Journal View

Can random UAC detect microalbuminuria in diabetic patients?

For microalbuminuria screening in patients with diabetes, measuring urinary albumin concentration (UAC) in random urine samples offers sensitivity and specificity similar to those of the albumin-to-creatinine ratio (ACR), reports a study in *JAMA Internal Medicine*.

A meta-analysis was performed with the use of data on 2078 patients from 14 studies evaluating UAC and ACR in random urine samples. All studies included 24-hour urine collections as the criterion standard for diagnosis of microalbuminuria.

In bivariate random-effects models, the two tests offered similar diagnostic performances. Pooled sensitivity in detecting microalbuminuria was 0.85 for UAC and 0.87 for ACR. Specificity was 0.88 for both tests; diagnostic odds ratios were similar as well. Performance was similar by timing of sample as well as on analysis of seven studies in which patients underwent both UAC and ACR.

Measuring ACR in random urine samples has some disadvantages as a screening test for microalbuminuria, including the higher cost of urinary creatinine measurement. Studies comparing ACR with UAC for this purpose have yielded conflicting results.

The new meta-analysis suggests that UAC and ACR have similarly good performances for microalbuminuria screening in diabetic patients. With the rising incidence of diabetes and limited health care resources in many countries, the authors conclude, "UAC of random urine samples may become the screening tool of choice for the population with DM" [Wu H-Y, et al. Diagnostic performance of random urine samples using albumin concentration vs ratio of albumin to creatinine for microalbuminuria screening in patients with diabetes mellitus: a systematic review and meta-analysis. *JAMA Intern Med*, published online May 05, 2014. doi:10.1001/jamainternmed.2014.1363].

Diabetes complications—rates are down, but numbers are still high

Although the incidence of diabetes-related complications in the United States has decreased since 1990, the burden remains high because of rising prevalence of diabetes, according to a report in the *New England Journal of Medicine*.

The researchers compiled nationwide data from multiple sources to assess trends in diabetes-related complications from 1990 to 2010. Age-standardized to the United States population in 2000, the data showed decreased incidence rates for all five complications of interest. Relative decreases were 67.8 percent for acute myocardial infarction, 64.4 percent for death resulting from hyperglycemic crisis, 52.7 percent for stroke, 51.4 percent for lower-extremity amputations, and 28.3 percent for ESRD.

When 1995 was used as the start year rather than 1990, the decline in ESRD was more similar to that for the other outcomes. Absolute declines in cases per 10,000 persons per year were 95.6 for myocardial infarction, 58.9 for stroke, 30.0 for lower-extremity amputation, 7.9 for ESRD, and 2.7 for death resulting from hyperglycemic crisis.

However, once the rising prevalence of diabetes was taken into account, the reductions were significant only for myocardial infarction and death resulting from hyperglycemic crisis: by 32.2 and 42.0 percent, respectively. There was no significant change in the rates for amputation or stroke, and the ESRD rate increased by 90.9 percent: from 1.1 to 2.1 cases per 10,000 population.

The results suggest that improvements in preventive care have reduced the rates of important diabetes-related complications over the past two decades. However, as diabetes prevalence continues to rise, high numbers of complications persist nationwide. "The encouraging reductions in the rates of morbidity and hyperglycemia-related mortality in the population of adults with diabetes do not signify imminent reductions in the overall burden of diabetes-related complications," the researchers conclude [Gregg EW, et al. Changes in diabetes-related complications in the United States, 1990-2010. *N Engl J Med* 2014; 370:1514–1523].

Fewer adults will receive BP drugs under JNC8

Under the 2014 BP guideline of the Eighth Joint National Committee (JNC8), antihypertensive therapy will be recommended for significantly fewer adults in the United States, reports a study in the *Journal of the American Medical Association*.

The researchers used data on 16,372 adults from the National Health and Nutrition Examination Survey between 2005 and 2010 to assess the implications of the JNC8 2014 BP guideline, compared with the previous JNC7 BP guideline. Among younger adults aged 18 to 59, the percentage for whom antihypertensive therapy would be recommended decreased from 20.3 percent under JNC7 to 19.2 percent under JNC8. The decrease was even sharper for those aged 60 or older: from 68.9 to 61.2 percent.

The 2014 blood pressure guideline was also associated with an increase in the proportion of treatment-eligible adults meeting blood pressure targets: from 41.2 to 47.5 percent in those aged 18 to 59 and from 47.5 to 65.8 percent in those aged 60 or older.

Overall, 1.6 percent of adults aged 18 to 59 and 27.6 percent of those aged 60 or older were receiving antihypertensive drugs and meeting more stringent JNC7 targets. Under JNC8, some of these patients would be eligible for less stringent or no BP therapy.

The JNC8 guideline increased the systolic BP treatment goal from less than 140/90 to less than 150/90 mm Hg while increasing the target for patients with chronic kidney disease and diabetes from less than 130/80 to less than 140/90 mm Hg. The new study suggests that in comparison with JNC7, antihypertensive therapy will be recommended for fewer Americans under JNC8.

Under JNC8, more patients will be considered to have met BP targets, especially in those aged 60 and over. More study is needed to determine how the new guideline will affect overall BP levels and the resulting effects on cardiovascular disease outcomes [Navar-Boggan AM, et al. Proportion of US adults potentially affected by the 2014 hypertension guideline. *JAMA* 2014; 311:1424–1429].

Little benefit of spironolactone for heart failure with preserved ejection fraction

Treatment with spironolactone doesn't improve overall outcomes for heart failure patients with preserved left ventricular function, reports a trial in the *New England Journal of Medicine*.

The Treatment of Preserved Cardiac Function Heart Failure with an Aldosterone Antagonist (TOPCAT) trial included 3445 patients with symptomatic heart failure but an ejection fraction of 45 percent or higher. They were randomly assigned to double-blinded treatment with spironolactone, 15 to 45 mg/d, or placebo, added to existing therapy. A composite outcome of death resulting from cardiovascular causes, aborted cardiac arrest, or hospitalization for heart failure was assessed at a mean follow-up time of 3.3 years.

A primary outcome event occurred in 18.6 percent of patients receiving spironolactone and 20.4 percent with placebo. The difference was not significant; incidence rates were 5.9 and 6.6 events per 100 person-years, respectively. The rate of hospitalization for heart failure was lower in the spironolactone group: 12.0 versus 14.2 percent, hazard ratio 0.83.

The rates of all-cause mortality and hospitalization were also similar between groups. Patients receiving spironolactone had higher rates of increased serum creatinine and hyperkalemia but a lower rate of hypokalemia. There were no differences in serious adverse events, including serum creatinine of 3.0 mg/dL or higher or dialysis. The authors note that the study protocol included frequent patient monitoring.

For patients with heart failure and left ventricular dysfunction, mineralocorticoid-receptor antagonists reduce the risk of death and heart failure hospitalization. Some studies have reported that these drugs improve diastolic function in heart failure patients with preserved ejection fraction.

However, the TOPCAT trial found no overall reduction in cardiovascular outcomes with spironolactone added to existing therapy in this group of patients. The results suggest some reduction in hospitalization for heart failure in patients treated with spironolactone. In treated patients, close monitoring is warranted because of the heightened risk of hyperkalemia and increased creatinine levels [Pitt B, et al. Spironolactone for heart failure with preserved ejection fraction. *N Engl J Med* 2014; 370:1383–1392].