High-sensitivity cardiac Troponin T (hs-cTnT) assay is not superior to its previous 4th cTnT assay generation for the diagnosis of acute myocardial infarction in a real-world emergency department

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Methods:
We compared the high-sensitivity cardiac troponin T (hs-cTnT) assay (Roche® Diagnostics) with its previous 4th assay generation for the diagnosis of acute myocardial infarctions (AMI) during a period of 2 months in a non-surgical emergency department (ED). cTnT was measured on request of the attending physicians in 2438 patients (60 ± 21 years, 52% females). There were 451 patients with chest pain, 292 with acute dyspnea, 50 AMI (median delay 3h, range 1-96h), 785 patients with cardiac diseases, 540 patients with neurological diseases, and the remaining patients suffered from various internal medical diseases.

Results:
Using the 99th percentile cut-off the sensitivities and specificities for AMI diagnosis on admission in the whole study population were 90% and 74% (hs-cTnT), 88% and 80% (4th generation cTnT, cut-off 10 ng/L), and using the 10% coefficient of variation (CV) cut-off (30 ng/L) for the 4th generation assay 76% and 93%, respectively. The overall diagnostic performances for AMI diagnosis of both assay generations were comparable (area under receiver operating characteristics [ROC] curves [AUC] 0.90 ± 0.02 vs. 0.89 ± 0.03, p=0.30). However, hs-cTnT detected significantly more patients with acute or chronic cardiac diseases (AUC: 0.77 ± 0.01 vs. 0.67 ± 0.01, p<0.001).

Conclusions:
In unselected ED patients the hs-cTnT assay is not superior to the previous cTnT assay for AMI diagnosis. If for both assays the 99th percentile cut-off limits were used the early sensitivities on admission were comparable, and the 4th generation cTnT assay lost AMI specificity as well. However, for the detection of any cardiac disease hs-cTnT was significantly superior to the previous cTnT assay, which could not be outweighed by lowering the cut-off value of the 4th cTnT assay generation to 10 ng/L.

Declaration of interest
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