ARIC MANUSCRIPT PROPOSAL # 527S

Date Rec'd: 9/26/97  A  2
Date Approved  Status:  Prty:

1.a. Lacunar Syndromes Assessed by Questionnaire/Algorithm and MAI Findings: The ARIC Study
b. Abbreviated Title (Length 26):
   Lacunar Syndromes & MRI Findings

2. Writing Group (list individual with lead responsibility first):
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3. Timeline:

   Submit proposal to pubs com 9/97
   Develop algorithm for lacunar syndromes 1st draft done, will be prog by 12/97
   Complete analysis 4/98
   Submit 1st draft to pubs committee 9/98
   Submit to journal 12/98

4. Rationale:

   Lacunar infarcts are small infarcts that lie in the deeper, noncortical parts of the cerebrum and brainstem which result from the occlusion of penetrating branches of the large cerebral arteries. Loss of arteriolar architecture with fibrous replacement is the most frequently seen arterial lesion underlying lacunes (Fisher 1969). These lesions may be called fibrinoid necrosis or lipohyalinosis. Micro atheroma may also be seen at the origin of their penetrating arteries. Thus, the underlying pathogenic process generally reflects unique degenerative changes in small arteries and arterioles rather than atherosclerosis in larger arteries. Lacunar infarcts account for 10-25% of all stroke in various populations. It is important to identify patients with lacunar infarcts, as the risk factors, natural history, rational treatment and prognosis of lacunar infarction may differ significantly from infarction due to atherosclerosis affecting the cervical and larger cerebral arteries. Lacunar syndromes may be suggested by clinical examination. The classical lacunar syndromes are pure motor stroke, pure sensory stroke, sensorimotor stroke and ataxic hemiparesis. Diagnosis of lacunar infarcts
based on lacunar syndromes is used in clinical practice. However, only a few population-based studies applied this diagnostic tool. Although the TIA/Stroke questionnaire used in the ARIC Study was not designed specifically to ascertain lacunar syndromes, most information regarding lacunar syndromes is available from the questionnaire. The proposed definition of lacunar syndromes in the ARIC study is: a syndrome of sudden unilateral motor or and sensory deficit involving at least two of three areas (face, arm, leg) or dysarthria. The presence of a visual field defect, evidence of higher cerebral dysfunction (e.g., dysphasia, visuospatial disturbance), or features that clearly localize the lesion in the vertebrobasilar distribution (e.g., crossed deficits) exclude the diagnosis of lacunar syndrome.

An algorithmic definition of lacunar syndromes based on ARIC TIA/stroke questionnaire has been developed and reviewed by the neurologists in this study. Enclosed please find a copy of the algorithm for lacunar syndromes.

The objective of this study is to determine whether lacunar syndromes based on selfreported symptoms from the ARIC TIA/stroke questionnaire are associated with lacunar infarcts detected by magnetic resonance imaging (MRI). If lacunar syndromes correlate well with MRI findings, the algorithmic definition of lacunar syndromes developed in this study could be considered as an inexpensive diagnostic tool in population-based studies.

5. Main Hypothesis:
(1) Lacunar syndromes identified by means of the TIA/Stroke questionnaire are associated with the lacunar infarcts detected by MRI.
(2) Lacunar syndromes identified by means of the TIA/Stroke questionnaire are more strongly associated with lacunar infarcts than non-lacunar infarct lesions (large infarct and white matter lesions) detected by MRI.

6. Data (variables, time window, source, inclusions/exclusions):
Baseline, Visit 2 and Visit 3 TIA/stroke questionnaire data, Visit 3 MRI data set, age at Visit 3, gender, ethnicity, field center, blood pressure, anti-hypertensive medication X diabetic status, smoking status, total cholesterol and its fractions.
ABIC participants who participated in the cerebral MRI study at the Forsyth County, NC and Jackson, MS will be included in the study. Demographic characteristics and risk factors for CVD will be compared between those eligible and those ineligible for this study to illuminate any selection biases. Sex and ethnicity specific analysis will be conducted if there are enough number of participants with lacunar syndromes in each subgroup.

**Definitions of Lacular Syndromes: The ARIC Study**

A syndrome of sudden unilateral motor or and sensory deficit involving at least two of three areas (face, arm, and leg) or dysarthria. The presence of a visual field defect, evidence of higher cerebral dysfunction (e.g., dysphasia, visuospatial disturbance), or features that clearly localize the lesion in the vertebrobasilar distribution (e.g., crossed deficits) exclude the diagnosis of lacunar syndrome.

The algorithm for lacunar syndromes was developed using TIA/Stroke Form in the ARIC Study. More specifically, the symptoms of sudden loss or change of speech (section B), sudden numbness or tingling (section E), and sudden paralysis or weakness (section F) were evaluated.

**Section B:** Lacunar syndromes will be diagnosed if a patient has sudden dysarthria, with or without unilateral sensory and/or motor deficit. Presence of any lightheadedness or dizzy spells, blackouts or fainting, seizures or convulsions, visual disturbance, or dysphasia will exclude the diagnosis of lacunar syndromes.
Section E: Lacunar syndromes will be diagnosed if a patient has sudden unilateral numbness or tingling involving at least two of three areas (face, arm, and leg) with or without the same side paralysis or weakness. Dysarthria could be present. Presence of any lightheadedness or dizzy spells, blackouts or fainting, seizures or convulsions, visual disturbance, or dysphasia will exclude the diagnosis of lacunar syndromes.

Section F: Lacunar syndromes will be diagnosed if a patient has sudden unilateral paralysis or weakness involving at least two of three areas (face, arm, and leg) with or without the same side numbness or tingling. Dysarthria could be present. Presence of any lightheadedness or dizzy spells, blackouts or fainting, seizures or convulsions, visual disturbance, or dysphasia will exclude the diagnosis of lacunar syndromes.

Please contact the ARIC Coordinating Center to request copies of these complicated Figures.