Diagnostic value of negative cardiac markers or nuclear imaging in an emergency department based chest pain center

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Objective:
To compare the 30-day outcomes of patients with negative serial cardiac biomarkers or negative cardiac nuclear imaging in an emergency department (ED) based chest pain center (CPC). Nuclear imaging (NI) identifies cardiac ischemia, while cardiac markers identify muscle necrosis. We hypothesized that negative NI would be superior to negative serial markers at predicting the absence of a 30-day cardiac event, thus allowing a patient safe discharge from the ED.

Methods:
All patients with a chief complaint of chest pain who were greater than 25 years old, or with cocaine usage within 96 hours of initial presentation, were eligible for enrollment. Exclusion criteria included a presentation electrocardiogram with acute ST-segment elevation or depression >1mm in 2 contiguous leads, history of CAD, hemodynamic instability, or clinical syndromes consistent with unstable angina. The protocol consisted of ST segment monitoring, with serial myoglobin, CK-MB, and cardiac troponin T determinations at 0, 3, and 6 hours. NI utilizing single photon emission computerized tomography with sestamibi was performed within 2 hours of ED presentation. Cardiac events within 30 days of hospital discharge (defined as MI, PTCA, CABG, VT/VF arrest, CHF admission, abnormal angiogram or cardiac related death) were obtained. This follow-up was performed by medical record review, phone contact, letter, and review of national and state death registries.

Results:
The protocol included 485 patients between October 1998 and February 2000; complete marker and NI data were available for 470 and 485 patients, respectively. Both testing strategies had high and comparable diagnostic utility in our patient population (NI: specificity=92%, negative predictive value=98%; cardiac markers: specificity=95%, negative predictive value=98%).

Conclusion:
A negative nuclear imaging test or cardiac markers predict similarly low incidences of 30-day cardiac events in ED patients evaluated for chest pain. Use of either modality could assist in ED discharge decisions.