



Editorial

Metabolic syndrome in the elderly and its clinical implications

Metabolic syndrome (MetS), a cluster of multiple cardiovascular risk factors, has been recognized as an important predictor of cardiovascular disease and type 2 diabetes mellitus.¹ Although the concept of MetS has been increasingly used in academic researches,^{2–4} it is an empirical concept and the clinical utility is often challenged, especially in the elderly.⁵ In fact, the majority of previous observations obtained from middle-aged subjects, which raises the question of whether MetS maintains prognostic value in the elderly population. Additionally, different criteria used in defining MetS vary greatly that make comparisons difficult.

A previous cross-sectional study demonstrated the association of MetS and ischemic heart disease in the US geriatric population.⁶ Another study reported that MetS is a significant predictor of atherothrombotic stroke in older Japanese, but MetS in this study was defined by National Cholesterol Education Program Adult Treatment Panel III (NCEP-ATPIII) and the World Health Organization (WHO) criteria with modification that differ from current criteria.⁷ However, in that study, central obesity was defined by body mass index and maximal thickness of peritoneal fat while high blood pressure was surrogated by hypertension (blood pressure $\geq 140/90$ mmHg or taking antihypertensives). Rathmann et al., compared three different diagnostic criteria (NCEP, WHO and IDF) for MetS among older German, showed a weaker association of IDF-defined criteria to atherosclerosis risk (surrogated by serum C-reactive protein) and authors proposed a need of new IDF criteria in older adults in order to avoid underestimation of future risks for type 2 diabetes or cardiovascular disease.⁸

In the current issue of Journal of Clinical Gerontology & Geriatrics, Arai et al. compared different diagnostic criteria of MetS in the elderly and middle-aged population in Japan.⁹ The study disclosed three folds higher prevalence of MetS by using modified ATP III, IDF and Japanese criteria in elderly women than middle-aged women in which authors did not observe in men. These findings highlight the greater impact of aging or menopause on development of MetS in Japanese women. In addition, comparisons among three criteria identified much higher prevalence of MetS by employing modified ATP III or IDF criteria than Japanese stringent criteria used in Japanese women. It could be accounted by unique criteria to diagnose central obesity (waist circumference) in Japanese population. Other findings from this study that aging plays certain roles in the blood pressure, hyperglycemia and lipid profile do not deviate from major studies from other part of the world.

Recent studies have suggested that MetS *per se* in the elderly may be less important, in which one single risk factor has the same or even a greater prognostic value than MetS and the important predictors of long-term costs in the elderly population were

abdominal obesity, low HDL-cholesterol and hypertension but not MetS.¹⁰ Moreover, hyperglycemia has been shown to potentiate excess mortality risk associated with lipid abnormality in older adults, and the importance of optimal management of dyslipidemia and hyperglycemia in the elderly should be addressed.¹¹ It is generally agreed that the early identification of MetS is still important in clinical practice because the concept of MetS may facilitate clinicians to take a strategy-based approach aimed at reducing global cardiovascular risk. Moreover, clinicians should encourage elderly patients to abandon sedentary lifestyles by participating more in physical activities as part of primary prevention of MetS.

Aside from cardiovascular diseases, MetS has been shown to be associated with several geriatric problems. Both the prevalence of cognitive impairment and MetS increase with advancing age and previous studies found an association of MetS and cognitive impairment among older adults.^{12,13} Similar result has been observed in elderly Chinese and hyperglycemia was considered the main contributor to this association.¹⁴ The complex interrelationship deserves further investigations. In addition, MetS is also associated with depressive symptoms in community-dwelling older adults, especially in older women.¹⁵ A number of psychosocial risk factors have been reported to be associated with MetS in the elderly, such as anxiety symptoms, negative life events, inadequate emotional support and a high psychosocial risk index.¹⁶ Moreover, MetS was significantly correlated with physical dependence in terms of basic and instrumental activities of daily living and low health-related quality of life.¹⁷ Recent literature also indicated the associations between MetS and cancer development which often occur in elderly subjects.¹⁸

In summary, MetS in older adults is associated with cardiovascular events, as well as physical dependence, cognitive dysfunction, depressive symptoms, anxiety symptoms, high psychosocial risk index, and poorer health-related quality of life. Therefore, the benefit of early identifying MetS in older adults is beyond cardiometabolic health, and appropriate management of MetS is of great importance in promoting health and successful aging for older adults.

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