Troponin T Is Not as Diagnostic for Cardiac Conditions in the Geriatric Population

STUDY QUESTION
Does patient age affect the diagnostic or prognostic performance of troponin testing?

STUDY DESIGN
Design: Observational prospective subgroup analysis.
Setting: Chest pain unit and the Internal Medicine ED at the University of Heidelberg.
Patients: All patients presenting with chest pain over a six month time period. Patients were dichotomized as 75 years of age and above vs. less than 75 years of age. All patients with EKG criteria for acute MI were excluded from the diagnostic evaluation.
Description of Intervention: All patients had cardiac troponin T levels evaluated at arrival, 3 and 6 hours. Patients were classified as either having ACS vs non-ACS chest pain based on EKG results or imaging methods (echocardiogram), as well as kinetic changes (>20%) in troponin T levels. Patients deemed to have non-ACS conditions were then subdivided into cardiac and non-cardiac causes, with statistical analysis done between age group, troponin T level, and cause.
Outcomes: An ACS was suspected clinically in the presence of at least one of the following features including symptoms of ischemia, new ST-T changes in the ECG, development of pathologic Q-waves in the ECG, or signs of new loss of viable myocardium or regional wall motion abnormalities in imaging methods. Acute myocardial infarction was diagnosed if there was a rise and/or fall of cTn with at least one of the serially measured concentrations of hs-cTnT N99th percentile value.

Unstable angina pectoris was diagnosed if patients showed ECG signs or symptoms suggestive of myocardial ischemia in combination with hs-cTnT concentrations consistently <99th percentile value, after consecutive testing for at least 6 hours. Patients without findings suggesting myocardial ischemia but presenting with other acute symptoms associated with elevated hs-cTnT were diagnosed as non–ACS-related conditions.

MAIN RESULTS
848 patients were evaluated, of which 40.3% were diagnosed with NSTEMI, 7.5% with STEMI, and 52.2 with non-ACS conditions. An elevated Troponin T was more common in older patients (89.1% vs. 73.3%) as was a non-ACS cause (60.5% vs. 46.6%). Diagnostic performance was significantly better in the younger population, but repeat testing using absolute value change was significant in both study populations. Prognostic value of Troponin T were also significantly less in the geriatric patient population.

CONCLUSION
Diagnostic performance for troponin T for cardiac conditions is not as accurate in geriatric populations, as well as baseline elevations being more common in the geriatric population.

ABSTRACTED FROM

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COMMENTARY by Jeff Druck, MD (University of Colorado)

Geriatric patients are at increased risk for renal and cardiovascular disease, and there is data that suggests that the overall prevalence of elevated Troponin T levels in the asymptomatic geriatric patient population is elevated.[1, 2] This study validates that these same levels are elevated in geriatric patients coming to the ED with the complaint of chest pain. Clinically, an elevated Troponin T level in the geriatric patient is not as significant (as non-cardiac causes may be to blame), and only repeat testing with a significant absolute value change indicates NSTEMI. Although this data is helpful in adding to our knowledge of troponin elevation, as the most accurate diagnostic test available, there is little alternative to its use, with attention paid to the known risks of relying on a single test too much.

REFERENCES

1. Morgensen UM, Ersbøll M, Andersen M, Andersson C, Hassager C, Torp-Pedersen C, Gustafsson F, Køber L: **Clinical characteristics and major comorbidities in heart failure patients more than 85 years of age compared with younger age groups**. *Eur J Heart Fail* 2011, **13**(11):1216-1223.
2. Venge P, Johnston N, Lindahl B, James S: **Normal plasma levels of cardiac troponin I measured by the high-sensitivity cardiac troponin I access prototype assay and the impact on the diagnosis of myocardial ischemia**. *J Am Coll Cardiol* 2009, **54**(13):1165-1172.