Clinical application of high-sensitivity cardiac troponin T test in acute myocardial infarction diagnosis

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ABSTRACT. The aim of this study was to investigate the clinical application of a high-sensitivity cardiac troponin T (hs-cTnT) test in the diagnosis of acute myocardial infarction (AMI). Serum levels of hs-cTnT and cardiac troponin I (cTnI) were detected in 240 AMI patients and 200 healthy donors and used to plot receiver operating characteristic (ROC) curves. A clinically applicable diagnostic cut-off value of hs-cTnT was determined from the ROC curve and the diagnostic accuracy of hs-cTnT and cTnI levels in AMI were compared. The serum hs-cTnT levels in the AMI group were higher than 0.014 ng/mL (the 99th percentile of the healthy population), among which hs-cTnT levels in patients with ST-segment elevation myocardial infarction (STEMI) were higher than in patients with non-STEMI (NSTEMI). The area under the ROC curve (AUC) for hs-cTnT was significantly higher than for cTnI, and the detection combining hs-cTnT and creatine kinase isoenzyme (CK-MB) further increased the AUC. When 0.014 ng/mL was set as the cut-off value for hs-cTnT, the diagnostic sensitivity for AMI reached 100% but the specificity was only 45.5%. The diagnostic ability of hs-cTnT for AMI peaked at a cut-off value of 0.035 ng/mL, resulting in the highest Youden index (0.654) and sensitivity and specificity values of 91.8
and 74.9%, respectively. The diagnostic utility of the hs-cTnT test for AMI is superior to the traditional cTnI method. However, since hs-cTnT levels of non-AMI patients can be over the diagnostic cut-off value, further studies are necessary to define clinically applicable cut-off values of hs-cTnT.

**Key words:** High-sensitivity cardiac troponin T (hs-cTnT) test; Receiver operating characteristic curve (ROC curve); Diagnostic value; Acute myocardial infarction