**Journal View**

**Are Lower Blood Pressure Targets Beneficial in Chronic Kidney Disease?**

Intensive blood pressure reduction slows the progression of chronic kidney disease (CKD), but only in patients with proteinuria, suggests a meta-analysis in the *Canadian Medical Association Journal*.

A systematic review identified 11 randomized trials in which CKD patients were assigned to different blood pressure reduction targets. A meta-analysis included data on more than 9000 patients; blood pressure targets in the intervention groups varied widely. Outcomes of interest were a composite of doubling of serum creatinine level and a 50 percent decline in GFR, and the progression of ESRD.

Intensive blood pressure reduction was associated with a lower rate of both renal outcomes: hazard ratio 0.82 for the composite outcome and 0.79 for ESRD. However, there was a significant modifying effect of proteinuria. The reduction in kidney failure was significant only in patients with proteinuria at baseline: hazard ratio 0.73.

The effect on renal outcomes also appeared stronger in studies with lower markers of trial quality. The rates of cardiovascular events, all-cause mortality, and severe adverse events were similar between the intervention and usual care groups.

The current CKD guidelines recommend a blood pressure target of less than 130/80 mm Hg, but the strength of evidence behind this recommendation has been questioned. The new meta-analysis finds a reduced risk of kidney failure events with intensive blood pressure lowering, but mainly in patients with baseline proteinuria. Further study would be needed to show a similar protective effect in CKD patients without proteinuria [Lv J, et al. Effects of intensive blood pressure lowering on the progression of chronic kidney disease: a systematic review and meta-analysis. *CMAJ* 2013; 185:949-957].

**Cystatin C–Based eGFR Improves Risk Prediction**

Estimates of GFR (eGFR) based on cystatin C—alone or combined with creatinine—improve the prediction of adverse clinical outcomes related to kidney function, according to a meta-analysis in the *New England Journal of Medicine*.

The meta-analysis included data from 11 general population studies, with nearly 91,000 participants, and five cohort studies including nearly 3000 patients with chronic kidney disease. All reports provided information on standardized serum creatinine and cystatin C measurements. The eGFRs based on cystatin C, creatinine, or both were evaluated for associations with mortality, death of cardiovascular disease, or ESRD.

In the general population studies, the prevalence of eGFR less than 60 mL/min/1.73 m² was higher with estimates based on cystatin C than in those based on creatinine: 13.7 percent versus 9.7 percent. For all three outcomes, risk was decreased when eGFR was reclassified to a higher value based on cystatin C, and it was increased when eGFR was reclassified to a lower value based on creatinine.

Cystatin C-based eGFR was associated with a net reclassification improvement of 0.23 for death and 0.10 for ESRD. This was so with estimates based on either cystatin C alone or cystatin C plus creatinine. With both methods, mortality was significantly increased below a threshold eGFR value of about 85 mL/min/1.73 m².

Using cystatin C to calculate eGFR increases the accuracy of kidney function estimates. The new results suggest that cystatin C–based estimates strengthen the association between eGFR and adverse outcomes, especially all-cause mortality, but also cardiovascular mortality and ESRD. The study “provides evidence that the use of cystatin C improves the role of eGFR in risk categorization” [Shlipak MG, et al. Cystatin C versus creatinine in determining risk based on kidney function. *N Engl J Med* 2013; 369:932-943].

**Cholecalciferol Lowers Albuminuria in Chronic Kidney Disease**

In patients with chronic kidney disease (CKD), a daily oral cholecalciferol supplement reduces albuminuria—with the potential to delay the progressive decline in kidney function, reports a trial in *Nephrology Dialysis Transplantation*.

The prospective study included 101 CKD patients with albuminuria who were not receiving dialysis. Fifty of these patients had low 25(OH) vitamin D along with a high prevalence of eGFR less than 60 mL/min/1.73 m². The remaining 51 patients were free of hyperparathyroidism and did not receive cholecalciferol, regardless of their vitamin D status. Changes in albuminuria were compared for the cholecalciferol and control groups.

The mean 25(OH)D level increased by 53 percent in the cholecalciferol group. After 6 months, the patients receiving cholecalciferol had a significant decrease in the urinary albumin-to-creatinine ratio (ACR): from 284 to 167 mg/g, compared with no change in untreated control individuals.

The drop in ACR was significantly correlated with the increase in 25(OH)D but was unrelated to other factors that could affect proteinuria. Cholecalciferol treatment was also associated with a decrease of 13.8 percent in mean parathyroid hormone level, with small increases in phosphate and calcium-phosphate product.


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