HIGH SENSITIVITY TROPONIN ASSAYS PREDICT MAJOR ADVERSE EVENTS AT 2 YEARS AND AT LEVELS BELOW THE 99TH PERCENTILE

ACC Oral Contributions
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Background: The current definition for acute myocardial infarction (AMI) stipulates a troponin cut point of the 99th percentile of the healthy reference population. Studies have shown that many patients with adverse outcomes are only identified by more sensitive troponin assays. New generation assays have emerged, with progressively lower detection limits which we have evaluated for their ability to define AMI and predict clinical outcomes up to 2 years.

Method: We studied 441 patients admitted with chest pain suggestive of AMI. Blood samples for troponin (Architect TNI 3rd generation), used by the treating physician for diagnosis, were taken at 0 and 6-24 hours. Frozen samples were later analysed for Architect TNI 6th generation (TNI), Roche TNT 4th generation (TNT) and Roche high sensitivity TNT (hsTNT). All patients were followed for 2 years for admission diagnosis of AMI and follow-up major adverse cardiac events (AMI, revascularization procedure ± cardiac death - MACE).

Results: During the index admission, 156 (35%) were diagnosed with AMI. Sensitivities/specificities (cut point - 99th centile) for admission troponin are 74.0%/91.6% for TNI, 40.2%/98.7% for TNT and 85.0/86.1% for hsTNT. The receiver operator curve (ROC) area under the curve (AUC) for admission troponins were not significantly different for TNI, 0.91 (0.87-0.94) and hsTNT, 0.92 (0.89-0.95), p=0.59, however, AUC for hsTNT was significantly greater than for TNT, 0.78 (0.73-0.84), p<0.001. A similar relationship was seen for peak troponins.

At 2 years, MACE was seen in 92 (20.9%). The AUCs are 0.68 (0.61-0.74) for TNI, 0.62 (0.54-0.69) for TNT and 0.71 (0.65-0.77) for hsTNT for admission troponins. There is no statistically significant difference for AUCs between TNI and hsTNT, p=0.197, but hsTNT out-performs TNT, p<0.001. Optimal prediction of MACE from ROC analysis was at >0.011 ug/L for TNI and >10.3 pg/mL for hsTNT, both below the 99th centile.

Conclusions: The performance of hsTNT was compared with current troponin assays for the diagnosis of AMI and prediction of 2 year MACE. hsTNT was superior to TNT but equivalent to TNI for all end points. The optimal cut-points for MACE for both hsTNT and TNI were lower than the 99th percentile.