April 5, 2013
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Journal Club


Background:

• Cardiovascular disease is an important cause of mortality as people age
• Traditional risk factors used in Framingham Cardiovascular Risk Score include: smoking, obesity, BP, NIDDM, lipids however predictive capacity of score declines with old age
• High uric acid level associated with cardiovascular risk in middle age but not well studied in older ages

Aim: Estimate the CVD mortality risk associated with high serum uric acid concentration in older adults independent of traditional cardiovascular risk factors.
Could serum uric acid add predictive information at advanced age (>75 y.o.) to Framingham Cardiovascular Risk Score.

Methods:

Data: Established Populations for Epidemiologic Studies of the Elderly (EPESE- Iowa) and the National Health and Nutrition Examination Survey III (NHANES III) utilized. Participants over 70 y.o. at enrollment were followed for 12-20. Uric acid levels >7.0 mg/dl considered to be high. EPESE participants followed for 20 years after uric acid level measured. Deaths determined through verification of death certificates and searching National Death Index. Causes of death obtained through ICD 9 codes. Mortality information also obtained through Social Security and CMS. Patients were excluded if they had preexisting CVD, taking diuretics or had severe CKD with GFR <30ml/min.

Highlights: Participants who were over the age of 70 y.o. and lived more than 3 years after obtaining uric acid level were included. EPESE study: 1020 individuals followed through 2008; 877 excluded due to lack of f/u data, lack of cause of death, died w/i 3 years of enrolling in study, severe ckd.

NHANES III: 1316 participants out of 20,050: 14,048 excluded because they were <70 y.o. at enrollment, 3,185 excluded due to missing or invalid data, 509 died w/i 3 years of enrollment, 992 had preexisting CVD.

Statistical Analysis: Logistic regression was utilized to study the association between serum uric acid concentration and various covariates including CVD risk factors (age, smoking, NIDDM, systolic bp, BMI, HDL, total cholesterol and GFR). Age at death or age at end of f/u used for survival analysis. Kaplan-Meier Curves used to assess cardiovascular mortality in both groups and categorized according to serum uric acid concentration.

Cox regression model utilized to calculate FCRS with uric acid model. Participants were classified into tertiles: low, intermediate or high risk.

Results:

All participants in EPESE and 73% NHANES III participants died at end of observation period. Median age at death was 90 y.o. in EPESE and 88 y.o. NHANES. (Table 1: characteristics of cohorts).
High uric acid significantly associated with male sex, obesity, decreased GFR, low HDL in both groups. Figure 1&2: At serum uric acid levels of >7.0mg/dl, CVD mortality increased in both groups for adults >70 y.o. even when adjusting for smoking, systolic bp, DM, BMI, GFR, cholesterol and HDL. This association of high uric acid level and greater risk of CVD in individuals greater than 70 y.o. is independent of traditional CVD risk factors. By adding uric acid level to the FCRS, it increased it's risk classification capacity in both EPESE and NHANES group (20% and 9%).