

Findings

Kidney Function May Interact with Oral Anticoagulants

For patients with atrial fibrillation (AF), baseline renal function may influence the risks and benefits of oral anticoagulation with dabigatran versus warfarin, according to a research letter in the *Journal of the American College of Cardiology*.

The retrospective analysis included propensity-matched groups of adults with AF who were taking warfarin (11,546 patients) or dabigatran (5469 patients). Baseline eGFR showed normal kidney function in about 20% of patients, mild kidney disease in 50%, and moderate kidney disease in 30%. Only 2% had severe

kidney disease (eGFR of 30 mL/min per 1.73 m² or lower). Interactions between treatment and baseline eGFR for thromboembolic events and major bleeding were assessed.

For patients with normal kidney function, dabigatran was associated with a higher risk of thromboembolism (incidence rate ratio [IRR], 3.14) but a lower risk of major bleeding (IRR, 0.28). For those with mild kidney disease, thromboembolism risk was similar between treatment groups, but major bleeding risk remained lower with dabigatran (IRR, 0.39).

Among patients with severe kidney disease, there were no thromboembolic events in the dabigatran group versus 2.95 events per 100 person-years in the warfarin group. However, major bleeding risk was higher with dabigatran (IRR, 3.58). The interaction between kidney function and treatment was significant for gastrointestinal but not intracranial bleeding.

Studies have found dabigatran to be superior to warfarin in reducing AF-associated thromboembolism, with similar rates of major bleeding. Kidney disease increases the risk of both thromboembo-

lism and bleeding, whereas dabigatran has significant renal clearance.

This cohort study suggests that dabigatran has a more favorable risk-to-benefit ratio for AF patients with mild to moderate kidney disease but may be associated with a higher risk of thromboembolism in those with normal renal function. The study is limited by the small number of patients with severe kidney disease [Del-Carpio Munoz F, et al. Dabigatran versus warfarin in relation to renal function in patients with atrial fibrillation. *J Am Coll Cardiol* 2016; 68:129–131]. ●

High BMI Increases Risk of Diabetes, Not MI or Premature Mortality

Independent of genetic factors, higher body mass index (BMI) is associated with a higher risk of type 2 diabetes, but not of myocardial infarction (MI) or death, suggests a twin study in *JAMA Internal Medicine*.

Using the Swedish national twin registry, the researchers identified 4046 monozygotic twin pairs discordant for BMI. Mean BMI was 25.9 in the heavier twins versus 23.9 in the leaner twins; because the twins were genetically identical, the difference in BMI was lifestyle-related. Twelve-year follow-up data were used to estimate

the effects of higher BMI on mortality and MI risk (composite primary outcome) and incident diabetes (secondary outcome).

During follow-up, MI occurred in 5.0 percent of the heavier twins and 5.6 percent of the leaner twins; mortality was 13.6 and 15.6 percent, respectively. On multivariable analysis, risk of the composite outcome was significantly lower in the heavier twins: adjusted odds ratio (OR) 0.75. On analysis of 65 twin pairs with at least a seven-unit discrepancy in BMI and where the heavier twin had a BMI of 30 or higher, the difference in MI risk or mortal-

ity was not significant.

However, incident diabetes risk was twice as high in the heavier versus leaner twins: OR 2.14. This risk increased with widening BMI discordance between pairs. Changes in BMI occurring about three decades before baseline were also unrelated to MI or mortality, but were significantly related to diabetes risk: OR 1.13.

Genetic factors may help to explain why population rates of MI and mortality are decreasing even as the prevalence of obesity increases. This study shows that lifestyle-related increases in BMI are asso-

ciated with the incidence of diabetes, but not with MI or death.

Obesity appears to have a causal association with type 2 diabetes, with no confounding influence of genetics. “Lifestyle interventions to reduce obesity may be more effective in reducing the risk of diabetes than the risk of cardiovascular disease or death,” the researchers conclude. [Nordström P, et al. Risk of myocardial infarction, death, and diabetes in identical twin pairs with different body mass indexes. *JAMA Intern Med* 2016; doi:10.1001/jamainternmed.2016.4104]. ●

Abrupt Decline in Kidney Function Predicts Early ESRD Mortality

A sudden drop in kidney function in the few months before starting hemodialysis is associated with a threefold increase in the risk of death within the first year on dialysis, reports a study in *The American Journal of Kidney Diseases*.

The prospective study included 661 patients with mild to moderate chronic kidney disease who developed chronic kidney failure requiring hemodialysis. Patients were drawn from the Chronic Renal Insufficiency Cohort (CRIC) Study. Using data on annual estimated

glomerular filtration rate (eGFR), the researchers identified patients with an abrupt decline in kidney function, defined as an extrapolated eGFR of 30 mL/min/1.73 m² at 3 months before the start of hemodialysis.

Abrupt decline in kidney function was evaluated as a predictor of death during the first year on dialysis. Multivariable analysis included adjustment for demographic factors, cardiovascular disease, diabetes, and cancer.

Fifty-six patients met the study

definition of abrupt decline in kidney function—a rate of 8.5%. Sixty-nine patients died in the first year after starting hemodialysis. On adjusted analysis, patients with abrupt decline in kidney function were at increased risk of early death: hazard ratio 3.09. Patients with abrupt decline were more likely to have initial dialysis catheter access, but less likely to have nephrologist care before dialysis.

About 1 in 12 patients starting hemodialysis have an abrupt decline in

kidney function during the preceding three months. The new analysis of CRIC data suggests that this pattern is associated with an increased risk of early death. The authors call for further study to evaluate the causes of such sudden drops in eGFR, and whether interventions can improve survival after starting dialysis [Hsu RK, et al. Abrupt decline in kidney function before initiating hemodialysis and all-cause mortality: the Chronic Renal Insufficiency Cohort (CRIC) Study. *Am J Kidney Dis* 2016; 68:193–202]. ●

After Bariatric Surgery, a Reduced Risk of Kidney Function Decline

Severely obese patients undergoing bariatric surgery are at lower risk of declining kidney function, independent of other factors, reports a study in *Kidney International*.

The study included a cohort of 985 patients with severe obesity—mean body mass index of 46.6—who underwent bariatric surgery between 2004 and 2013. They were matched to the same number of obese patients who did not have bariatric surgery. Propensity score matching included demographic factors, body mass index,

estimated GFR (eGFR), comorbid conditions, and previous nutrition clinic visits.

With a mean age of 45, 80% of patients were women, and 97% were white. One-third had a baseline eGFR of less than 90 mL/min per 1.73 m². At 1 year, patients in the bariatric surgery group had lost a mean of 40.4 kg body weight compared to 1.4 kg for controls.

At median follow-up of about 4 years, 8.6% of bariatric surgery patients had a 30% or greater decline in eGFR compared with 17.9% of controls. Bariatric surgery

was also associated with a lower rate of ESRD or doubling of serum creatinine: 2.2% versus 5.0%.

On adjusted analysis, bariatric surgery patients were at lower risk of both adverse kidney outcomes: hazard ratios of 0.42 for 30% or greater decline in eGFR and 0.43 for ESRD or doubling of serum creatinine. Subgroup analyses showed similar patterns in patients with eGFR less than 90 mL/min per 1.73 m², hypertension, or diabetes.

Bariatric surgery improves numerous

health outcomes for patients with severe obesity, but less is known about how it affects their very high risk of kidney disease. This matched cohort study finds a lower risk of declining kidney function and ESRD after bariatric surgery. The researchers conclude, “Bariatric surgery may be a possible treatment option to prevent and slow the progression of chronic kidney disease in severely obese patients” [Chang AR, et al. Bariatric surgery is associated with improvement in kidney outcomes. *Kidney Int* 2016; 90:164–171]. ●