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Association of Metabolic Syndrome with Chronic Kidney Disease Stage 2 Among Persons with Hypertension Treated in Primary Care

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Objectives: Studies in general population shown that metabolic syndrome (MetS) causes chronic kidney disease (CKD) stage 3 to 5. However, there are limits knowledge if MetS affects the early stage of CKD in a high-risk people such as hypertensions. Therefore, we examined the association of MetS with CKD stage 2 in treated hypertensions.

Methods: Among 2,150 hypertensions from 15 primary care units in Southern Thailand, 1,540 cases were eligible (CKD stage 1 or 2 = 1,404). MetS was defined according to NCEP-ATP III criteria. Weight circumference was defined based on NCEP-APC, a cut-off points of 80 cm in women and 90 cm in men indicated abdominal obesity. Estimated glomerular filtration rate (eGFR) was calculated based on CKD-EPI equation in ml/min/1.73m^2. GFR ≥90 indicated CKD-1, and GFR 60-89 with proteinuria indicated CKD-2.

Results: Approximately 60% of hypertensions had CKD-2. Prevalence of MetS were 82.5%, and 77.6% among CKD-1, and CKD-2, respectively. Unadjusted OR of MetS on CKD-2 was 0.74 (Wald 4.84 [95%CI 0.56-0.97], p = 0.028). However, adjusted ORs in all model revealed insignificantly association among MetS on CKD-2, as followed: model 1, by age (*Wald* 0.188; OR 0.81, 95%CI 0.59-1.11); model 2, by added sex (*Wald* 0.67; OR 0.93, 95%CI 0.67-1.29); model 3, by added social determinant factors (Wald 0.69; OR 0.94, 95%CI 0.67-1.29); model 4, by added total cholesterol, LDL-C, smoking, alcohol drinking, systolic blood pressure, diastolic blood pressure and blood pressure controlled (Wald 0.97; OR 0.99, 95%CI 0.71-1.38); and the full model, by added ACEIs, ARBs, CCBs, BBs and diuretic medications (*Wald* 0.93; OR 1.12, 95%CI 0.73-1.42).

Conclusions: Unlike the general population, MetS was not associated with CKD-2 in treated hypertensions. We suggested that hypertension is an independent risk of CKD, those who had any 1-2 metabolic risk components had similar risk for CKD-2 as those with any 3-5 metabolic risk components.