

Journal View

Off-Pump CABG Reduces AKI Risk—But No Difference in Later Kidney Function

Patients assigned to off-pump coronary artery bypass grafting (CABG) have a lower risk of acute kidney injury (AKI) but no reduction in the rate of reduced kidney function 1 year later, reports a study in the *Journal of the American Medical Association*.

In the international randomized trial, 4752 patients undergoing their first isolated CABG procedure were assigned to the off-pump (beating-heart) technique or to on-pump cardiopulmonary bypass. A kidney function substudy analyzed serum creatinine data during the postoperative period and at 1-year follow-up in 2932

patients. The two groups were compared for their risk of AKI at 30 days, defined as a 50 percent or greater increase in serum creatinine level. The 1-year rate of loss of kidney function—a 20 percent or greater reduction in estimated GFR—was also compared between groups.

The 30-day AKI risk was 17.5 percent in patients assigned to off-pump CABG versus 20.8 percent in the on-pump group: adjusted relative risk (RR) 0.83. However, the reduction in AKI did not lead to a reduced risk of kidney function loss at 1 year: 17.1 and 15.3 percent, respectively.

A subgroup analysis of patients who had chronic kidney disease at baseline showed an even greater reduction in AKI risk with off-pump CABG: 19.2 versus 30.2 percent, RR 0.63. In both analyses, the results were similar when different definitions of AKI were used.

Cardiac surgery is associated with a substantial risk of mild to moderate AKI, but the implications for long-term kidney function are unclear. No intervention that lowers the risk of AKI has been proved to protect long-term kidney function.

The new trial shows a lower 30-day risk

of AKI in patients undergoing off-pump CABG rather than the on-pump procedure. However, this does not lead to any difference in the rate of reduced kidney function at 1-year follow-up. The researchers write, “[T]he findings emphasize proof is needed to claim an intervention that reduces the risk of mild acute kidney injury better preserves long-term kidney function for the group that received it” [Garg AX, et al. Kidney function after off-pump or on-pump coronary artery bypass graft surgery: a randomized clinical trial. *JAMA* 2014; 311:2191–2198]. ●

Rising Diabetes Rates in American Children and Teens

The prevalence of both type 1 and type 2 diabetes among American youth increased significantly during the past decade, according to a report in the *Journal of the American Medical Association*.

The SEARCH for Diabetes in Youth study analyzed data on diabetes prevalence from 2001 to 2009 among children and adolescents in four geographic areas of the United States, including American Indian reservations in two states, and from a large California

healthcare system. Trends in the prevalence of physician-diagnosed type 1 diabetes from age 0 to 19 years and type 2 diabetes from age 10 through 19 years were analyzed.

The prevalence of type 1 diabetes (per 1000) increased from 1.48 in 2001 to 1.93 in 2009. Type 1 diabetes was most frequent in white children and adolescents and least frequent in American Indian youth: 2.55 versus 0.35 per 1000, respectively. Prevalence increased in nearly all age, sex, and racial and eth-

nic groups. On adjusted analysis, the increase in type 1 diabetes prevalence was 21.9 percent.

The prevalence of type 2 diabetes also increased: from 0.34 to 0.46 per 1000. By racial and ethnic groups, the rates per 1000 were 1.20 for American Indian, 1.06 for black, 0.79 for Hispanic, and 0.17 for white youth. The adjusted increase in the prevalence of type 2 diabetes was 30.5 percent.

The study supplies needed data on trends in diabetes rates among children

and adolescents in the United States. The results suggest that the prevalence of type 1 diabetes increased by about 20 percent and of type 2 diabetes by 30 percent during the previous decade, with significant variations by race and ethnicity. Further study will be needed to determine the cause of the rising diabetes rates in young Americans [Dabelea D, et al. Prevalence of type 1 and type 2 diabetes among children and adolescents from 2001 to 2009. *JAMA* 2014; 311:1778–1786]. ●

Autopsy Study Looks at Kidney Damage in Drug Abusers

Illicit drug abuse is associated with a “broad but unspecific” range of pathologic changes in the kidneys, according to a postmortem analysis in the *American Journal of Kidney Diseases*.

The researchers analyzed the renal findings at forensic autopsy in 129 individuals who died of causes related to illicit drug abuse in one German city between 2009 and 2011. The mean age was 39 years, and 82 percent of the decedents were male. Eighty percent were intravenous drug users. The average known duration of drug use was

17 years. Toxicologic analyses showed a broad spectrum of substances, most commonly opioids, cocaine, and alcohol.

Comorbid conditions included cardiovascular disease, cirrhosis, and infections. Pathologic findings in the kidneys included arteriosclerotic and ischemic damage, mild interstitial inflammation, parenchymal calcification, and interstitial fibrosis and tubular atrophy. The most common cause of nephropathy was hypertensive-ischemic.

Pathologic findings associated with

severe intravenous drug use included interstitial fibrosis, odds ratio (OR) 16.59; and renal calcification, OR 2.43. By contrast, cocaine abuse was associated with hypertensive and ischemic damage, OR 6.00. There was no evidence of specific glomerular damage associated with heroin-related or hepatitis C virus-related disease, or of analgesic nephropathy.

Abuse of illicit drugs is a known risk factor for chronic kidney disease, but few studies have examined the renal consequences of long-term drug abuse.

This autopsy study shows a broad but nonspecific range of nephropathy in a group of young individuals who died of causes related to drug abuse.

Drug abusers may sustain chronic progressive kidney damage related to “multiple pharmacologic challenges” over time, the researchers write. Cocaine abuse may promote kidney disease progression by inducing hypertensive and ischemic damage [Buettner M, et al. Nephropathy in illicit drug abusers: a postmortem analysis. *Am J Kidney Dis* 2014; 63:945–953]. ●

High Rate of Cancer-Related Death after Kidney Transplant

Kidney transplant recipients are at high risk of malignancy-related death, and this risk may be higher in recipients of organs from deceased donors, reports a study in *Kidney International*.

The researchers analyzed data on all kidney-only transplantations performed in England from 2001 to 2012, with linkage to hospital and mortality data. The study included 19,103 kidney transplant procedures, and the median follow-up time was 4.4 years. The analysis focused on the overall and site-specific risks of malignancy-

related death, along with associated factors.

Of 2085 deaths during follow-up, 18 percent were malignancy-related, for a crude mortality rate of 361 deaths for 100,000 person-years. Lymphoma and lung cancer were the most common malignancies: 18.4 and 17.6 percent, respectively; followed by renal cancer, 9.8 percent; and unspecified cancers, 14.1 percent. Malignancy-related mortality was 0.8 percent for recipients younger than 50 years, 2.5 percent at ages 50 to 59, 4.8 percent at ages 60 to 69, 6.5 percent at ages 70 to 79,

and 9.1 percent at age 80 or older.

When patients were stratified for age and sex, the risk of malignancy-related death was significantly higher in transplant recipients than in the general population. Independent risk factors included older age, history of cancer before transplantation, and receipt of organs from deceased donors.

Kidney transplant recipients are at increased risk of cancer, reflecting the effects of immunosuppression. Few data are available on the risk of malignancy-related mor-

tality after transplantation.

The new results show that malignancy is a common cause of death after kidney transplantation. Although the increased risks associated with age and previous cancer history are expected, the link to deceased-donor organ transplantation is not. The findings underscore the importance of targeted surveillance after transplantation [Farrugia D, et al. Malignancy-related mortality following kidney transplantation is common. *Kidney Int* 2014; 85:1395–1403]. ●