ARIC MANUSCRIPT PROPOSAL FORM

Manuscript #314

1. Title: Cerebral Abnormalities Identifiod on Magnetic Resonance Imaging and Cognitive Functioning: The ARIC Study

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3. Timeline:

Submit Proposal to Publications Committee	ASAP
Complete Analysis	10/20/95
Submit first draft to Publication Committee	1/20/96
Submit to Journal	4/20/96

4. Rationale:

MRI has proven highly sensitive in detecting subtle abnormalities in cortical and subcortical brain parenchyma. While some of these abnormalities are associated with known neurologic disorders, many are unexpected or incidental. White matter lesions, ventricular enlargement, and sulcal widening are common incidental finding in persons ovor age 50. Although these structural abnormalities have been associated with a number of cardiovascular and cerebrovascular risk factors, and in some studies with tho presence of dementia, relativoly few studios have examined the effects of these changes on cognitive performance in nondemented subjects. Moreover, only one population-based study has been published to date, based on a sample of only 90 all white adults residing in the Netherlands. No study, to date, has examined the cognitive effects of these structural changes in a sample of asymptomatic middle-aged adults. The present investigation proposes to examine the effects of WMLs, ventricular enlargement, and sulcal widening on cognitive functioning using the MRI and cognitive performance data collected at visit 3 of the ARIC study.

5. Main Hypotheses:

(1) A negative association will be observed between (a) WML grade and cognitive functioning, (b) ventricular enlargement grade and cognitive functioning, and (c) sulcal widening grade and cognitive functioning.

(2) The associations observed in (1) will remain after controlling for relevant demographic variables (e.g., age, gender, education) and medical status variables (e.g., blood pressure, presence of lacunar strokes).

We will also assess whether associations observed between (a) WMLs and cognitive functioning and (b)

cortical atrophy and cognitive functioning vary by age, ethnicity, or gender.

6. Data (variables, source, inclusions/exclusions):

MRI data regarding: WMLs, ventricular enlargement, sulcal widening, number of lacunar strokes; cgnitive functioning data collected at visit 3, and field center. Demographic data will include age, race, gender, and education level. Medical status data will include blood pressure variables, diabetes, prevalent cardiovascular and cerebrovascular disease, carotid wall thickness variables, stroke status, and medication such as antihypertensives.