

METABOLIC SYNDROME IN THE KINGDOM

The metabolic syndrome is becoming increasingly recognized as a powerful predictor for the risk of developing coronary artery disease (CAD).^[1] The incidence of the metabolic syndrome has reached epidemic proportions -- with more than 1 in 4 adults affected by this disorder in the worldwide. During TAIF 13th Annual Cardio-vascular Conference the data on the prevalence of metabolic syndrome in the kingdom was presented, and found to be around 38% among the sample screened between 35 and 70 years of age.^[2]

The definition of the metabolic syndrome has been evolving over the past 10 years. The National Cholesterol Education Project Adult Treatment Panel (NCEP-ATP III) included a widely used definition of the metabolic syndrome in the 2001 guidelines.^[3] In addition, the American College of Endocrinology (ACE) has published a position statement on "insulin resistance", which uses body mass index (BMI) rather than waist circumference to measure central obesity, introduces ethnicity as a risk factor, and emphasizes that diagnosis should be based on clinical judgment informed by the evaluation of risk factors.^[4] The most recent definition of the metabolic syndrome was released by the International Diabetes Federation (IDF) at an April 2005 conference in Berlin, Germany.^[5] In all cases except the IDF definition, the original definitions were written before the American Diabetes Association (ADA) lowered the fasting glucose cutpoint for normal glucose tolerance from 110 mg/dL to 100 mg/dL, so many investigators modify the original definitions to use the lower fasting glucose level. Currently, the metabolic syndrome is viewed as the phenotypic confluence of central obesity, atherogenic dyslipidemia, hypertension, and insulin resistance (with or without Type-II diabetes) resulting from dysregulated gene expression and lifestyle behaviors.

The Nateglinide and Valsartan in Impaired Glucose Tolerance Outcomes Research

(NAVIGATOR) trial is a multinational, randomized, placebo-controlled, prospective study to determine whether CVD or progression to type 2 diabetes can be reduced or delayed in subjects with impaired glucose tolerance by the administration of Valsartan and/or Nateglinide.^[6] In the screening phase for the study, 43,509 subjects who were 50 years of age or older and had a history of CVD or were at increased risk for CVD underwent an oral glucose tolerance test (OGTT). Of the 8853 who had known CVD, the prevalence of the metabolic syndrome (based on the NCEP criteria) was calculated to be 51%. When divided by region (North America, Latin America, Europe, and Asia), rates of the metabolic syndrome were lowest in Asians (36%), suggesting that the current criteria may need modification in this population. The criteria used in the kingdom study was based on NECP.

The high prevalence of metabolic syndrome in the kingdom has been already reflected on the increased morbidity and mortality from cardiovascular diseases. As well as the populations got older, there will be more and more cases. Obesity in young generation is very common in the kingdom.

In young, apparently healthy adults, the presence of the metabolic syndrome is associated with increased atherosclerotic burden as measured by carotid intima-media thickness (IMT), according to the results of a new study.^[7]

To investigate the relationship between the metabolic syndrome and atherosclerosis in young people, the investigators studied 507 asymptomatic men and women, aged 20 to 38 years, participating in the **Bogalusa Heart Study**, a longitudinal epidemiologic study of atherosclerosis in children and young adults. Carotid IMT measurements, including a composite measurement and individual measurements of the common carotid, carotid bulb, and internal carotid artery, were used as a marker for atherosclerotic burden.



Weight loss is considered to be one of the key therapeutic interventions to limit the risks associated with the metabolic syndrome. Indeed, weight loss has been shown to reduce the incidence of the metabolic syndrome and significantly improve control of blood pressure, lipids, and glucose -- all central features of the syndrome. However, achieving and sustaining weight loss, particularly in obese patients with the metabolic syndrome, has been difficult if not impossible with nonpharmacologic, nonsurgical therapies. As such, medical therapies to assist with weight management have been actively sought. Exciting reports from this year's ADA meeting provided an early look at the potential of several classes of pharmacologic therapies to assist in efforts to achieve sustained weight reductions. In an Italian study of more than 11 000 patients surviving MI, 29% had metabolic syndrome (METS) and 21% had diabetes; aggressive weight loss significantly reduced the progression from METS to diabetes, with high risk of cardiovascular events (CVE).^[8] Smoking as well is unfortunately increasing among young generation in the kingdom .

In a study of US adolescents aged 12 to 19 years, the investigators found that exposure to tobacco smoke whether by active smoking or by exposure to secondhand smoke is associated with an increase in the risk of developing metabolic syndrome.⁽⁹⁾

Among overweight youths or those at risk for becoming overweight, exposure to tobacco smoke was associated with a fourfold increase in the risk of metabolic syndrome, report investigators.

In this survey of more than 3000 adolescent subjects from the **National Health and Nutrition Examination Survey** (NHANES III), serum cotinine levels, a metabolite of nicotine, were used as a biomarker for active smoking and exposure to environmental tobacco smoke. In addition to cotinine, the presence of a household smoker and self-reported smoking status were also used to determine exposure to tobacco smoke and smoking status.

Overall, the metabolic syndrome was present in 5.6% of subjects. The prevalence of metabolic syndrome increased with increasing body mass index (BMI) and level of tobacco-smoke exposure. Whereas 1.2% of non-exposed teens had the metabolic syndrome, 5.4% of those exposed to secondhand smoke and 8.7% of actively smoking teens met the criteria for metabolic syndrome. A

similar relationship was also observed among overweight teens and those at risk for becoming overweight (body mass index \geq 85th percentile).

Multivariate regression analyses revealed that active smoking and environmental tobacco-smoke exposure were independently associated with the metabolic syndrome. To control for possible confounding of body mass index, the same analyses were conducted in youth with a BMI \geq 85th percentile and again showed that tobacco-smoke exposure was independently associated with metabolic syndrome.

Conclusion

The metabolic syndrome is increasingly common, and the characteristic components of this disorder are obvious targets for treatment to reduce the risk of both diabetes and CVD. Therefore there should be a national program directed towards early prevention and management of all predisposing factors for metabolic syndrome .

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