

**Detection of myocardial dysfunction in sepsis using  
the cardiac specific troponin I as a diagnostic  
and prognostic marker**

**Thesis**

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critical care medicine

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## Abstract

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(Key Words): **Myocardial dysfunction, Sepsis, Troponin I**  
**Introduction:**

Cardiac troponins I (cTnI) and T (cTnT) are cardiospecific markers of prognostic value in acute myocardial infarction (AMI), unstable angina, acute chest pain, myocarditis, cardiac trauma, and perioperative cardiac complications. Therefore, cTnI measurement may be a method that can identify myocardial injury in sepsis in a simple and practical way.

**Aim of work:**

Detection of myocardial dysfunction in sepsis using the cardiac specific troponin I

**Patients and methods:**

Our study included 30 patients with different degree of sepsis, all patients and controls were subjected to; cardiac specific troponin I, echocardiography and APACHE II scoring at day 1 and day 5 of admission.

**Results:**

Patients were divided into cardiac troponin I positive and cardiac troponin I negative, 18 (60%) patients had elevated serum cTnI. These cardiac troponin I positive patients had higher need for MV and inotropic support; there was a statistically highly significant difference between the two groups as regards the need for mechanical ventilation and inotropes, it shows that cTnI positivity is associated with more need for MV [55.6% in cTnI+ve vs 25% in cTnI-ve] ( $P < 0.05$ ) and more need for inotropes [61.1% in cTnI+ve vs 25% in cTnI-ve] ( $P < 0.05$ ). Higher APACHE II score in cardiac troponin I positive patients [ $18.4 \pm 3.8$  in cTnI+ve vs  $8.9 \pm 2.8$  in cTnI-ve] ( $P < 0.05$ ), lower ejection fraction [44.4% of cTnI+ve patients vs. 16.7% of cTnI-ve patients] ( $P < 0.05$ ) and higher mortality [55.6% in cTnI+ve vs 25% in cTnI-ve] ( $P < 0.05$ ), compared to normal cTnI patients. Serum cTnI and APACHE II score were predictor of death and length of stay in intensive care unit. Serum cTnI was a good predictor of need for inotropic/vasopressor support. Receiver-operating characteristics of serum cTnI as a predictor of death in septic shock were significant. The elevated serum level of cTnI correlated with the lower left ventricular ejection fraction ( $p < 0.001$ ).

**Conclusion:**

Myocardial injury can be detected in patients with sepsis severe sepsis or septic shock by serum cTnI. Serum cTnI concentration correlates with myocardial dysfunction in septic shock. Serum cTnI can predict increased severity of sepsis and higher mortality.