OP 1

Metabolic Syndrome among Obese Indonesian Chinese Adolescent (The Petai Cchina Study)

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Background and Aims. *Childhood obesity is one of the most serious and urgent public health problems in both developed and developing countries(1). Puberty itself is a state of relative insulin resistance and there is an increase in basal and stimulated insulin secretion during the progression through normal puberty(2), and metabolic syndrome occurs with a high rate in overweight youth. This Petai China Study determines the prevalence of metabolic syndrome among the obese adolescents in Indonesia for estimating the magnitude of this health problem and evaluate a definition for its early diagnosis in the young population.*

Materials and Methods. *Subjects were taken by a cluster random sampling from the list of junior high school and high school located in north Jakarta. A cross-sectional study with a survey method was done to students from 5 schools agreed for the study. Physical examination and anthropometric measurement were done to all participating students. A fasting blood venous sample was collected among the overweight population to determine glucose, trygliceride, HDL cholesterol and insulin levels, and also among lean students for study control. Prevalence of the metabolic syndrome was estimated according to the National Cholesterol Education Program Adult Treatment Panel III- Asia Pacific Perspective(3).*

Results. *Data were analyzed out of 510 adolescents participants, 51% were female, with the average of 14.84 +/- 1.46 year of age. Mean of BMI is 22.32 +/- 4.77 kg/m2. The prevalence rate of obesity was 4.9% (95% CI 26.31 - 36.75). With the blood test done to 47 overweight students and 11 lean students referring to the parents permission. Metabolic syndrome found in 29.78% of population. Out of 14 obese subjects (BMI exceeding the 95th percentile) metabolic syndrome criterions found in 5 students (35.71%). The prevalence rate of the metabolic syndrome increased significantly with increasing insulin resistance (P for trend, < 0.001) after adjustment for sex group and degree of obesity.*

Conclusion. *The prevalence of the metabolic syndrome is high among overweight Chinese adolescents in Jakarta, Indonesia and it increases with worsening obesity.*

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OP 2

Clinical Charactoristic of the Metabolic Syndrome Using New IDF Worldwide Definition in Middle Aged Korea Adults; Chungju Insulin Resistance Cohort (CIRC) Study

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Background and Aims. *To elucidate the clinical characteristics of the metabolic syndrome(MetS) using new IDF worldwide definition in middle aged Korean adults*

Materials and Methods*. Population based, cross-sectional study including 8417 participants(3442 men, 4975 women), over the age 40 was conducted at rural area in Korea. The survey provided data on anthropometric, biochemical & various questionnaires including life style. According to the new IDF definition, for a person to be defined as having the metabolic syndrome they must have central obesity (defined as waist circumference e" 90 cm for men and e" 80 cm for women) plus any two of the following four factors: 1) raised triglyceride level; e" 150 mg/dl 2) reduced HDL cholesterol; < 40 mg/dl in men and < 50 mg/dl in women, 3) raised blood pressure; e" 130/85 mmHg, 4) raised fasting plasma glucose; e" 100 mg/dl. Association between metabolic syndrome and insulin resistance was analyzed using the HOMA-IR and fasting insulin values.*

Results*. Mean age of study population was 62.8±10.4 years and mean body mass index(BMI) was 24.3±3.3 kg/m2. Overall prevalence of MetS was 29.5%(20.4% in men, 35.8% in women). The prevalence of MetS for each age group in men was as follows: age 40-49 (21.1%), 50-59 (16.3%), 60-69(16.9%), and over 70(12.8%). In women: age 40-49(30.9%), 50-59(40.7%), 60-69(45.1%), and over 70 (41.6%). When the definition of central obesity by NCEP-ATP III values (waist circumference e" 102 cm for men and e" 88 cm for women) was applied to this study subjects, the prevalence of metabolic syndrome was only 10.1% in total population(1.6% in men and 16.1% in women). The degree of increment of HOMA-IR & fasting insulin levels depended on the number of components of MetS. Relative risk of MetS increased as HOMA-IR & fasting insulin levels did.*

Conclusion*. In men, the prevalence was highest at the 40-49 age group and afterwards the prevalence of metabolic syndrome decreased as they aged. Therefore, men should actively prevent cardiovascular diseases before they turn 30-40, and women should actively take care after their menopause in Korea.*

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OP 3

Visceral Fat Area in Non-Obese Indonesian and Japanese

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Background and Aims. *Recent increase of patients with diabetes in Asia is remarkable and has become a serious issue. WHO predicts that in comparison with India, China, and Japan ,the top, the second, and the fifth most numerous country in diabetics in the world as of 2000 respectively, Indonesia, the fourth most numerous country, would reach much greater rate of its increase in 2030. In this study, we compared the visceral fat area as the causative factor of insulin resistance in Indonesian and Japanese.*

Materials and Methods. *The non-obese (25 kg/°3>BMIg"18.5 kg/°3) male adults aged between their 20's and 50's were subject to the present study. Seventy-seven subjects in Akashi city, Japan, 133 subjects in Sangsit town in the suburbs of Singaraja city, and 64 subjects in Pedawa, isolated village in mountains, Bali, Insonesia, were recruited. Visceral fat area was measured with the bioelectorical impedance analysis.*

Results. *(1) The visceral fat area of subjects in their 20's was 30.6±9.4 3 in Akashi, 33.1±13.3 3 in Sangsit, and 31.2±13.7 3 in Pedawa. No significant difference was present among these three districts. The visceral fat area per kilogram body weight did not differ from each other, either.(2) In every districts the visceral fat area increased with age. It reached to 90.4±26.1 3 in Akashi, 67.4±29.6 3 in Sangsit and 65.5±23.4 3 in Pedawa in subjects in their 50's.(3) Compared with the visceral fat area in subjects in their 20's, it increased after their 30's in Akshi and Sangsit both of which were economically prosperous, whereas it did after their 40's in Pedawa which was economically poor.(4) The subjects after their 40's in Sangsit and those after their 30's in Pedawa had less visceral fat area than those in the corresponding range of age in Akashi. The visceral fat area per kilogram body weight tended to decrease after their 30's in Pedawa compared with that of the corresponding age group of Akashi, but no significant difference was present between Sangsit and Akashi.*

Conclusion. *(1) Visceral fat seems to increase significantly with aging and urbanization in lifestyle even in non-obese people.(2) It is considered important to take some preventive measures against visceral fat increase during the age of the 20's and 30's in urban and rural inhabitants respectively.*

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OP 4

Blood Cell Count and Metabolic Syndrome in Adolescent

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Background and Aims*. MS is with high prevalence in well-developed countries.So monitoring of those risk factors known to be part of MS should become part of routine medical care for overweight or obese adolescents. Recent studies showed that the elevated C-reactive protein level and low-grade inflammation were associated with MS. In this study, we measured of WBC count and components of MS in Chinese, both males and females between 14 to 19 years old.*

Materials and Methods. *We enrolled 1657 subjects with age 14 to 19 years in 1997. The qualified subjects were separated into young male group (YM) and young female group (YF). To evaluating each of the components of MS, we again divided the subjects in both groups (YM and YF) into 4 quartiles according to WBCC (WBCC1 to WBCC4, from the lowest to highest WBCC). We also checked each variable of MS (BMI, SBP, DBP, FPG, HDLC and TG). Statistic analysis was performed using SPSS version 13.0 statistical package for Windows (SPSS, Chicago, IL). Data were calculated for normal distribution with Kolmogorov-Smirnov test and for homogeneity of variances with Levene's test. Continuous variables are expressed as mean ± SD. One-way ANOVA test using the Bonferroni as post hoc test was used to evaluate differences among YM and YF groups. The same tests were also applied to compare differences between different quartiles of each WBC group. Each variable of MS (BMI, SBP, DBP, FPG, HDLC and TG) was adjusted for age and BMI .Eventually, we used the multiple regressions to estimate the relationship between each component of MS and the WBCC after adjusted with age and BMI in YM and YF.All statistical tests were two-sided and p-values less than 0.05 were considered to indicate statistical significance.*

Results. *The findings showed the similar results as previous studies. That subjects with higher BMI will have higher WBCC in YM and YF. Correlations after the adjustment of the BMI and age still showed the same finding. We also found in YM, the BMI and TG were significantly higher and HDLC lower in the WBCC4 group. In the meanwhile, only BMI were significantly higher in the WBCC4 in YF.*

Conclusion. *In conclusion, in subjects with normal WBCC and no history of significant medical diseases, BMI is significantly related to the levels of WBCC and are the earliest components of MS to be noted in adolescents.And the overweight may be associated with a state of chronic low-grade inflammation in children.*

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OP 5

Prevalence of Diabetes and Cardiovascular Risk Factors in Bruneian Population

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Background and Aims. *Brunei has witnessed dramatic changes in both life- style and food habit in the last few decades. This has resulted in cardiovascular disease emerging as the main health problem. We set up a screening and educational project in the multi-ethnic Belait district. The objectives of this project are early detection of diabetes, hypertension and dyslipidaemia, also to raise understanding and awareness amongst the public on diabetes and other cardiovascular risk factors.*

Materials and Methods. *The project consists of two parts; one part conducted at hospital during public health campaign and the other part is at government departments and community centres. So far 3284 persons (aged 38.3+12.7) participated in this ongoing project. They were asked to answer self administered questionnaire on demographic data, life style and medical history. Then their weight height, waist and BP were measured, followed by a blood test for glucose and cholesterol. With this data they received on spot individualized counseling by diabetes educator, dietitian and physician. The modified Asian criteria were used to define obesity (BMI >25, waist circumference >80 in F and >90 in M). Hypertension was considered on those on hypertension medications or BP >140/90, diabetes was diagnosed on known diabetics or fasting blood glucose >7 mmol/L, (those with FBG 6.1-6.9 were referred for OGTT) and hypercholesterolaemia on those on lipid lowering therapy or blood cholesterol >5.2.*

Results. *15% of the subjects were smokers, the overall prevalence of diabetes was 19.3% and of impaired fasting glucose (IFG) was 14.4%, the frequency of other risk factors was high as well. The data showed that 68.2% of diabetes, 72% of hypertension and 69 % of hypercholesterolaemia cases were undiagnosed earlier. There were ethnic differences in the occurrence of the cardiovascular risk factors, these factors were more prevalent in men than women (Table).*

	Smoking %	Obesity %	Abdominal obesity %	Diabetes %	Hypertension %	Hypercholesterolemia %
All (n=3284)	15	55.8		19.3	42.6	33
Ethnicity						
Malay(n=2233)	15.7	58.5	M 42.4 F 49.2	18	43	33.7
Chinese (n=466)	11.3	42.3	M 40 F 46.4	26	47	33
Indigenous(n=215)	15	59.5	M 37.8 F 55	21.8	57.7	35.6
Others (n=370)	11.3	52	M 41 F 61.7	19	38.1	26
Sex						
M (n=1780)	22.2	56.8	41.6	20	49	34.8
F (n=1504)	3.4	54.8	51.5	17.3	35	30.5

Conclusion. *Our data showed a high prevalence of diabetes and other modifiable cardiovascular risk factors, furthermore the majority of cases remained unrecognized. This stresses the importance of conducting a national screening and educational program.*

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OP 6

Prevalence and Determinants of Undiagnosed Diabetes in a High-Risk Population in Ho Chi Minh City

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Background and Aims. *Diabetes is increasingly posing a serious public health problem in Vietnam. This study was designed to assess the prevalence and determinants of undiagnosed diabetes in population with risk factors of diabetes.*

Materials and Methods. *A cross-sectional study involving 5 hospitals and and out-patient clinic in Ho Chi Minh City and surrounding districts was conducted, in which 3336 individuals (1060 men and 2276 women) aged 30+ years (average: 52.6 years) participated in the study. The individuals did not have previous history of diabetes mellitus (DM), and had at least 2 of the following 9 criteria: (1) history of gestational diabetes, (2) history of having a baby > 4kg, (3) 65-year age or older, (4) no regular exercise, (5) having brother or sister with diabetes, (6) parents with diabetes, (7) hypertension: systolic blood pressure (BP)e" 140 mmHg or diastolic BPe" 90 mmHg, (8) dyslipidemia and (9) overweight (BMI > 23 kg/m2). Venous fasting plasma glucose (FPG) was measured and categorized according to the American Diabetes Association diagnostic criteria: DM if FPG e" 126mg/dL (with 2 separately blood samples), impaired fasting glucose (IFG) if 110d" FPG < 126mg/dL, and normal if FPG < 110mg/dL. The association between these factors and DM was analyzed by the logistic regression model.*

Results. *The overall prevalence of DM was 7.3% with men having higher prevalence than women (8.9% vs 6.5%; p=0.014). All 9 risk factors was analyzed by univariate logistic regression; the risk of DM was significantly associated with a history of gestational diabetes (OR= 5.2; 95%CI: 1.61–16.7, p=0.006), at least one sibling with DM (OR=1.42; 1.02-2.0; p=0.04), or parents with DM (OR=1.36; 1.05-1.77; p=0.022). When all of the risk factors were considered in a multivariate logistic regression model, the risk of DM was found to be independently associated with gestational diabetes (OR=6.37; 1.89-2.52), familial history of DM (brother or sister: OR=1.82; 1.25-2.64; parents: OR=1.92; 1.38-2.66), advancing age (age e" 65 : OR=1.57; 1.06-2.32) and hypertension (OR=1.60; 1.16-2.20). Furthermore, the risk of DM increased almost linearly with the number of risk factors, such that each increment of risk factor was associated with an OR of 1.37 (95%CI: 1.16-1.62) of having DM.*

Conclusion. *These data suggest that the prevalence of undiagnosed diabetes mellitus in the South Vietnamese urban population was comparable to other Asian populations, and that a history or familial history of DM, advancing age and hypertension may help identify undiagnosed diabetic individuals.*

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OP 7

Investigation on the Peripheral Artery Disease and the Related Risk Factors in the Type 2 Chinese Diabetes Patients

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Background and Aims. *To analyse the risk factors of the peripheral artery disease (PAD) in the elderly diabetic patients.*
Materials and Methods. *The prevalence of PAD and its related risk factors were investigated in 505 Chinese diabetic patients based on the ankle brachial index (ABI). The patients wih ABI < 0.9 were diagnosed as these with PAD, patients with ABI > 0.9 as those without PAD. All the patients were divided into Goup A (age = or > 60) and Goup B (age < 60).*
Results. *Prevalence of PAD was 35.36% for the Group A and 10.49% for the Group B. The patients with PAD from Group A were older and with longer duration of diabetes, higher HbA1c, uric acid and CRP level, higher urine albumin/creatinine, lower HDL-C level and lower diastolic blood pressure, comparative with those without PAD from same age group. There were more patients with PAD with more number of the macrovascular risk factors (hyper cholesterolemia, hypertriglycemia, lower HDL-C level, hypertension, proteinuria, smoking and obesity). The relationship between the cluster of macrovascular factors and PAD was obviously stronger in the elderly diabetic patients than the younger patients.*
Conclusion. *There are more patients with PAD in the elderly diabetic patients with longer duration , longer hyperglycemia, lipids disorder, smoking and obesity, particularly in these with more number of macrovascuar risk factors cluster.*

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OP 8

The Samadhan System - A New, Economical and Effective Approach for Offloading Bodyweight in People with Type 2 Diabetes and Neuropathic Forefoot Plantar Ulcers

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Background and Aims. *A prospective randomized clinical trial : Samadhan System (SS: Samadhan: Hindi word=solution), a newly discovered method of offloading, is a reasonably logical solution to the problem of offloading body-weight, required for the management of plantar ulcers in people with type 2 diabetes. The present study aims to compare the impact on healing of common footwear (CFW) with SS, which is a piece of foam (density 40), rolled into a cylinder (shape maintained by applying adhesive lotion over inside of the foam) and placed over a place, which effectively renders offloading at the vulnerable part; retained in position with the help of an elastocreppe bandage.*

Materials and Methods. *In a prospective, randomized, open label clinical study of 3 months duration, 30 middle aged people with type 2 diabetes with almost similar characteristics such as age (SS: 49.53±4.45; CFW: 50.93±4.04 years), Sex (SS: 7m/8f; CFW: 8m/7f), BMI (SS: 27.75±3.72; CFW: 29.30±3.57 Kg/m2), duration of diabetes (SS: 13.0±3.16; CFW: 14.93±1.98 years), baseline glycemia (A1C= SS: 10.06±0.37%; CFW: 10.10±0.23%), with neuropathic forefoot ulcers (diagnosed with 10 point S.W. Monofilament)-grade I & II (Wagners Classification) without Peripheral Ischaemia (Ankle Brachial Index: >0.9; calculated with Hand Held Doppler) and infection (ruled out with swab culture) were randomized, by draw of lot, to SS or CFW. While patients of CFW group were offered only velcro sandals, those in SS group had SS in addition to velcro sandals.*

Results. *By the end of the study 73.3% in SS Vs 13.3% patients in CFW had complete healing. Mean day healing of SS was 42.27±16.1 days vs 60±21.21 in CFW. The direct cost incurred on each patient of SS group over 3 months was only Rupees 50 (approximately 1 USD)*

Conclusion. *The SS contributes positively on healing and appears most affordable method of offloading.*

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