Loss of Kidney Function in Older Adults: Common but Limited. The Framingham Heart Study

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Introduction

• Current guidelines suggest that creatinine-based estimates of glomerular filtration rate (GFR) may help to identify individuals at risk of advanced kidney disease.
• The objective of this study was to evaluate the utility of creatinine-based estimates for longitudinal evaluation of kidney function in older community dwelling adults.

Methods

• We used the limited-access Framingham Heart Study data set to study participants at the 14th and 15th biennial examinations.
• Four-variable MDRD Study to calculate GFR. Associations of calibrated creatinine levels from NHANES III were used to standardize creatinine levels between examinations.
• Generalized linear models were used to evaluate associations of change of GFR between examinations.
• The observed population mean and standard deviation and the correlation between measurements were used to estimate the regression-to-the-mean effect associated with two measurements, when a threshold eGFR of 60 mL/min/1.73 m² was used to identify ‘cases’.

Results

• The mean (standard deviation) GFR values at the 14th and 15th biennial examinations were 74.5 (21.7) and 73.3 (22.5), respectively.
• Changes in GFR and initial GFR were related, suggesting that regression to the mean occurred between examinations (R² 0.37, [-0.78 - 0.74] (95% confidence interval -0.81, -0.74), P < 0.0001).
• When an initial GFR of 60 was used as a threshold, GFR decreased from 83.5 (79.6, 87.4) to 75.5 (74.5, 76.5) in those with initial GFR < 60.
• The mean GFR ml/min 74.5

Conclusions

• Regression-to-the-mean effects may limit the utility of creatinine-based estimates of GFR for identifying subjects at risk of progression to end-stage renal disease.