Preprogression Rate, Cardiovascular Comorbidity and Survival in Alzheimer’s Disease

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OBJECTIVE
To examine the influence of preprogression rate and cardiovascular comorbidity on survival among Alzheimer’s disease patients from a large multi-ethnic population with excellent longitudinal follow-up.

METHODS
All patients with a diagnosis of probable Alzheimer’s disease were identified from the Baylor College of Medicine Alzheimer’s Disease and Memory Disorders Center comprehensive database. The database includes baseline and annual follow-up information on patients enrolled in Alzheimer’s and dementia studies at Baylor from 1989 through October 1, 2005. All subjects underwent an evaluation by a neurologist and a standardized dementia interview. A detailed history or interview with the patient and informant, neurological and physical examinations, a neuroimaging study, systematic heaping, and screening laboratory studies were performed as part of the initial visit. We employ a comprehensive battery of neuropsychological tests to assess all patients, described elsewhere.

An estimate of duration of symptoms at baseline was based on the physician’s estimate methodology added to the period from first recognition to diagnosis. The preprogression rate as an estimate of cognitive decline prior to physician visit was calculated for each subject based on previously published methods (see Table 2). Cardiovascular comorbidity was based on a history of hypertension, hyperlipidemia, coronary artery disease, stroke, congestive heart failure, hypertension, systolic blood pressure, or initial visit. Vital status as of October 1, 2005 was available for all subjects based on methods described previously.

We estimated median survival time from onset and from diagnosis using the product-limit method (Kaplan-Meier) and examined the univariate and multivariable effects of baseline characteristics, preprogression rate, and comorbidity on survival (Cox proportional hazards).

RESULTS
Restricting the analyses to patients with age at onset 55 years or older, 708 out of 1205 (59%) patients had excellent longitudinal follow-up and comprehensive database. The database includes baseline and annual follow-up information on patients enrolled in Alzheimer’s and dementia studies at Baylor from 1989 through October 1, 2005. All subjects underwent an evaluation by a neurologist and a standardized dementia interview. A detailed history or interview with the patient and informant, neurological and physical examinations, a neuroimaging study, systematic heaping, and screening laboratory studies were performed as part of the initial visit. We employ a comprehensive battery of neuropsychological tests to assess all patients, described elsewhere.

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CONCLUSION
In addition to the effects of age on survival, the preprogression rate is also a strong predictor of survival in this population, particularly for survival from onset and this effect is consistent across age groups. Additionally, the presence of at least one major cardiovascular condition at baseline exerts a modest influence on survival. These findings have important implications for prognosis from onset as well as from initial diagnosis of Alzheimer’s disease.

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