Mindfulness Meditation Can Reduce Hypertension in Patients with Kidney Disease

By Kurtis Pivert

Mediation could be a valuable, low-cost, non-pharmacologic intervention for reducing blood pressure and adrenaline levels in patients with chronic kidney disease (CKD) according to research presented at Kidney Week 2013. Because CKD patients have a higher risk for cardiovascular disease, in part due to increased sympathetic nervous system activity, Jeanie Park, MD, of Emory University School of Medicine and her colleagues (1) investigated the technique to determine if it could help control hypertension and reduce this risk. Although examined in other therapeutic settings (2, 3), mindfulness meditation, “a stress-reduction technique involving focused awareness on internal and external sensory stimuli in the present moment without judgment or cognitive elaboration,” has never been studied in this population.

Park conducted a randomized crossover study of 15 male VA patients with stage III CKD and hypertension. Each underwent either mindfulness meditation or education on managing hypertension (control) while undergoing continuous microneurography (for sympathetic nerve activity), electrocardiography, and blood pressure monitoring. A subset of six patients underwent an additional study comparing deep breathing alone to mindfulness meditation and control. A significant decrease in systolic and mean arterial pressure and sympathetic nerve activity was observed in patients undergoing mindfulness meditation compared to control. Dramatically lower levels of nerve activity were also shown in the subset of patients when meditating compared to controlled breathing alone.

“Because mindfulness meditation acutely lowered muscle sympathetic nerve activity and blood pressure in hypertensive patients with CKD, it may have beneficial effects on blood pressure and autonomic function in patients with kidney disease,” said Park. She added that although their findings demonstrated that blood pressure and sympathetic activity were significantly improved acutely during one session of mindfulness meditation, there are no studies investigating the long-term effects or sustained effects on hemodynamics and autonomic function.

“Although mindfulness meditation has previously been shown to lower blood pressure among patients with hypertension, I was surprised by the difference in impact on sympathetic nerve activity between mindfulness meditation and deep breathing alone, which has also been shown to decrease blood pressure and reduce stress,” said Delphine Tuot, MD, of the University of California, San Francisco, who was not affiliated with the study.

Tuot highlighted that hypertension in patients with CKD is multifactorial, with hypervolemia, activation of the renin angiotensin system, and overactivity of the sympathetic nervous system all playing a role. “It is thought that impaired kidney function may lead to chemical changes in the blood, which in turn communicate to the central nervous system to increase sympathetic outflow. If sustained, this can lead to higher arterial blood pressures, faster heart rates, irregular heart rhythms, and structural changes in the heart muscle,” said Tuot. All are independent risk factors for cardiovascular disease, but in patients with kidney disease they can act synergistically to increase cardiovascular risk even more, she added.

Park noted that there are not enough data to definitively conclude that mindfulness meditation lowers blood pressure and sympathetic activity in patients with CKD. “However, this intervention is safe, and without side effects, and may have beneficial physiologic and psychologic effects; thus, it may be a reasonable complementary therapy to offer to interested patients.”

“Future research will determine if mindfulness meditation has long-term beneficial effects on blood pressure, adrenaline levels, and mortality in patients with kidney disease,” said Park. She and her coworkers were currently investigating the potential benefits of an intradialytic mindfulness-based stress reduction program on physiologic and psychologic end points in patients with end stage renal disease.

“This low-cost, low harm intervention is clearly a promising adjunct for our patients. However, it’s important to know how to teach and lead patients through such an exercise and how to select patients who are good candidates for mindfulness meditation,” said Tuot. “In light of the short-lived impact of mindfulness meditation on blood pressure and sympathetic activity, I would be surprised if mindfulness meditation can reduce the number of antihypertensive medications that nephrologists must prescribe patients. However, with these results and prior studies demonstrating that mindfulness meditation can lead to sustained stress reduction, it’s exciting to see that mindfulness meditation might be another weapon in our arsenal to combat high blood pressure in patients with CKD.”

References