Predictors of Significant Echocardiography Findings in Older Adults With Syncope

Marc Probst, MD MS*; Thomas Gibson, BA**; Robert Weiss, PhD**; Annick Yagapen, MPH***; Benjamin Sun, MD MPP*** - *Mount Sinai School of Medicine; **University of California; ***Oregon Health & Science University

Objectives: Limited evidence exists to guide emergency physicians in the decision to obtain a transthoracic echocardiogram in the evaluation of syncope. We sought to derive a risk-stratification tool to predict major, significant findings on echocardiography among older adults presenting to the emergency department (ED) with syncope or near-syncope.

Methods: We analyzed data from a large, multicenter, prospective cohort study of older adults (>60 years) who presented to an ED with syncope or near-syncope. Clinical, electrocardiogram (ECG), and laboratory variables were collected on all patients. Only patients who underwent rest transthoracic echocardiography (TTE) were included. Our primary outcome was a major, clinically significant finding on TTE. Least Absolute Shrinkage and Selection Operator (LASSO) multivariate regression analysis was used to determine predictors of a major finding on TTE and to construct a clinical decision instrument.

Results: A total of 3,678 syncope/near-syncope patients were consented and enrolled into the study across 11 EDs in the United States. Of those, 995 (27%) received TTE. The mean age of patients receiving TTE was 74 years; 55% were male. Of these, 131 (13%) had a major, clinically significant finding on TTE. LASSO multivariate regression analysis revealed five variables that were independently predictive of major TTE findings: history of congestive heart failure, history of coronary artery disease, abnormal ECG, high-sensitivity troponin T over 14 pg/ml, and N-terminal pro B-type natriuretic peptide >125 pg/ml. The risk of major finding on TTE when none of these predictive variables was present was 0.8% (95% Confidence Interval: 0.02%-4.5%)

Conclusions: This risk-stratification tool using five simple, objective criteria can help clinicians determine which adult syncope patients are at very low risk of having a major finding on TTE. If validated, this tool could help optimize resource utilization for ED syncope patients.