ARIC MANUSCRIPT PROPOSAL FORM

Manuscript #227

1. Title:
The morphology of painless versus painful MI

2. Writing Group:
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3. Timeline:
Preliminary analysis to begin October, 1993.

4. Rationale:
Unrecognized myocardial infarction (UMI) is less frequently accompanied by angina pectoris than recognized MI (Kannel et al 1990). Although the reasons why remain obscure, the clinicopathologic literature suggests that UMI may be inapparent to patient and physician because it is more frequently smaller, subendocardial, and posterior (Johnson et al 1959; Cabin and Roberts 1982). Clinical observations that patients with smaller or non-Q wave MI have cardiac pain that is lower in severity, shorter in duration, and easier to relieve with analgesics support the role of infarct size and type in UMI (Ledwich 1977; Ledwich and Mondragon 1980; Herlitz et al 1984; Sederholm et al 1985; Herlitz et al 1986; Hofgren et al 1988). However, the relationship between MI location and recognition has not been confirmed by population studies (Stokes and Dawber 1959; Kannel et al 1970). Moreover, the relationship between infarct size and type and painless MI has not been addressed by prior epidemiologic investigation. The proposed study will address these issues by focusing on MI identified by ARIC surveillance.

5. Main Hypothesis:
Painless MI is less frequently larger, Q wave, and anterolateral than painful MI.

6. Analysis:
Subjects with evolving diagnostic Q (ED1-ED7) ECG patterns or abnormal enzymes will be studied. No history of acute chest pain will identify those subjects with painless MI. Exclusion of subjects with a missing history of acute chest pain will be considered. MI size, type (Q wave versus non-Q wave), and location variables in development under proposal #133 will be used to characterize MI morphology. Electrocardiographic (Rautaharju et al 1981; Hindman et al 1985; Bar et al 1987; Aldrich et al 1988) and historical (Hofgren et al 1988) measures also will be used to estimate MI size. The validity of these measures has been addressed (Ideker et al 1982; Roark et al 1983; Ward et al 1984; Ezaki et al 1987; Eisen et al 1988; Willems et al 1991). The associations between the morphologic variables identified above, the following non-morphologic covariables, and painless MI will be determined: demographic characteristics (sex; race; age), disease history (hypertension; angina; MI; stroke), comorbid disease states (including diabetes; congestive heart failure), medication given (nitrates; calcium channel blockers; beta-blockers; digitalis; lidocaine; thrombolytics; coumadin; aspirin), hemodynamic indices (blood pressure; heart rate), and electrocardiographic measures (QT; QTI, Rautaharju et al 1993). Differences in in-hospital mortality (total; CVD; CHD; sudden) between subjects with painless versus painful MI will be determined.
7. Data:
Demographic variables, disease history, reason for admission, dates (of admission; pain onset; event),
cardiac pain history, delay times (symptom onset hospital arrival; event onset-death), enzymes (standards;
days 1-4), ECGs (first; third day after event; last), blood pressure & heart rate (first; first not during CPR),
medications given (including thrombolytics), diagnosis & procedure codes, discharge disposition. Final
analyses to be performed on the 1987-1989 closed data set.