Abstract: P282

Elevated serum uric acid associated with both electrocardiographic and echocardiographic left ventricular hypertrophy independent of blood pressure in healthy individuals

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Background
Elevated serum uric acid (SUA) is associated with cardiac fibrosis and hypertrophy. A growing body of evidence showed the positive correlation between hyperuricemia (HUA) and left ventricular hypertrophy (LVH), but most studies defined LVH by a single method such as electrocardiogram or echocardiogram; the former is generally used in massive screen but the latter take advantage of the accuracy of LVH.

Purpose
We conducted this study to concomitantly investigate the association between SUA and electrocardiographic and echocardiographic LVH.

Methods
We initially enrolled 17,913 healthy individuals, who routinely underwent an annual health exam at our hospital between 2016/1/1~2016/12/31. Of them, 347 individuals received transthoracic echocardiography because of abnormal results in their electrocardiogram. Amplitudes of 12-lead electrocardiogram were artificially measured by a study assistant under the supervision and by artificial intelligence. HUA is defined as an SUA level of =7 mg/dl in men and =6 mg/dl in women. Electrocardiographic LVH is defined by the criteria of Cornel voltage and product and Sokolow-Lyon and the Minnesota Code ECG classification. Echocardiographic LVH is defined by LV mass index =115g/m² in men or =95g/m² in women.

Results
The HUA group (n = 233) vs. normouricemic group (n = 114) was older and predominant male with greater values of body mass index, systolic and diastolic blood pressure and laboratory biomarkers, including non-high density total cholesterol, fasting glucose impairment, creatinine clearance, and haemoglobin. The two groups had comparable lifestyle choices, including tobacco use, alcohol intake, and physical activities per week. The HUA group compared with the normouricemic group had greater values of S amplitude of V1 plus R amplitude of V5 (3031±2055 uV vs. 2566±1021 uV, P = 0.005), R amplitude in lead I plus S amplitude in lead III (842±443 uV vs. 696±386 uV, P = 0.002) and LV mass index (95±23 g/m² vs. 85±30 g/m², P = 0.001). The prevalence of electrocardiographic and echocardiographic LVH was greater in the HUA group than the normouricemic group (7.0% vs. 2.1%, P = 0.034 for electrocardiographic LVH and 15.8% vs. 7.7%, P =0.025 for echocardiographic LVH). In multivariate logistic regression analyses, elevated SUA was associated with LVH after the confounders were fully adjusted (OR: 1.38, 95% CI: 1.07-1.77, P = 0.012 for electrocardiographic LVH and OR: 1.58, 95% CI 1.15-2.17, P = 0.004 for echocardiographic LVH).

Conclusion
Elevated SUA is independently associated with the prevalence of both electrocardiographic and echocardiographic LVH in healthy individuals from Taiwan. Future studies might evaluate urate-lowering effects on the regression of LVH.