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1/3 of risk for dementia attributable to small vessel disease, autopsy study shows

Alzheimer's disease may be what most people fear as they grow older, but autopsy data from a long-range study of 3,400 men and women in the Seattle region found that the brains of a third of those who had become demented before death showed evidence of small vessel damage: the type of small, cumulative injury that can come from hypertension or diabetes.

Dr. Thomas Montine, University of Washington, presented the study results at Experimental Biology 2008 in San Diego on April 6. His presentation was part of the scientific program of the American Society for Biochemistry and Molecular Biology (ASBMB).

In the autopsied brains of people who had experienced cognitive decline and dementia, 45 percent of the risk for dementia was associated with pathologic changes of Alzheimer's disease. Another 10 percent of dementia risk was associated with Lewy bodies, neocortical structural changes that indicate a degenerative brain disease known as Lewy Body Dementia, believed by some clinicians to be a variant of Alzheimer's and/or Parkinson's disease. But a third of the risk for dementia (33 percent) was associated with damage to the brain from small vessel disease.

Dr. Montine and his colleagues believe that, and are now studying in more detail, this small vessel damage is the cumulative effect of multiple small strokes caused by hypertension and diabetes, strokes so small that the person experiences no sensation or problems until the cumulative effect reaches a tipping point. This may be good news, says Dr. Montine. At a time when prevention and treatment for Alzheimer's remain investigational, methods for preventing complications of hypertension and diabetes are currently available.

These findings are very different from both conventional wisdom and from those of most autopsy studies of brain aging and dementia, says Dr. Montine.

Why such different results? Perhaps because of the broad reach of the population on which the autopsy study was based, says Dr. Montine. Most studies looking at the structural changes on

autopsy in brains of persons with dementia have focused on participants in Alzheimer's disease center studies or in populations limited to one gender, ethnic or professional group. Individuals in this study were part of the Group Health Cooperative, one of the oldest and largest managed care programs in the United States.

Members in the group who reach 65 with normal cognitive ability are eligible to volunteer for an Adult Changes in Thought (ACT) study, established by Dr. Eric Larson, director of Research at the Group Health Cooperative. ACT participants undergo cognitive, neurological and psychological tests every two years until their death.

Between 1994 and 2006, the period covered by this study, 3,400 men and women entered the ACT study. They were representative of the Seattle urban and suburban area: white, Asian, African American and Hispanic, with a range of educational and professional levels. During this 12-year period, some participants suffered cognitive impairment and dementia, while others did not. Roughly a third of all participants died, and autopsies were performed on the 221 who had given permission for this to be done.

With 55 percent of the risk for dementia attributable to Alzheimer's and Lewy Body Dementia, these findings underscore the therapeutic imperative for developing new pharmacologic and other means of preventing or delaying the onset of Alzheimer's and Lewy Body disease, says Dr. Montine. But the unexpected finding that a third of the risk for dementia is related to small vessel disease also provides an additional reason to control hypertension and diabetes: not only to protect cardiovascular and renal health but also to protect the health of the brain.

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