Central Obesity Plays as a Major Role in the Pathophysiology of Left Ventricular Hypertrophy in Associated with Metabolic Syndrome in one Aged Remote Community Survey in Southern Taiwan

中央型肥胖是台灣南部偏遠社區中罹患代謝症候群的老人居民產生心室肥厚時最主要的病理生理機轉

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Background: Metabolic syndrome (MetS) may increase the risk of cardiovascular disease. Multiple risk factors of MetS such as obesity, diabetes, and dyslipidemia are associated with left ventricular hypertrophy (LVH). Our current study will explore the relationship between MetS and LVH among an aged group in Taiwan.

Methods: We initially surveyed totally 393 residents over 65 years of age in this aged community, Tian-Liao Town at southern Taiwan. We finally enrolled 302 subjects with an average age of 74.37±6.01 years (range 65~98 years). All subjects received echocardiographic evaluations as well as blood tests after signature of inform consents. We applied the diagnosis of MetS according to ATP III guideline for Taiwanese. LVH was defined by American Society of Echocardiography criteria by LV mass and LV mass index by echocardiography study.

Results: The total prevalence rate of MetS was 28.1%. The mean value of LV mass was significantly higher in the MetS group (154.67±38.56 vs. 131.82±42.04 gm, $p<0.001$). Subjects MetS presented with significantly higher LVH (LV mass >200gm)

prevalence rate than the non-MetS ones (14.1% vs. 6.5%, p<0.05) and also had a 2.38-fold higher risk to have higher LV mass (Odds ratio: 2.38; 95% CI 1.05-5.39; p < 0.05). Furthermore, multivariate analysis showed that the waist circumference was the only significant independent risk factor of LVH among the five diagnostic criteria (Odds ratio: 3.84, 95% CI: 1.44-8.45, p<0.01). Furthermore, both the LV mass and LV mass index were strongly correlated with the increased waist circumference (mean LV mass and LV mass index for <75cm, 75-90cm and >90cm: 111.6±33.4, 132.7±36.7 and 156.9±41.1; 74.4±23, 81.65±22 and 88.63±22.1, respectively; p values for trend by ANOVA were both <0.001)

Conclusion: MetS is correlated with echocardiographic measures of LVH in this aged remote community of southern Taiwan. Among diagnostic criteria for MetS, waist circumference plays the major role in the pathophysiology of LVH.