanged in both groups, however 18 MS patients, and only 7 non-MS patients developed new-onset diabetes (7.8% vs. 2.2%, P = 0.001).

Key Words: Hypertension, Microalbuminuria, Obesity

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LEUKOCYTE COUNT AND GLOBULAR SEDIMENTATION VELOCITY, COST-EFFECTIVE MARKERS OF INFLAMMATION, ARE INCREASED IN METABOLIC SYNDROME
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Previous studies have established a marked association between metabolic syndrome and increased cardiovascular risk. The individual components of the metabolic syndrome (according to the ATP-III definition, presence of at least 3 of the following factors: abdominal obesity, elevated triglycerides, reduced HDL-cholesterol, raised blood pressure (BP), and elevated fasting glucose) are associated with left ventricular hypertrophy, diastolic dysfunction, and microalbuminuria. Moreover, proinflammatory and prothrombotic states have also been identified as major components of metabolic syndrome. We have investigated if some readily available and cost-effective markers of inflammation may be associated with metabolic syndrome. We studied 1709 subjects (876 men, 48.2 ± 13.8 years of age. Among them, 499 were normotensive (according to ambulatory BP criteria) and 1210 were diagnosed with grade 1-2 essential hypertension. All subjects were untreated at the time of the study. BP was measured at 20-min intervals from 07:00 to 23:00 hours and at 30-min intervals at night for 48 hours. Metabolic syndrome was present in 576 of the subjects (33.7%). Subjects with metabolic syndrome were characterized by a significant increase in leukocyte count (7170 versus 6613 cells/µL, P < 0.0001), neutrophils (4161 versus 3825 cells/µL, P < 0.0001), lymphocytes (2247 versus 2076 cells/µL, P < 0.0001), and globular sedimentation (15.0 versus 11.6 mm, P < 0.0001) as compared to subjects without metabolic syndrome. Regarding ambulatory BP, the larger difference between groups were found for the nocturnal BP mean and the day/night BP ratio, indicating a tendency towards a more non-dipper profile in patients with metabolic syndrome.

Key Words: Hypertension, Microalbuminuria, Obesity
Both group reduced MA, but differences in prevalence of positive MA between MS and non-MS patients remained significant (24.5% vs. 10.1%, respectively). Prescription of ACEi and ARBs was similar in both groups (74.9% in SM, vs. 70.1% in non-MS, P=NS).

In conclusion, our usual hypertension care allowed to reach similar BP and LDL-cholesterol goals, both in MS and non-MS patients. However, it seems that global cardiovascular risk could remain higher in treated hypertensive with MS as suggested by 3 fold higher incidence of new onset diabetes and double prevalence of positive MA. The convenience of lower therapeutic goals in hypertensive patients with MS should be forward evaluated.

Key Words: Metabolic Syndrome, Microalbuminuria, Therapeutical Goals

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GENE EXPRESSION PROFILE IN INSULIN-SENSITIVE TISSUE IN RATS WITH METABOLIC SYNDROME

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High fat intake and less physical activity are high risk environmental factors for metabolic syndrome (MS). This study investigated the effects of high fat diet and exercise on gene expression profiles associated with the nuclear receptors, glucose and lipid metabolism, inflammation and energy in insulin-sensitive tissues in MS rats.

Methods: MS rat model was induced by high fat diet and salt, which was accorded to our previous work. Wistar rats were divided into the normal diet control (NC), high-fat and salt diet (MS), normal diet with exercise (NCE) and MS with exercise (MSE). The regular exercise means that rats swim three times (1hr/time) weekly and last for 48 weeks. Gene expression profiles were measured using RT-PCR in insulin-sensitive tissue after rats were decapitated.

Results: (1) skeletal muscles tissues: compared with NC rats, 4 gene (CRP, UCPI, SCD1 and SCD2) expressions were reduced and 9 gene (MCP1, IL-6, UCPI, UCP2, M-CPT1, LACS, PDK4, FABP3, P22-Phox) expressions increased in MS rats. In NCE rats, 5 gene (MCP1, UCPI, PDK4, SCD1 and SCD3) expressions were up-regulated, whereas 7 gene (IL-6, SOCS3, UCPI, UCPI, FABP3, ABCA1, P22-Phox) expressions down-regulated. In MSE rats 4 gene (CRP, UCPI, SCD1 and SCD2) expressions were up-regulated and 9 gene (MCP1, IL-6, UCPI, M-CPT1, LACS, CD36, ADRP, PDK4, FABP3) expressions down-regulated compared with NC rats. (2) visceral fat tissues: compared with NC rats, 2 gene (CRP and IL-6) expressions increased and other 18 gene expressions reduced in MS rats. In NCE rat, 3 gene (UCPI, UCP2, P22-Phox) expressions were up-regulated whereas 12 gene expressions were down-regulated; In MSE, 2 gene(CRP and PPAR-beta) expressions were increased and 10 gene expressions reduced. (3) brown fat tissues: compared with NC rats, 2 gene(CRP and FABP3) expressions were up-regulated, but 3 gene (IL-6, SOCS3 and ABCA1) expressions reduced in MS rats.

Conclusions: High fat and salt intake and exercise had a significant effect on the multiple gene expression in the insulin-sensitive tissue. Further work need to link these gene changes with the pathogenesis of MS (Supported by NSFC grant 30470830).

Key Words: Gene, Metabolic Syndrome, Risk Factors

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INCREASED DIETARY SODIUM PARTIALLY BLUNTS THE AMELIORATION OF INSULIN RESISTANCE INDUCED BY DIETARY POTASSIUM SUPPLEMENTATION IN A NEOENDOCRINE MODEL OF VISCERAL OBESITY

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Previous studies from our laboratory showed that dietary potassium supplementation improves insulin sensitivity and reduces blood pressure in the spontaneously hypertensive rats.

Objectives: The aim of this study was to evaluate the effects of increased contents of potassium alone or potassium + sodium chloride in the diet upon tail arterial pressure (TAP) and glucose metabolism of Wistar rats with visceral obesity induced by neonatal administration of MSG (2 mg/day/SC from day 1t o11th after birth), a model with insulin resistance.

Methods: MSG (2 mg/kg/day) was administered to newborn Wistar rats during the first 11 days of life. At 3 months of age they were separated into 3 groups and were feed for 12 weeks with: group 1-regular rat chow + tap water to drink (MSG, n=13); group 2-potassium enriched diet (K+ content: 3 times standard chow) + tap water to drink ((MSG-K+, n=12) and group 3 same diet of group 2 but receiving 1% saline to drink instead tap water (MSG+K+Na, n=12). Rats receiving vehicle instead MSG injections at neonatal period and feed with regular rat chow (C, n=12) or potassium enriched chow (C+K, n=10) and tap water to drink were used as controls. At the end of the follow-up period an oral glucose tolerance test (OGTT, glucose overload: 68 mg/kg) was performed in all animals. Areas under the curves of glucose (AUCG, mg/dl) and insulin (AUCI, mU/l) and the insulin sensitivity index (ISI mg−1mU−1) were determined. Upon animals sacrifice the left ventricle was weighted.

Results: *p<0.05 vs C, †p <0.05 vs MSG (see table)

Conclusion: Dietary potassium supplementation decreases blood pressure and improves glucose metabolism of MSG-induced visceral obese rats, and this effect is partially blunted by dietary sodium overload. Improvement in the insulin sensitivity may account for the effects of dietary potassium supplementation on blood pressure.

Key Words: Insulin Resistance, Neuroendocrine Obesity, Potassium

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OBESITY DOES NOT INCREASE SYMPATHETIC VASCULAR TONE IN HYPERTENSIVES

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Skeletal muscle sympathetic nerve activity (MSNA) is increased in obesity and hypertension and may increase sympathetically mediated vascular tone. We tested the hypothesis that elevated MSNA in obese hypertensives is associated with increased sympathetically mediated vascular tone. Forearm vascular resistance (FVR) was calculated from plethysmographic blood flows. Sympathetic vascular tone was assessed