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American Society of Nephrology

Protein in the urine: A warning sign for cognitive decline

1. Small Amounts of Urinary Protein Predict More Rapid Cognitive Decline in Elderly Women

Screening Efforts in Older Individuals May Be Warranted

A new study has found that low amounts of albumin in the urine, at levels not traditionally considered clinically significant, strongly predict faster cognitive decline in older women. The study involved more than 1,200 women aged >70 years in the Nurses' Health Study who were phoned every two years for three cycles and tested for general cognition, verbal/word memory, verbal fluency (speed in making word associations), and working/short-term memory. Julie Lin, MD (Brigham and Women's Hospital) and her colleagues found that participants with a urinary albumin-to-creatinine ratio of >5 mcg/mg at the start of the study experienced cognitive decline at a rate 2 to 7 times faster in all cognitive measures than that attributed to aging alone over an average 6 years of follow-up. "The strongest association was seen with a decline in the verbal fluency score, which has been attributed to progressive small vessel disease in the brain, which supports the view that albuminuria is an early marker of diffuse vascular disease," said Dr. Lin. "Therefore, in light of the aging U.S. population, which is at risk for cognitive decline and vascular disease, simple, non-invasive screening for albumin in the urine as an independent predictor for subsequent cognitive decline may represent an important public health issue."

Study co-authors include Fran Grodstein, PhD, Jae Hee Kang, PhD, and Gary Curhan, MD, ScD, (Brigham and Women's Hospital).

Disclosures: Dr. Curhan is a consultant for Takeda Pharmaceuticals; receives grants/research support from Astellas and honoraria from Takeda Pharmaceuticals. Dr. Lin, Dr. Grodstein, and Dr. Hee Kang reported no other financial disclosures.

The study abstract, "A Prospective Study of Albuminuria and Cognitive Decline in Women," [SA-FC355] will be presented as an oral presentation on Saturday, November 20 Day, Date at 5:18 PM MT in Room 405 of the Colorado Convention Center in Denver, CO.

2. Urinary Protein Excretion Increases Risk of Cognitive Impairment Simple Urine Tests Could Identify Individuals at Risk

Two characteristics of kidney disease—excreting protein in the urine (albuminuria) and low kidney function—increase individuals' risk of becoming confused and forgetful. To see whether these two characteristics are related or independent in their effects on cognitive decline, Manjula Kurella Tamura, MD (Stanford University) and her colleagues studied clinical data from 19,399 individuals participating in the Renal Reasons for Geographic and Racial Differences in Stroke (REGARDS) study. A total of 1,184 participants (6.1%) developed cognitive impairment over an average follow-up of 3.8 years. Individuals with albuminuria were 1.31-1.57 times more likely to develop cognitive impairment compared to individuals without albuminuria. This association was strongest for individuals with normal kidney function (eGFR ≥60 ml/min/1.73m2) and attenuated among individuals with low levels of kidney function. Conversely, low kidney function (eGFR <60 ml/min/1.73m2) was associated with a higher risk for developing cognitive impairment only among individuals without albuminuria. Surprisingly, individuals with albuminuria and normal kidney function had a higher probability for developing cognitive impairment as compared to individuals with moderate reductions in kidney function (eGFR 45-59 ml/min/1.73m2) in the absence of albuminuria. The findings indicate that the presence of protein in the urine, even in small amounts, could be a warning sign that a patient may later have difficulty thinking clearly. "The results are important because albuminuria is easily measured and potentially modifiable. Incorporating information about albuminuria along with kidney function should help clinicians identify patients at high risk for subsequent cognitive decline and dementia," said Dr. Kurella Tamura.

Study co-authors include Virginia Wadley, PhD, Mary Cushman, Frederick Unverzagt, PhD, Neil Zakai, MD, Brett Kissela, MD, David Warnock, MD, and William McClellan, MD (for the REGARDS Study Group, University of Alabama at Birmingham).

Disclosures: The study received pharmaceutical company support in addition to funding from the National Institute of Neurological Disorders and Stroke. Dr. Cushman is a consultant for Glaxo Smith Kline and receives grants/research support from Amgen. Dr. Unverzagt holds ownership in Eli Lilly. Dr. Warnock is a consultant for Genzyme and Gilhead, holds ownership in Parion and Relypsa, and receives honoraria from Genzyme, Amicus, Amgen, Gilhead, and Shire. Dr. McClellan receives grant/research support from and is a scientific advisor for Amgen. Dr. Wadley, Dr. Zakai, and Dr. Kissela reported no financial disclosures.

The study abstract, "Albuminuria, Kidney Function and the Incidence of Cognitive Impairment in US Adults," [SA-FC359] will be presented as an oral presentation on Saturday, November 20 Day, Date at 6:06 PM MT in Room 405 of the Colorado Convention Center in Denver, CO.

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ASN Renal Week 2010, the largest nephrology meeting of its kind, will provide a forum for 13,000 professionals to discuss the latest findings in renal research and engage in educational sessions related to advances in the care of patients with kidney and related disorders. Renal Week 2010 will take place November 16 – November 21 at the Colorado Convention Center in Denver, CO.

Founded in 1966, the American Society of Nephrology (ASN) is the world's largest professional society devoted to the study of kidney disease. Comprised of 11,000 physicians and scientists, ASN continues to promote expert patient care, to advance medical research, and to educate the renal community. ASN also informs policymakers about issues of importance to kidney doctors and their patients. ASN funds research, and through its world-renowned meetings and first-class publications, disseminates information and educational tools that empower physicians.
