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Metabolic syndrome: sign of things to come

In a recent article in *Vascular Health and Risk Management*, Paoletti and colleagues (2006) pointed out that individuals with metabolic syndrome (MS) have twice the risk of dying and three times higher risk of having heart attacks or stroke compared with individuals without this syndrome. Moreover, people with MS have a five-fold greater risk of developing type-2 diabetes. Thus MS could become a leading cause of morbidity/mortality in the world population (Paoletti et al 2006). In the current issue of *Vascular Health and Risk Management*, Mathieu and colleagues (2006) have proposed a link between MS and atherosclerosis suggesting that individual with the syndrome have a substantially higher risk of coronary heart disease (CHD).

There is little doubt that changes in life style is a major contributor to MS. Recently, it was reported that while the prevalence of MS was higher among Chinese women, 17.8% (95% confidence incidence [CI] 16.6–19.0) than Chinese men, 9.8% (CI 9.0–10.6), the overall prevalence was higher in urban 18.6% (CI 17.6–19.6) compared with rural areas, 12.7% (CI 10.7–13.1) (Gu et al 2005). Society has to recognize that this syndrome is rapidly becoming a problem affecting the health of a large portion of the population. Furthermore, as the population ages and people live longer, this problem will become compounded if it is ignored.

It is essential that an appropriate definition should be employed to determine the prevalence of this syndrome in a population. MS is characterized by abdominal obesity, high blood pressure, dyslipidemia, and increased glucose concentration. Currently there are three definitions of the syndrome, one proposed by US National Cholesterol Education Program Adult Treatment Panel III (NCEP), another by World Health Organization (WHO), and more recently one by International Diabetes Federation (IDF) (Mathieu et al 2006; Paoletti et al 2006). Perhaps not surprisingly, not all definitions present the appropriate gauge for classifying people of different ethnic background with MS. For example, it has been suggested that the use of NCEP criteria in Chinese and Asian populations could underestimate the prevalence of MS (Tan et al 2004).

A recent study attempting to determine the prevalence of MS and cardiovascular disease in an elderly Chinese population (age 60 to 95) residing in urban centers such as Beijing revealed some interesting information in relation to the syndrome and the cohort that was studied (He et al 2006). The prevalence of MS as defined by IDE or NCEP was higher in females than males. Based on IDF criteria 34.8% and 54.1% for males (n=943) and females, (n=1391) respectively, were classified with MS, whereas when employing the NCEP (glucose ≥ 5.6 mmol/l) criteria, 23.2% of males and 46.1% of females were found with MS. He and colleagues (2006) also reported that individuals with MS as defined by either NCEP or IDF criteria had a significantly higher odds ratio (OR) for CHD (n=784), peripheral arterial disease (PAD) (n=461) and stroke (n=378). The OR (CI) for cardiovascular disease in people with MS as defined by IDF for CHD, PAD, stroke, and combined (CHD, PAD, and stroke) (n=1219) were 1.69 (1.40–2.02), 1.42 (1.14–1.76), 1.58 (1.26–2.00) and 1.73 (1.46–2.07), respectively. The data was adjusted for gender, age, marital status, education, exercise, alcohol consumption, cigarette smoking, and family history of CHD or stroke. The OR (CI) for cardiovascular disease in people with MS as defined by NCEP (glucose ≥ 5.6 mmol/l) for CHD, PAD, stroke and combined (CHD, PAD,

and stroke) were 1.58 (1.31–1.90), 1.37 (1.10–1.70), 1.53 (1.21–1.94) and 1.57 (1.31–1.88), respectively. It is apparent that the OR for cardiovascular disease associated with MS as defined by IDF criteria reveals a stronger trend compared with MS defined by NCEP, even when fasting glucose cutoff was lowered to ≥ 5.6 mmol/l (He et al 2006). Determination of the OR for cardiovascular disease in individuals with MS as defined by IDF based on gender indicated 1.77 (1.34–2.34) and 1.71 (1.37–2.13) for men and women, respectively. Moreover, when analyses were carried out excluding the diabetic patients (n=362; 15.5%), the OR for cardiovascular disease associated with MS was somewhat reduced but nonetheless, it was still significant. With this adjustment, the OR in individuals with MS were 1.57 (1.28–1.91), 1.36 (1.07–1.73), 1.53 (1.18–1.99) and 1.55 (1.28–1.87), for CHD, PAD, stroke, and combined (CHD, PAD, and stroke), respectively. Based on the evidence presented by He and colleagues (2006), it seems that MS is significantly linked to a higher risk of cardiovascular disease in the population that was studied.

It is expected that the prevalence of MS will rise over the coming decades and appropriate steps are required to

address this issue. In general, there are three concerns that need attention in relation to MS. First, it must be recognized that MS is a major contributor to morbidity and mortality in the population at large. Second, appropriate definition needs to be sought and refined to accurately measure the correct prevalence of MS within a population. Finally, suitable public health education must be developed and implemented to prevent the expected rise of MS and its sequelae from becoming a worldwide epidemic.

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