Brain Hormone Tied to Poor Cognitive Function

BY MITCHEL L. ZOLER

ORLANDO — High blood levels of a brain natriuretic peptide were associated with poor cognitive function in a study of 950 community-dwelling, healthy, elderly adults.

"This is the first time this [association] has been shown," Dr. Lori B. Daniels said at the annual scientific sessions of the American Heart Association.

Elevated levels of natriuretic peptide mark the presence of a variety of disease states, especially heart failure, Dr. Daniels said.

Mechanisms that might link production of natriuretic peptide to poor cognitive function include reduced cardiac output that decreases oxygen or nutrient supplies to the brain, atrial fibrillation that creates microemboli, microcirculation deficits that harm both the heart and brain, and genetic predisposition, said Dr. Daniels, a cardiologist at the University of California, San Diego.

Patients analyzed were enrolled in the Rancho Bernardo study in the early 1970s. Of the more than 5,000 community-dwelling adults in the study, 950 underwent a battery of cognitive function tests in 1997-1999 and had blood specimens drawn; they were the focus of the new analysis.

The average age of the 950 participants was 77 years; 61% were women. Two-thirds were hypertensive, 4% were current smokers, 49% drank three or more alcoholic drinks per week, 41% were college graduates, 12% had diabetes, 6% had a history of stroke, and 20% a history of cardiovascular disease.

Three tests were used to evaluate cognitive function: the Mini-Mental State Examination (MMSE), which assessed orientation, attention, calculation, and recall (a score of 24 or less indicated poor cognitive function); the Trail-Making Test B, which gauged executive function (a score of 132 seconds or more indicated poor function); and a

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category fluency test that asked participants to name as many animals as they could in 1 minute (a score of 12 or less indicated poor function).

MMSE results identified poor function in 7%, the Trail-Making Test B identified poor function in 30%, and category fluency identified poor function in 15%.

Natriuretic peptide levels in the blood specimens were measured using a test that detects N-terminal pro-B-type natriuretic peptide (NT-proBNP). A level less than 450 pg/mL was considered low. Among the 950 participants, 79% had a low level and 21% had a high level.

People with high levels of NT-proBNP had significantly worse results on all three cognitive function tests, compared with those who had low levels. In the low-level group, 5%, 23%, and 12% of patients had poor cognitive scores on the MMSE, 23% scored low on the Trail-Making Test B, and 12% had low scores on the category fluency test. In the high-level group, 17%, 54%, and 26% of patients scored poorly on the three tests.

When the results were adjusted for age, education, body mass index, exercise, alcohol use, and smoking, participants with high NT-proBNP levels had significantly worse cognitive function scores on the MMSE and the Trail-Making Test B. Poor scores for category fluency were lower in people with high NT-proBNP in the fully adjusted model, but the difference fell short of statistical significance relative to those with low NT-proBNP.

In the fully adjusted model, people with high levels of NT-proBNP were 82%, 75%, and 37% more likely to have poor cognitive function on the three tests, respectively, compared with people with low levels. ■

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