Mediterranean Diet May Help Preserve Kidney Function in Transplant Recipients

By Tracy Hampton

Diet plays an important role in the health of patients with chronic kidney disease, even after transplantation. New research published in the *Clinical Journal of the American Society of Nephrology* indicates that following the Mediterranean diet may help kidney transplant recipients maintain normal kidney function.

The Mediterranean diet—which focuses on high intake of fish, fruit, vegetables, legumes, nuts, and olive oil together with lower intake of dairy and meat products—has been linked with reduced risks of cardiovascular disease and early death in the general population, and a reduced risk of diabetes after kidney transplantation; however, whether the diet is also associated with kidney function preservation in kidney transplant recipients is unknown.

To investigate, António Gomes-Neto, MD, of the University of Groningen, in the Netherlands, and his colleagues provided a food-related questionnaire to adult kidney transplant recipients from their medical center who had a functioning donor kidney for at least one year. After assessing answers to the questionnaire, which inquired about intake of 177 food items during the last month, the researchers assessed adherence to the Mediterranean diet using a 9-point score.

During an average follow-up of 5.2 years, 119 of the 632 participants in the study experienced kidney function decline (76 of whom developed kidney failure). The Mediterranean Diet Score was inversely associated with kidney function decline and kidney failure. Each 2-point increase in the score was associated with a 29% lower risk of kidney function decline and a 32% lower risk of kidney failure.

“Increasing scientific evidence has demonstrated health benefits of the Mediterranean diet on cardiovascular and kidney health. In this study, we show that kidney transplant recipients with higher adherence to the Mediterranean diet are less likely to experience function loss of their kidney transplant,” Gomes-Neto said.

“Moreover, this association was strongest in patients with greater proteinuria and patients transplanted more recently.”

The findings are important because, despite improvements in the survival of transplanted kidneys in the early years after transplantation, loss of kidney function remains a significant challenge. The Mediterranean diet, which has been shown to be beneficial for cardiovascular health, may offer a promising strategy to preserve kidney function in transplant recipients.

Desmopressin and Bleeding after Kidney Biopsy

Creatinine Level May Affect Risk

By Tim O’Brien

The clot-promoting drug desmopressin is commonly used with the goal of reducing bleeding complications in patients undergoing percutaneous kidney biopsy. But the evidence supporting this practice is weak—particularly in patients with decreased kidney function.

Desmopressin’s impact on bleeding risk after kidney biopsy depends on the patient’s creatinine level, reports a paper in the open-access journal BMC Nephrology. In a retrospective analysis, Ambarish Athavale, MD, and colleagues of Cook County Health, Chicago, report that desmopressin is associated with fewer bleeding events in patients with elevated serum creatinine—but with a spuriously increased bleeding risk in those with lower creatinine values.

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KDIGO

Our special section looks at KDIGO’s history, current guidelines, and vision moving forward.

Policy Update

KidneyX receives $5 million in funding; OPO accountability and living donor incentives get boost.

Kidney Health Initiative

2019 was a banner year for kidney medicine, and KHI will continue to catalyze innovation in 2020.

Exercise and Kidney Disease

Can exercise training affect cardiovascular morbidity in patients with CKD?
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within 10 years still occurs in more than one-third of re-
cipients. Identifying modifiable risk factors may help to
improve organ survival. “The observational design of this
study precludes us from drawing conclusions of causality,
and individual confounding may exist despite adjustments
for potential confounders in our analyses,” noted Gomes-
Neto.

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“Desmopressin should not be used routinely prior to
percutaneous kidney biopsy in patients at low risk for
bleeding but should be reserved for patients who are at
high risk for bleeding,” the researchers write.

Desmopressin before kidney biopsy: Which patients do (and don’t) benefit?

Athavale is a nephrologist and director of clinical research
at Cook County Health. His coauthors are Hernani Kulkarni, MD, of M&H Research, San Antonio, Texas; and Cagil D. Ardan, MD, and Peter Hart, MD, of Cook County Health.

Their study included 269 patients who underwent per-
cutaneous kidney biopsy at the authors’ urban public hos-
pital from 2014 through 2018. All patients had available
data on bleeding time; patients with bleeding time over 10
minutes, platelet counts under 50,000, or evidence of
coagulopathy were excluded from the analysis. Indica-
tions for biopsy (nonspecific) included nephritis in 122
patients, nephrotic syndrome in 122, and chronic kidney
disease in 85. Biopsy was performed on an emergency basis
in 56 patients.

At the discretion of the nephrologist performing the
biopsy, 37.17% of patients received desmopressin (0.3 μg/
kg IV). There were some significant differences in patient
characteristics, including potential risk factors for bleeding
events: Patients receiving desmopressin had lower baseline
hemoglobin, lower platelet count, lower estimated glomer-
lular filtration rate, higher bleeding time, higher blood urea
nitrogen, and higher serum creatinine.

Athavale and colleagues looked at whether desmo-
pressin achieved the goal of reducing bleeding risk, and
whether this effect differed for patients with decreased ver-
sus normal kidney function. The primary outcome was a
composite of a 1 g/dL or greater decrease in hemoglobin,
gross hematuria, and need for angiogram or red blood cell
transfusion. Overall, patients in the desmopressin group
had a higher rate of bleeding events: 59.46%, compared to
31.75% in those who did not receive desmopressin.

A propensity score was generated to account for vari-
ables that differed between groups. In this analysis, the odds
of postbiopsy bleeding were nearly four times higher in pa-
tients receiving desmopressin: odds ratio 3.88. Most of the
difference was related to higher rates of decreased hemo-
globin (44.14% versus 18.96%) and hematoma (18.02%
versus 15.17%) in desmopressin-treated patients. Rates of
gross hematuria and need for red blood cell transfusion
were similar between groups.

On subgroup analysis, two factors contributed to the
desmopressin-related increase in bleeding events: high baseline
eGFR and low serum creatinine. None of the other factors
analyzed—including gender, emergent versus elec-
tive biopsy, acute kidney injury, diabetes, hypertension, or
bleeding time—were significantly related to bleeding risk.

For patients with high baseline creatinine (1.8 mg/
dl or greater), there was a trend toward reduced bleeding
complications after desmopressin administration: OR 2.11
(95% confidence interval 0.87 to 5.11). In contrast, ad-
ministration of desmopressin to patients with low baseline
creatinine (less than 1.8 mg/dL) was associated with a large
increase in bleeding risk: OR 9.2 (95% confidence interval
2.95 to 31.96).

“This increased odds of bleeding was driven mainly by
a drop in hemoglobin in patients with relatively preserved
kidney function,” Athavale said. “Because these patients
did not need blood transfusion or angiographic emboliza-
tion and the absolute magnitude of hemoglobin drop was
small, we felt that this decrease in hemoglobin reflected
dilution effect after desmopressin administration and not
true bleeding from kidney tissue.”

New questions on routine desmopressin
before kidney biopsy

Bleeding is the most frequent complication of percutane-
ous kidney biopsy and is more common in patients with
decreased kidney function. Several abnormalities may
contribute to platelet dysfunction in patients with kidney
disease. The rationale for using desmopressin is to improve
platelet aggregation by increasing release of von Wille-
brand factor.

However, these authors observed a sharply increased risk
of severe hyponatremia in patients receiving desmopressin:
10.7% versus 3.0%, adjusted odds ratio 4.02. Athavale
and colleagues found no episodes of symptomatic hypona-
tramia, nor any other adverse events or side effects attribut-
able to desmopressin.

In a study in CJASN, Moledina et al. found an 8% rate
of transfusion, a 7% rate of hematoma, and a 2% rate of
angiographic intervention in a cohort of 256 patients un-
dergoing kidney biopsy (5). Hospitalized patients were at
higher risk of complications; other risk factors included
lower platelet count, female sex, and higher blood urea
nitrogen (BUN). In this analysis, desmopressin was associ-
ated with a lower risk of transfusions after controlling for
BUN level: odds ratio 0.24.

The new study suggests that desmopressin reduces post-
biopsy bleeding in patients with elevated serum creatinine
(1.8 mg/dL) or higher but is not useful in patients with
normal creatinine levels. Athavale and colleagues note that
most of the desmopressin-related increase was driven by
an increase in postbiopsy hemoglobin, which doesn’t nec-
essarily reflect true bleeding from the kidney. However,
a drop in hemoglobin may lead to additional and unneces-
sary testing, leading to increased costs and patient anxi-
ety. The authors add that desmopressin has been linked to
other adverse events, including increased thrombotic risk
when given to reduce bleeding risk in non-uremic patients
undergoing major cardiovascular surgery.

Athavale and colleagues note some strengths of their
study, including the inclusion of many patients with com-
mon risk factors: elevated serum creatinine in about 70%,
high body mass index in 40%, and acute kidney injury in
4%. The experience reflects contemporary kidney biopsy
practice. All procedures were performed using an 18-gauge
biopsy needle; the findings may not be applicable to biop-
sies performed using a 16-gauge needle.

These limitations, together with the mixed findings and
sparse evidence on bleeding risk associated with kidney bi-
opsy in general and the effects of desmopressin in particu-
lar, highlight the need for definitive studies of assessing
and reducing bleeding risk. Athavale and coauthors conclude,
“A randomized trial is needed to further evaluate the ef-
ficacy and safety of desmopressin in high-risk patients.”

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