T3:PS.26

Hyperuricemia and Metabolic Syndrome in the Middle Aged in Taiwan'

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Objectives: The relationship between serum uric acid levels and cardiovascular risk factors is complex. We examined the association between hyperuricemia and metabolic syndrome amongst apparently healthy Taiwanese aged from forty to sixty-five years.
Research Design And Methods: This cross-sectional survey was based on a population from 4 nationwide health screening centers in Taiwan in 2000. A total of 4,466 subjects, aged 40 to 65 years were included. Blood pressure, body mass index (BMI), waist circumference, HDL cholesterol, serum triglycerides, and uric acid levels were measured. Hyperuricemia was defined as a serum uric acid level > or = 7.0 mg/dl (420 µmol/L) in men and > or = 6.0 mg/dl (360 µmol/L) in women, respectively. Metabolic syndrome was defined using the National Cholesterol Education Panel (NCEP) criteria or modified NCEP criteria (WC >90 cm in men and >80 cm in women).
Results: The prevalence of hyperuricemia was 42.4% in men and 28.7% in women, respectively. The crude odds ratios (ORs) of metabolic syndrome was 2.79 (and 2.68 using the modified NCEP criteria) in subjects with hyperuricemia With increasing age (OR=1.01-1.10) and BMI (OR=1.39-1.47), the ORs of having metabolic syndrome increased significantly in each gender. After adjustment for age, gender, and BMI, the ORs of metabolic syndrome were significantly higher in subjects with hyperuricemia.
Conclusions: The present study revealed that hyperuricemia was positively associated with metabolic syndrome and its individual factors. Therefore, serum uric acid levels may be applied as an additional evaluation for metabolic syndrome in a clinical setting.

Table 1. Odds ratios (95% CI) of having MS derived from a multivariate logistic regression analysis categorized by gender using age, BMI, and uric acid groups as independent variables.

Variables	Model 1 (MS defined by NCEP criteria)		Model 2 (MS defined by modified NCEP criteria)	
	Men ORs (95% CI)	Women Ors (95% CI)	Men ORs (95% CI)	Women ORs (95% CI)
Age (years)	1.01(0.98-1.03)	1.09(1.05-1.13)	0.99(0.97-1.01)	1.10(1.06-1.13)
BMI (kg/m^2)	1.47(1.40-1.53)	1.39(1.32-1.46)	1.42(1.36-1.48)	1.47(1.40-1.55)
UA group	1	1	1	1
Grade 1*	1.50(1.16-1.95)	1.48(1.00-2.20)	1.45(1.15-1.83)	1.22(0.84-1.77)
Grade 2	1.60(1.20-2.14)	2.00(1.17-3.40)	1.61(1.24-2.10)	1.72(1.03-2.86)
Grade 3	1.67(1.14-2.42)	2.48(1.12-5.49)	1.65(1.16-2.35)	2.35(1.10-5.03)
Grade 4	2.28(1.37-3.80)	6.58(2.33-18.60)	2.32(1.39-3.86)	4.24(1.49-12.11)

*Grade 1 was defined by uric acid level•7 ~7.99 in men and 6~6.99 in women;
Grade 2 was defined by uric acid level•8 ~8.99 in men and 7~7.99 in women;
Grade 3 was defined by uric acid level•9~9.99 in men and 8~8.99 in women;
Grade 4 was defined by uric acid level••10 in men and •9 in women

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Reduction of the cut-off of waist circumference does not seem to modify the prevalence of metabolic syndrome in a population with morbid obesity

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Metabolic syndrome (MS) is described by the presence of abdominal obesity, hyperglycemia, hypertension and dyslipidemia, associated with increased cardiovascular risk. In this study MS prevalence in an obese population was evaluated according to ATP-III-2001, ATP-III-2005 and IDF-2005.
Patients were evaluated in their first morbid obesity appointment, regarding anthropometric variables, blood pressure, fasting plasma levels of glucose, LDL-C, HDL-C and triglycerides.
262 women having 40.9 ± 11.3 years old and 45.4 ± 6.3Kg/m^2 BMI were evaluated. MS was observed in 63.0%, 66.8% and 66.4%, according to ATP-III-2001, ATP-III-2005 and IDF-2005, respectively. Hypertension prevalence was 83.2% (218/262 revealed systolic blood pressure >/=130mmHg and/or diastolic blood pressure >/=85mmHg, or under therapeutic). 38.9% revealed triglycerides concentration >/=150mg/dL, or under therapeutic. Waist circumference was > 88cm in 98.5% and > 80cm in 99.2%. Fasting plasma glucose (FPG) was >/= 110mg/dL in 39.3% and 48.5% > 100mg/dL; 43.9% showed HDL-C < 50mg/dL.
40 men having an age average of 39.6 ± 13.3 years and mean BMI of 44.7±4.9Kg/m^2 was evaluated. MS condition was observed in 85% according to ATP-III-2001 criteria and 95% to ATP-III-2005 and IDF criteria. All men had a waist circumference > 102cm. There was a high prevalence of hypertension (92.5%) and hypertriglyceridemia (42.5%). FPG was >/= 110mg/dL in 47.5% and > 100mg/dL in 62.5%. 52.5% had HDL-C < 40mg/dL.
This study revealed that MS prevalence in the analyzed samples was high. The reduction of cut-off of waist circumference did not have influence on the prevalence of MS in this sample.

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Fenugreek with reduced bitterness prevents diabetes accompanied with obesity

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Fenugreek (*Trigonella foenum-graecum L. Leguminosae*) is one of the oldest medicinal plants, much cultivated in India and Mediterranean countries. It is one of the spices which are contained in curry powder. Fenugreek has various medical effects such as nourishing, lactation stimulant, treatment of indigestion and anti-inflammatory. Recently, hypoglycemic effect of fenugreek on type1 and type2 diabetes was reported. However, its mechanism is still uncertain. And it is difficult to apply fenugreek to foodstuff, because fenugreek has a strong bitter taste.

Furostanol saponins contained in fenugreek are major cause for bitterness. Enzymatic cleavage at the O-linked sugar chain of fenugreek saponins yielded fenugreek with reduced bitterness (FRB). To evaluate the effect of FRB on diabetes and investigate its mechanism, we examined the effects of FRB on the metabolism of glucose and lipid in obese diabetic KK-Ay mice.

Hyperglycemia accompanied with obesity was ameliorated in KK-A_y mice fed with FRB. Glucose tolerance was also improved in mice fed with FRB. This treatment increased the expression of peroxisome proliferator-activated receptor γ(PPARγ) and PPARγ target genes, while decreased slightly the expression of macrophage-specific genes in white adipose tissue. Moreover, hyperlipidemia and hepatosteatosis were ameliorated in mice fed with FRB. Interestingly, this treatment decreased the expression of sterol regulatory element-binding proteins1c (SREBP1c) and SREBP1c target genes in liver. These results indicate that FRB improves the disorder of glucose and lipid metabolism. Consequently, FRB may be useful for ameliorating diabetes accompanied with obesity.

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Ferritin was associated with metabolic syndrome

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Introduction: Metabolic syndrome (MS) is associated with insulin resistance (IR), and MS increases the risks of cardiovascular morbidity and mortality. Ferritin was found to be associated with IR in some studies.
Aim: To investigate the relationship between ferritin and MS.
Material and methods: Tao-Yuan General Hospital conducted the annual physical examination for an electronic factory in 2002. The workers with elevated alanine transaminase were excluded because it was associated with ferritin level. MS was diagnosed as the criteria of ATP-III with the following changes: waist circumference: male > = 90 cm or female > = 80 cm and fasting sugar > = 100 mg/dl.
Results: 3380 workers recruited in our analyses with male to female ratio as 65:35. The mean age was 34.1 ± 8.2 years old and the BMI was 23.3 ± 3.5. Fatty liver was found in 28.3%. MS was found in 12.9% of workers. Using logistic regression analyses, we found that fatty liver, more age, BMI, IR and ferritin were associated with MS. If we regarded ferritin as linear data, the odds ratio (OR) to have MS was 1.002 in each unit increase (ng/ml). Using ferritin < 100 as reference, the OR of ferritin between 100-300 was 1.6 (95% C.I. 1.2-2.0), and the OR of ferritin > 300 was 2.7 (95% C.I. 1.8-4.1).
Conclusion: Ferritin was associated with MS significantly. Physicians should take care of the older, obese workers with high ferritin level and fatty liver because they carry higher risk to have MS.