

Critical Review Form Meta-analysis

PGY-1

HYPERLINK "<http://pmid.us/35148534>"Gabrielli M, Cucurachi R, Lamendola P, Candelli M, Pignataro G, Del Bono G, Franceschi F. Troponin Testing in Adult Patients Presenting to the Emergency Department for Paroxysmal Supraventricular Tachycardia: A Review. Cardiol Rev. 2023 Sep-Oct 01;31(5):265-269.

Objectives: “to provide a comprehensive synthesis covering published literature on the diagnostic and prognostic role of cTn [cardiac troponin] in patients admitted to ED for a symptomatic episode of PSVT [paroxysmal supraventricular tachycardia].” (p. 265)

Methods: This review article searched PubMed and Web of Science for articles written in English between January 2000 and April 2021. They report the results of 7 articles assessing the role of cTn as a marker of coronary artery disease in patients with PSVT (with a range of 70 to 226 patients enrolled) and 4 studies assessing the prognostic role of cTn in PSVT. The articles varied regarding the specific cTn used (cTnT, cTnI, HS-cTnT, and HS-cTnI). All articles were retrospective cohort studies.

Guide	Question	Comments
I	<i>Are the results valid?</i>	
1.	Did the review explicitly address a sensible question?	Yes. The article attempted to provide a comprehensive evaluation of the diagnostic and prognostic role of cardiac enzyme testing in patients presenting to the ED with SVT. Cardiac enzymes are frequently ordered on such patients while the clinical impact of such testing remains unknown.
2.	Was the search for relevant studies detailed and exhaustive?	No. The authors searched PubMed and Web of science, and hand-searched the reference lists of selected articles. They did not search EMBase, CINAHL, the Cochrane Central Register of Controlled Trials, Clinicaltrials.gov, or lists of relevant conference abstracts. This report is at risk of publication bias .
3.	Were the primary studies of high methodological quality?	Uncertain. The authors provide no formal assessment of study quality. All studies were retrospective chart reviews and hence at risk of selection bias , misclassification bias , and confounding, and can demonstrate association without necessarily proving causation .
4.	Were the quality assessments of the included studies reproducible?	No formal assessment of study quality was performed.
II.	<i>What are the results?</i>	

1.	What are the overall results of the study?	• cTn was tested frequently in patients admitted to ED for PSVT in the included trials (37–79%) and was associated with increased length of stay in the ED. • Approximately one-third of patients with cTn testing in the ED for SVT had an elevated level (30-33%). - o History of CAD was the most frequently reported factor associated with a positive cTn. - o cTn elevation was associated with a significantly higher percentage of hospital admissions and noninvasive or invasive diagnostic investigations for CAD. - o Prevalence of CAD in this population was low (4% for “significant” CAD, 8% for any CAD), and cTn elevation did not predict the presence of CAD. • In a retrospective study of 222 patients with atrial dysrhythmias, elevated cTn was found to be an independent risk factor for all-cause mortality (HR 1.95, 95% CI 1.08-3.50); unfortunately, this study included patients with atrial fibrillation and flutter, who comprised 78.8% of patients. • One retrospective cohort study including 78 patients with confirmed SVT found that elevated cTnI was associated with increased risk of death, myocardial infarction, or cardiovascular rehospitalization at one year (HR 3.67, 95% CI 1.22-11.1). Among the components of this composite outcomes, only cardiac rehospitalization was significantly associated with a positive cTnI.
2.	How precise are the results?	See above.
3.	Were the results similar from study to study?	No. This was not a meta-analysis and hence did not assess statistical measures of heterogeneity . Narratively, the studies discussed in this review were heterogenous in terms of inclusion criteria, and it is not surprising that vastly difference results were reported.
III.	<i>Will the results help me in caring for my patients?</i>	
1.	How can I best interpret the results to apply them to the care of my patients?	While the reported results of this narrative review are far from conclusive, it would appear that while cardiac troponin testing is common, the prevalence of CAD was overall low among patients presenting to the ED with paroxysmal SVT. Further, troponin results do not appear to have a significant association with CAD among patients with SVT (when atrial fibrillation and flutter are excluded), and is not strongly associated with

		patient-centered adverse events. These findings are far from robust given the nature of this review.
2.	Were all patient important outcomes considered?	Yes. The authors considered ED length of stay, association with CAD, and ability to predict adverse outcomes.
3.	Are the benefits worth the costs and potential risks?	Uncertain. This review suggests limited utility of cTn testing for all patients presenting to the ED with SVT, but more rigorous research will be needed to help verify these suggested results.

Limitations:

1. This was a narrative review rather than a systematic review and meta-analysis. It is limited in several facets and should be used to guide future research rather than provide a definitive answer. Its limitations include the following:
 - a. A cursory literature search was performed with a high risk of missing relevant studies ([publication bias](#)).
 - b. No formal [assessment of study quality](#) was performed.
 - c. The authors did not pool results and hence were unable to provide quantitative assessment of [heterogeneity](#) between studies.
2. All studies were retrospective chart reviews and hence at risk of [selection bias](#), [misclassification bias](#), and confounding, and can demonstrate [association without necessarily proving causation](#)

Bottom Line:

This narrative review, while limited by its nature, suggests that while cardiac troponin testing is common in patients presenting to the ED with paroxysmal SVT, there is no evidence that such testing is diagnostic of significant coronary artery disease or predictive of adverse, patient-centered outcomes.