

Kidney News

July 2012 | Vol. 4, Number 7

Homeless CKD patients experience increased kidney failure and premature death

By Tracy Hampton



for chronic kidney disease such as diabetes mellitus and hypertension might be elevated among homeless individuals, but the elusive nature of this population has limited our understanding of the long-term outcomes of chronic diseases in this population,” said Yoshio Hall, MD, of the University of Washington, Seattle. “Our research attempts to address this knowledge gap and provides a rare glimpse into the characteristics and adverse health outcomes of this marginalized group.”

Homelessness and health

To examine the associations between homelessness and the clinical outcomes of chronic kidney disease (CKD) among adults, Hall and his team analyzed the medical records of 15,343 adults with moderate to advanced CKD (stages 3–5) who received outpatient care from 1996 to 2005 from the Community Health Network, which along with a consortium of not-for-profit primary care clinics forms the backbone of

San Francisco’s healthcare safety net system and offers an array of healthcare services including primary care, specialty care, and acute care. Their results were published recently in the *Clinical Journal of the American Society of Nephrology*.

A total of 858 (6 percent) of the adults in the study were homeless. The main outcome measures of this retrospective cohort study were emergency department visits, hospitalizations, and time to ESRD or death.

“We hypothesized that in this resource-poor setting, homeless adults would experience worse morbidity and mortality, and that they would use healthcare resources far less efficiently than indigent peers with stable housing,” said Hall. “We further hypothesized that the worse health outcomes among the homeless would be in part attributable to higher rates of substance use and other risk factors for death and disease progression.”

The researchers found that homeless adults were younger, were dispro-

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The approximately 3.5 million people who are homeless each year in the United States experience numerous barriers to obtaining appropriate and effective medical care, and they have high rates of physical illness, mental health disorders, and substance abuse.

“Prior studies suggested that risk factors

Renal Denervation Found Safe and Effective for Chronic Kidney Disease Patients

Benefits Include Increased Hemoglobin

Renal denervation—a technique that uses radiofrequency waves to disrupt the overactive sympathetic nerves running along the arteries in the kidneys—can lower blood pressure in individu-

als with resistant hypertension and normal kidney function, but clinicians have worried that the procedure might not be safe for patients with compromised kidney function.

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transitions to independence, continues practice guideline development

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Kidney research helps drive discovery and economy, ASN tells Congress. Plus, ASN’s first “NIH Advocacy Day” touts kidney research at multiple institutes.

Supreme Court Upholds Individual Mandate, Alters Medicaid Expansion

On June 28, the U.S. Supreme Court in a 5–4 decision ruled key components of the Affordable Care Act (ACA) constitutional, including the controversial individual mandate that would require nearly all Americans to obtain healthcare insurance coverage. The mandate was considered the most crucial question being considered by the court because invalidating it would have complicated other provisions of the law. The ACA is set to fully take effect in 2014.

The Court restricted the provision expanding Medicaid coverage.

ASN President Ronald J. Falk, MD, FASN, said the Court’s decision will “allow more patients with kidney disease to obtain or maintain insurance coverage and access to the high-quality care they deserve to treat or slow the progression of kidney disease.” Next month’s *Kidney News* will feature an in-depth report on what the ruling means for the care and health of kidney disease patients and the nephrology community.

Renal Denervation

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New research largely puts these concerns to rest. A study recently published in the *Journal of the American Society of Nephrology* found that renal denervation not only can safely and effectively lower blood pressure in patients with chronic kidney disease (CKD) and hypertension but also may provide additional benefits, including a potential increase in hemoglobin concentration and reductions in proteinuria, brain natriuretic peptide levels, and peripheral arterial stiffness index.

Although the study's clinical trial enrolled only a small number of patients, making the results too limited to apply to patients with various forms of chronic renal failure, it provides guidance for further studies and clinical trials to properly assess the short- and long-term safety and efficacy of renal nerve ablation in CKD.

"It also emphasizes the concept that renal denervation may address crucial pathophysiologic mechanisms underlying the high cardiovascular morbidity and mortality rates in patients with chronic kidney disease and may provide a valuable tool in slowing the rate of progression of chronic kidney disease and its complications," the authors wrote.

Targeting the fight-or-flight response

Overactivity of neurons in the sympathetic nervous system, which controls the body's fight-or-flight response, is very common in patients with CKD. In addition to contributing to high blood pressure and heart problems in these patients, it can also worsen their kidney disease. Because targeting this system might provide significant benefits to individuals with kidney dysfunction, principal investigator Markus Schlaich, MD, of the Baker IDI Heart and Diabetes Institute in Melbourne, Australia, and his team designed a catheter-based renal nerve ablation trial in 15 patients with resistant hypertension and stage 3–4 CKD (mean estimated GFR 31 mL/min per 1.73 m²).

"The main aim of this study was to prove the safety and efficacy of the procedure in the setting of chronic kidney disease, which has not been tested before," said Schlaich. Patients underwent an average of 9.9 ablation treatments, with no periprocedural or postprocedural complications.

The study participants' average blood pressure at the start of the trial was 174/91 mm Hg even though they were taking numerous antihypertensive drugs. Their ambulatory blood pressure readings dropped considerably at 1, 3, 6, and 12 months after bilateral renal denervation (–34/–14, –25/–11, –32/–15, and –33/–19 mm Hg, respectively). Also, significant reductions in rate of blood pressure increase, blood pressure power surge, and night-to-day blood pressure ratios were observed. Moreover, renal denervation diminished mean and maximum nighttime blood pressures and restored a physiologic dip-

ping pattern.

Peripheral arterial stiffness assessed by augmentation index was significantly reduced 3 months after the procedure (51.3 percent at baseline versus 38.7 percent at follow-up). Renal denervation did not worsen patients' kidney function—as assessed by an estimation of GFR according to serum creatinine or cystatin C levels and according to plasma creatinine, cystatin C, or urea levels—indicating that it is safe even when CKD is present.

"So far, renal denervation has only been applied in patients with reasonably well kidney function; the present

study provides first results indicating that it can also be performed in patients with more advanced kidney failure," said Peter Blankestijn, MD, PhD, who was not involved with the work and is a nephrologist at the University Medical Center Utrecht in the Netherlands. "This is important new information, because this treatment could be very meaningful in kidney failure patients. More studies are needed," he added. Blankestijn has researched and written about the potential of renal denervation.

Future studies

This first clinical experience with catheter-

based renal nerve ablation in high-risk patients with moderate to severe kidney impairment indicates that the procedure may provide beneficial health effects beyond improved blood pressure control in patients with comorbid conditions, including resistant hypertension, diabetes, obesity, and obstructive sleep apnea.

Several interesting observations may deserve further investigation in future clinical trials. For example, the investigators noticed a tendency toward gradually increased serum hemoglobin levels in all treated patients. This could be important

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ASN Kidney News is published by the American Society of Nephrology
1510 H Street NW, Suite 800, Washington, DC 20005. Phone: 202-640-4660

www.asn-online.org

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Postmaster: Please send address changes to ASN Kidney News, c/o Customer Service, American Society of Nephrology 1510 H Street NW, Suite 800, Washington, DC 20005.

Publications mail agreement No. 40624074. Return undeliverable Canadian addresses to PO Box 503, RPO West Beaver Creek, Richmond Hill ON L4B 4R6

ASN Kidney News (ISSN print 1943-8044 and online 1943-8052) is an official publication of the American Society of Nephrology, 1510 H Street NW #800, Washington DC 20005, and is published monthly. Periodicals postage paid at Washington, DC and at additional mailing offices. Subscription rates: \$12 per year. To order, please email bhenkel@asn-online.org. Subscription prices subject to change. Annual ASN membership dues include \$12 for ASN Kidney News subscription.

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Renal Denervation

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because the prevalence of anemia increases with deteriorating renal function and is related to heart complications and cerebrovascular events. Interestingly, the results of both experimental and human studies have suggested a role of renal sympathetic nerves in the regulation of erythropoiesis.

The investigators also observed a trend toward reduced urinary albumin excretion after patients underwent renal denervation, as well as a trend toward reduced plasma concentrations of circulating brain natriuretic peptide. Brain natriuretic peptide is considered an independent predictor of cardiovascular death not only in cardiorenal syndrome but also in early-stage kidney disease in the absence of heart failure.

Finally, patients in the study experienced an improvement in augmentation index. Higher augmentation index is associated with target-organ damage in patients receiving hemodialysis and with microalbuminuria in those with essential hypertension. Renal denervation may rapidly affect the peripheral vasculature through a significant reduction in arterial stiffness.

“These initial findings now open up an

entirely new approach to better control blood pressure in chronic kidney disease and potentially slow down progression of the disease and reduce cardiovascular risk in these patients,” Schlaich said. “Studies are now warranted to look into this in detail.”

Disclosures: This study was funded in part by grants from the National Health and Research Council of Australia (NH-MRC) and the Victorian Government’s Operational Infrastructure Support Program. Professor Schlaich, Professor Esler, Dr. E. Lambert, and Dr. G. Lambert are supported by career fellowships from the NHMRC. Dr. Dagmara Hering is currently supported by a Research Fellowship from the Foundation for Polish Science KOLUMB/2010-1. Dr. Felix Mahfoud is supported by the Deutsche Hochdruckliga. Drs. Schlaich, Mahfoud, Walton, Krum, Boehm, and Esler are principal investigators in studies sponsored by Medtronic, the company that manufactures the renal denervation device, and have received consultancy/lecture fees from Medtronic. ●

The article, entitled “Renal Denervation in Moderate to Severe CKD,” is available at <http://jasn.asnjournals.org/>.

ASN Glomerular Disease Advisory Group Meets with FDA

By Daniel C. Cattran

Dialogue between members of the U.S. Food and Drug Administration and ASN’s Glomerular Disease Advisory Group continued at the recent National Institute of Diabetes and Digestive and Kidney Diseases–sponsored symposium *Glomerular Disease: Pathophysiology, Biomarkers, and Registries for Facilitating Translational Research*. The discussion focused on possible end points to support the approval of new treatments for glomerular disease.

Challenges associated with establishing proteinuria as a surrogate end point (a biomarker intended to substitute for a clinical efficacy end point) in drug trials for glomerular diseases were identified. Both groups agreed that future discussions should focus on the data supporting proteinuria

as a surrogate within the context of a specific glomerular disease.

Patient-reported outcome measures were recognized as another important approach for establishing a drug’s efficacy and an area that required further exploration and discussion. It was also agreed that a number of disease-specific and thematically-focused “white papers” should be published as a joint venture. These papers will address the next steps in defining optimal end points for the approval of drugs to treat glomerular diseases. ●

Daniel C. Cattran, MD, is senior scientist, division of clinical investigation and human physiology, Toronto General Research Institute, and member of the ASN Glomerular Diseases Advisory Group.



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