Options for BP Control in Diabetic Kidney Disease

No BP-lowering medication strategy leads to increased survival in diabetic patients with kidney disease, concludes a network meta-analysis in The Lancet. A systematic literature search was performed to identify randomized trials comparing the outcomes of treatment with oral BP-lowering drugs in adults with diabetes and kidney disease. A random-effects network meta-analysis included 157 studies comprising more than 43,000 patients—most with type 2 diabetes and chronic kidney disease. All-cause mortality and ESRD were the main outcomes of interest; secondary safety and cardiovascular outcomes were evaluated as well.

The analysis identified no drug treatment that reduced all-cause mortality, compared with placebo. However, strategies using an angiotensin-receptor blocker (ARB) were associated with a significant reduction in ESRD compared with placebo. The odds ratios for this outcome were 0.77 with ARB monotherapy and 0.62 with ARB plus an angiotensin-converting enzyme inhibitor. The results for the primary outcomes were “generally robust” in sensitivity analyses.

No treatment strategy was associated with an increased risk of hyperkalemia or acute kidney injury. However, the combination of ARB and angiotensin-converting enzyme (ACE) inhibitor was associated with borderline increases, making it the lowest-ranked treatment for both safety outcomes.

There is continued debate over the relative safety and efficacy of different BP-lowering drugs, mainly because of the lack of head-to-head comparisons. Although ARBs and ACE inhibitors are assumed to be clinically equivalent, their concurrent use is not recommended. Within its limitations, the network meta-analysis suggests that no BP-lowering treatment reduces mortality in diabetic patients with kidney disease. The use of ARBs and ACE inhibitors, alone or in combination, appears most effective against ESRD. The authors emphasize the need for close follow-up for treatment-related acute kidney injury and hyperkalemia in patients receiving these drugs [Palmer SC, et al. Comparative efficacy and safety of blood pressure-lowering agents in adults with diabetes and kidney disease: a network meta-analysis. Lancet 2015; 385:2047–2056].

Strict BP Control May Reduce Mortality from ESRD

Although strict BP control doesn’t slow progression from chronic kidney disease (CKD) to ESRD, it is associated with a lower risk of death after ESRD develops, reports a study in Kidney International. The study presents extended follow-up of patients enrolled in the Modification of Diet in Renal Disease (MDRD) trial. In that study, 840 patients with CKD were assigned to strict or usual BP control; the mean arterial pressure targets were less than 92 mm Hg versus 107 mm Hg, respectively. The occurrence of ESRD and death were determined by linkage to the U.S. Renal Data System and National Death Index.

At a median follow-up time of 19.3 years, ESRD developed in 627 patients, with no significant difference between the two BP strategies. A median of 10 years after the occurrence of ESRD, there were 142 deaths in the strict control group versus 182 in the usual control group: 4.4 versus 6.1 deaths per 100 person-years, respectively.

With strict control, the unadjusted hazard ratio for death after the onset of ESRD was 0.72. On analysis regardless of ESRD status, strict BP control was also associated with a lower risk of death. Patients in the usual care group were more likely to have coronary artery disease and congestive heart failure at the time of ESRD diagnosis.

Few studies have examined how BP control and other CKD treatments affect clinical outcomes after ESRD develops. The new study suggests that patients receiving strict control have a lower long-term risk of death after incident ESRD. Further studies are needed to confirm this finding and its relationship to cardiovascular health status at ESRD onset [Ku E, et al. Association between strict blood pressure control during chronic kidney disease and lower mortality after onset of end-stage renal disease. Kidney Int 2015; 87:1055–1060].

“Kicking CAUTI” Lowers Antibiotic Use for Asymptomatic Bacteriuria

An “antimicrobial stewardship” program can reduce antibiotic overuse in patients with asymptomatic bacteriuria (ASB) related to urinary catheters, according to a study in JAMA Internal Medicine. The researchers developed the “Kicking CAUTI” intervention as a new approach targeting inappropriate treatment of ASB. The program focused on the reduction of urine culture ordering, with elements that included a case-based audit and streamlined diagnostic algorithm. Preintervention and postintervention comparisons were carried out at two Veterans Affairs health care systems, including patients with urinary catheters on acute medical and long-term care units. The main outcomes were urine cultures ordered and antibiotic prescriptions for patients with ASB:—defined as positive urine culture with no signs or symptoms.

During the intervention period, urine culture ordering decreased from 41.2 to 23.3 per 1000 bed-days: incidence rate ratio (IRR) 0.57. During a subsequent maintenance period, there was a further reduction to 12.0 per 1000 bed-days: IRR 0.29. The rate of ASB overtreatment decreased from 1.6 to 0.6 per 1000 bed-days, IRR 0.35, and then to 0.4 per 1000 bed-days, IRR 0.23.

Comparison of sites showed no change in either outcome. The intervention effect on ASB overtreatment was significant on long-term care wards. The challenges of differentiating ASB from catheter-associated urinary tract infection can lead to overtreatment of asymptomatic patients with positive cultures. The guidelines-based Kicking CAUTI intervention led to sustainable improvements in antimicrobial overuse for ASB without reducing appropriate treatment. Long-term care may be “an emerging domain for antimicrobial stewardship,” the researchers write [Trautner BW, et al. Effectiveness of an antimicrobial stewardship approach for urinary catheter associated asymptomatic bacteriuria. JAMA Intern Med 2015; doi:10.1001/jamainternmed.2015.1878].

Diagnostic Errors Are Key Source of Inappropriate Antibiotic Use

Inaccurate diagnosis is an important contributor to inappropriate antimicrobial prescribing for hospitalized patients, according to a report in Infection Control and Hospital Epidemiology. The retrospective analysis included a random sample of 500 patients receiving systemic antimicrobial drug treatment during a stay at a Veterans Affairs hospital. In blinded fashion, a panel of infectious disease physicians rated the accuracy of the initial diagnosis and the appropriate-ness of treatment.

The initial diagnosis was rated correct in 58 percent of cases, incorrect in 31 percent, and of indeterminate accuracy in 4 percent. In the remaining 6 percent of cases, the “diagnosis” was actually a sign or symptom rather than a disease or syndrome. Cystitis, pyelonephritis, and urosepsis were the diagnosis with the lowest rate of agreement between providers and reviewers—just 27 percent. The agreement rate for pneumonia was 48 percent.

Antimicrobial treatment was considered appropriate for 62 percent of cases when the diagnosis was correct but only 5 percent when the diagnosis was incorrect, indeterminate, or a sign or symptom. On analysis of 309 instances of inappropriate treatment, an incorrect antimicrobial was chosen for 73 percent of patients with a correct diagnosis. In cases of diagnostic error, antimicrobial treatment was not indicated in 84 percent of cases.

The study builds on previous results showing that inappropriate antimicrobial prescribing for hospitalized patients is often related to diagnostic error. Factors that may contribute to inaccurate diagnosis and inappropriate antibiotic use include reliance on intuitive processes, fatigue, previous diagnoses from other providers, and lack of experience. [Filice GA, et al. Diagnostic errors that lead to inappropriate antimicrobial use. Infect Control Hosp Epidemiol 2015; doi:10.1017/ice.2015.115].