Study provides extensive normative data for the evaluation of cognitive deficits in kidney disease

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Chronic kidney disease (CKD) has been associated with increased risk for cognitive impairment, with the highest risk observed for those with end-stage renal disease (ESRD). In many previous studies, healthy individuals have been compared with persons who have ESRD and are often being treated with hemodialysis.

In recent papers, investigators with the Maine-Syracuse Longitudinal Study (MSLS), a 35-year study of cognition and cardiovascular risk-factors, have argued two points: (1) The appropriate comparison group for persons with ESRD is a group of persons with early-stage CKD, not healthy individuals free from the cardiovascular disease risk factors (CVD-RFs) that play a role in the development of CKD and cognitive impairment; (2) There is an absence of normative data on multiple measures of cognitive ability that would allow comparisons between CKD and ESRD to be made.

In a recent issue of *Nephrology Dialysis Transplantation*, investigators at the University of Maine, Temple University and the University of Maryland published an extensive set of normative data for MSLS participants with early-stage CKD. This will allow clinicians to select tests appropriate for their patients' needs and researchers to compare the cognitive functioning of their participants with ESRD with those of an appropriate reference group.

In addition, their study also revealed that many CVD-RFs related to kidney disease, including inflammation, could play an important role in the relationship between CKD and cognition. The literature indicates that deficits seen in early-stage CKD are modest, but can progress to more serious deficits seen in ESRD.

A state-of-the-art neurocognitive battery composed of 22 tests indexing eight relatively independent, theory-based cognitive domains was utilized. For each test, raw scores were reported, as well as risk for modest (below the 16th percentile) and severe (below the 7th percentile) cognitive impairment.

The study design was cross-sectional with 898 individuals (146 with CKD) free from dementia and ESRD. Participants in the CKD group were significantly older than those in the non-CKD group (71 versus 62 years of age), and had a higher prevalence of CVD (25 percent versus 12 percent) and diabetes mellitus (25 percent versus 12 percent). With control for these and other comorbidity-related risk factors, participants with early-stage CKD had significantly higher risk for modest impairment on tests indexing scanning and tracking and visual-spatial organization/memory, as well as severe impairment on tests indexing language (i.e., tests sensitive to early dementia).

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