

Midwest Geriatrics – Palliative Fellowships Consortium

GERIATRICS TWITTER JOURNAL CLUB

#GeriJC

High-Sensitivity Cardiac Troponin I for Risk of Stratification in Older Adults

March 2021

Dr. Wesley Godfrey, Geriatrics Fellow from Mayo Clinic leads discussion on this study (see video)

T1. What are the most interesting aspects of the paper?

@GeriEducator: Elevated cTn may be detected in conditions including #heartfailure, cardiomyopathies, myocarditis, renal failure, tachyarrhythmias, and pulmonary embolism, and even after strenuous exercise in healthy individuals #GeriJC

Cardiac Causes	Noncardiac Causes
Cardiac contusion resulting from trauma	Pulmonary embolism
Cardiac surgery	Severe pulmonary hypertension
Cardioversion	Renal failure
Endomyocardial biopsy	Stroke, subarachnoid hemorrhage
Acute and chronic heart failure	Infiltrative diseases, eg, amyloidosis
Aortic dissection	Cardiotoxic drugs
Aortic valve disease	Critical illness
Hypertrophic cardiomyopathy	Sepsis
Tachyarrhythmia	Extensive burns
Bradyarrhythmia, heart block	Extreme exertion
Apical ballooning syndrome	
Post-percutaneous coronary intervention	
Rhabdomyolysis with myocyte necrosis	
Myocarditis or endocarditis/pericarditis	

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@WesGodfrey1: For sure. Excepting the strenuous exercise you mention, I wonder if this may speak to the all-cause mortality relationship with higher troponin I identified in the article, above and beyond ASCVD-related mortality.

@WesGodfrey1: One of the questions I wanted to pose was regarding use in inpatient vs ambulatory settings. I have very rarely (if ever) ordered troponins for an outpt, but this article makes me wonder. Is anyone using hs-cTnI in ambulatory practice in March 2021? Helpful?

@GeriEducator: I hope some clinicians can jump in and respond here. But to your point, I did find pubmed.ncbi.nlm.nih.gov/31050800/ “majority of outpatient cTn orders were intended to evaluate for MI...encourage cTn testing in a manner that minimizes the potential risk to patients with possible MI.”

@WesGodfrey1: Well said. I think that is the exact reason many of us don't order it. My teaching has been if I am actually worried enough about ACS to think to order a trop, they probably should be headed to the ED. Would this (appropriate) practice, lead to slow outpt uptake?

@drcavitale: Although I agree with the authors that this may allow better targeting of older adults for more aggressive use of statins, I wonder whether there would be insurance coverage/cost issues with ordering such a test as an outpatient. More study likely needed!

@BERosensteinMD: Question of when you would order it? Asymptomatic patient? Cardiac risk factors? Only with ACS sx? #Gerijc

@curcumin: Not using in outpatient practice

@BERosensteinMD: A1) The result seems the most interesting. Fairly strong correlation between hs-cTnI and disease or mortality risks. Just not sure what I'd do with it. #Gerijc

T2. Were the analytical approaches used in the study appropriate?

@GeriEducator: I think the methods were overdone, which might be a good thing in statistics. But could also be done simply. #Gerijc hs-cTnI predicting cardio and death risk; hs-cTnI related to any variable you can think of. All shown appropriately.

@GeriEducator: @curcumin. Wonder whether imputation of values below 1.2ng/L as 0.6 ng is legitimate. And, what would happen to the data if the imputation was lower (0.3) or higher (1.0) for example. #Gerijc

@BERosensteinMD: A2) I have some concern here.

- Article found that TnI was increased in those who smoke, higher BP, w/DM
- All themselves risk factors of CVD risk and mortality
- Not sure you can control these across the models
- Could introduce significant confounding #Gerijc

@curcumin: SPRINT study suggests that BP >120 systolic is cut off for adverse CV events and all cause mortality

T3. Does the study add new knowledge to established foundations?

@GeriatricsJC: Falls cause cTnI to increase, so no exclusion of falls could drive values upward.

@WesGodfrey1 @curcumin #Gerijc

@BERosensteinMD: A3) Hard to say. Does increase TnI represent chronic ischemia, myosarcopenia, decrease renal fxn (Trop retention)? All more common in older adults w/multimorbidity and decrease life expectancy.

Other research has shown increase CV mortality w/non-ACS elevation of Troponins #GeriJC
doi: <https://doi.org/10.1016/j.amjmed.2013.12.020>

T4. What are the weaknesses of the study (design)?

@BERosensteinMD: A4) As w/prior answer, confounding seems like an issue.

Through article addressing weakness of current CVD prediction models (PCE, ASCVD risk calc) r/t age, relatively young cohort w/avg age 75. How to apply to those 80, 90... #GeriJC

@GeriEducator: Study did not address if cTnI levels are stable in frozen serum over 40 years (study started in 1980's) #GeriJC

@drcavitale: Maybe more of study limitation: difficult to apply findings to a frail older adult population as functional status/ADL dependency of participants not apparent and difficult to control for #GeriJC
@ORengeringDO @RachelDennyDO @BasnyatSoney

T5. How would you introduce the findings in your practice?

@BERosensteinMD: A5) Interesting finding that may improve prognostics, but needs more review to see if this is clinically useful #GeriJC