



Troponin Elevation is Highly Predictive of Outcomes in Patients with Infective Endocarditis



Jonathan B. Purcell, Mahesh J. Patel, Christopher H. Cabell, James de Lemos, Lisa W. Forbess, Amit Khera, Gail E. Peterson

ABSTRACT

Background. Elevated troponin is increasingly recognized as a marker of cardiac injury and poor outcome in diverse disease states. We hypothesized that patients with infective endocarditis (IE) and elevated troponin would have more extensive IE and worse clinical outcomes.

Methods. Patients were enrolled as part of the International Collaboration on Endocarditis (ICE-PCS) prospective cohort study. Data from 83 consecutively enrolled patients from a single center were evaluated. Troponin I was drawn for clinical indications and prior to any cardiac surgery in 51 of the 83 patients. Outcomes evaluated were hospital mortality, annular or myocardial abscess based on echo or surgery, and CNS events.

Results. Of 51 patients with troponin drawn, 33 (64.7%) had elevated troponin ≥ 0.1 . Results stratified by troponin I are shown in tables. There was no difference in age, gender, prosthetic valve IE, S. aureus IE, or prior history of CAD, CHF, or diabetes between the two groups. Patients with elevated troponin were less likely to have isolated right sided IE, had higher creatinine, and were more likely to have depressed LVEF ($p < 0.05$ for each). Elevated troponin was associated with the composite of death, abscess, and CNS events ($p < 0.001$). When restricted to patients with creatinine < 1.3 mg/dL ($n=32$) the association between troponin and the composite outcome remained significant (table).

Conclusions. Our data demonstrate a strong association of elevated troponin with the composite endpoint of cerebral vascular events, abscess or death in patients with IE. Further prospective evaluation is needed to fully define the role of troponin in IE.

DISCLOSURES

No authors have disclosures

INTRODUCTION

➤ Infectious Endocarditis (IE) is associated with considerable morbidity and mortality

➤ Troponin (Tn) is an inexpensive measure of heart damage

➤ However, little is known about the prognostic value of troponin specifically in IE

➤ We hypothesized that Tn is associated with adverse clinical outcomes in IE

METHODS

➤ Patients were enrolled into the **International Collaboration on Endocarditis prospective cohort study (ICE-PCS)**

➤ Of 83 consecutively enrolled patients, 51 had troponin I (Tn I) drawn for clinical indications (prior to cardiac surgery).

➤ Baseline characteristics were compared in patients with and without Tn I measurements using t-test and chi-square analyses.

➤ Peak Tn I ≥ 0.1 mg/dL was considered positive

➤ In-hospital outcomes included death, myocardial or annular abscess, CNS event, or a composite of the three

➤ Baseline characteristics and clinical outcomes were compared using t-test and chi-square analysis in analyses stratified by troponin positivity

➤ Analysis was repeated for all patients with creatinine (Cr) ≤ 1.3 & preserved ($\geq 55\%$)

left ventricular systolic function (LVSF)

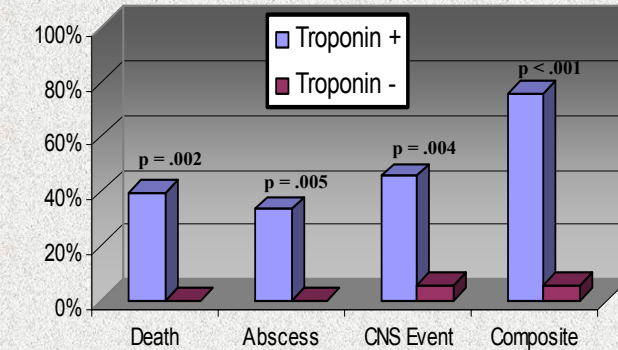
Baseline Characteristics in Patients with Troponin Drawn vs. Not Drawn

Characteristic	Tn I drawn (n=51)	Tn I not drawn (n=32)	p value
Age, mean	47	44	0.33
Male, %	67	75	0.42
Nonwhite, %	73	63	0.34
h/o CHF, %	27	22	0.64
h/o CAD, %	6	6	0.98
Diabetes, %	29	19	0.99
ESRD, %	8	6	0.99
Right sided IE only, %	18	16	0.81
Prosthetic valve IE, %	16	19	0.72
S. aureus infection, %	42	38	0.69
Creatinine mg/dl, mean	1.9	1.2	0.08
Depressed LVSF, %	43	19	0.02

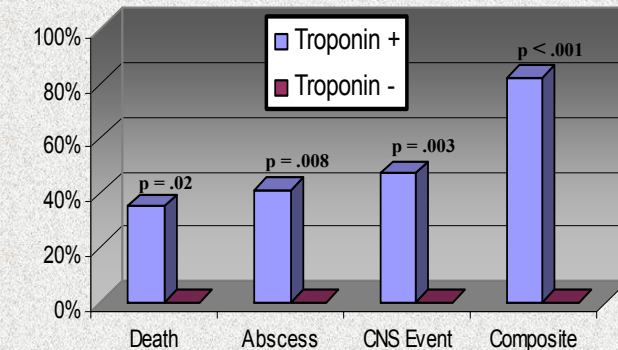
Baseline Characteristics in Patients with Positive vs. Negative Troponin

Characteristic	Tn I positive (n=33)	Tn I negative (n=18)	p value
Age, mean	48	46	0.63
Male, %	73	56	0.21
Nonwhite, %	79	61	0.18
h/o CHF, %	26	28	0.88
h/o CAD, %	3	11	0.55
Diabetes, %	29	28	0.93
ESRD, %	12	0	0.28
Right sided IE only, %	3	44	<0.01
Prosthetic valve IE, %	15	17	0.89
S. aureus infection, %	47	33	0.35
Creatinine mg/dl, mean	2.3	1.1	0.04
Depressed LVSF, %	55	22	0.03

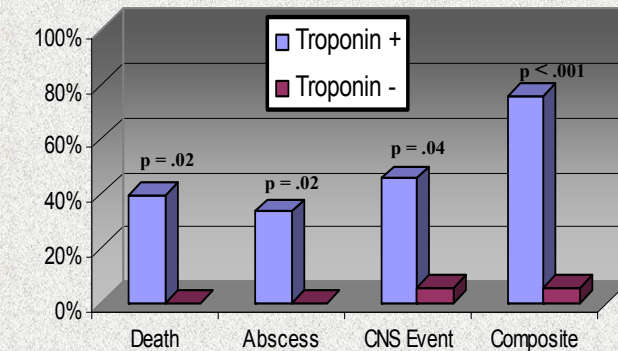
Outcomes in All Patients with Troponin Drawn



Outcomes in Patients with Troponin Drawn & Creatinine ≤ 1.3 mg/dL (n=32)



Outcomes in Patients with Troponin Drawn & Preserved LVSF (n=29)



Operating Characteristics of Troponin I for the Composite Endpoint in IE

Sensitivity	96.2%
Specificity	68.0%
Positive predictive value	75.8%
Negative predictive value	94.4%
Positive likelihood ratio	3.01
Negative likelihood ratio	0.056

CONCLUSIONS

➤ **A strong association exists between elevated troponin I and adverse outcomes in IE**

➤ **The association persists after excluding subjects with renal insufficiency and depressed LVSF**

➤ **Further investigation is needed to evaluate whether troponin I can be used as a marker to identify patients with IE who may require more aggressive treatment**

REFERENCES

- Cabell CH, Abrutyn E. Progress toward a global understanding of infective endocarditis: Lessons from the International Collaboration on Endocarditis. *Cardiology Clinics* 21; 147-158, 2003.
- Fowler VG Jr, Miro JM, Hoen B, et al. Staphylococcus aureus endocarditis: a consequence of medical progress. *JAMA*. 293(24):3012-21, 2005.