Hospitals with out-of-hospital or in-ED refractory cardiac arrest from January 2015 to December 2016. Based on a review of existing ECPR literature, we defined two sets of liberal and restrictive criteria associated with survival and applied these to our cohort for possible initiation of ECPR. The chart review was completed by one of the principal investigators, with 10% of charts randomly reviewed by a second investigator to ensure good inter-agreement. Any discrepancies or ambiguities found in the review were resolved collaboratively between both investigators. Results: A total of 220 charts were identified and 191 deemed eligible for inclusion in the study. The median age was 59 (IQR: 49.5-67) years and the cohort was 72% male. The initial presenting rhythm was identified as VT/VF in 47% of patients. 65% of arrests were witnessed, with immediate bystander CPR performed on 50% patients and an additional 12% receiving CPR within 10 minutes of collapse. 60% of patients had cardiac arrest lasting less than 75 minutes. 69% of patients were identified as having a reversible cause of cardiac arrest. A favorable premorbid status was identified in 76% of patients. Application of our two sets of ECPR inclusion criteria revealed that 17% and 3% of patients for the liberal and restrictive criteria respectively, would have been candidates for ECPR. Conclusion: At our centre, we identified that in a two-year period, 3% to 17% of cardiac arrest patients presenting to the ED would have met inclusion criteria for ECPR, translating to an additional 0.2-1.4 patients per month admitted for critical care. These findings would suggest that the implementation of an ECPR program at our institution has the potential to have a positive impact for patients with only a relatively low volume of patients requiring additional resources.

Keywords: extracorporeal life support, cardiac arrest, resuscitation

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Sex-specific Troponin T cutoffs for ruling out acute myocardial infarction at ED arrival

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Introduction: ex-specific diagnostic cutoffs may improve the test characteristics of high-sensitivity troponin assays for the diagnosis of myocardial infarction. Sex-specific cutoffs for ruling in MI improve the sensitivity of the assay for MI among women, and improve the specificity of diagnosis among men. We hypothesized that the use of sex-specific high-sensitivity Troponin T (hsTnT) cutoffs for ruling out MI at the time of ED arrival would improve the classification efficiency of the assay by enabling more patients to have MI ruled out at the time of ED arrival while maintaining diagnostic sensitivity. The objective of this study was to quantify the test characteristics of sex-specific cutoffs of an hsTnT assay for acute myocardial infarction (AMI) when performed at ED arrival in patients with chest pain. Methods: This retrospective study included consecutive ED patients with suspected cardiac chest pain evaluated in four urban EDs were, excluding those with ST-elevation AMI, cardiac arrest or abnormal kidney function. The primary outcomes was AMI at 7 days. Secondary outcomes included major adverse cardiac events (MACE: all-cause mortality, AMI and revascularization) and the individual MACE components. We quantified test characteristics (sensitivity, negative predictive value, likelihood ratios and proportion of patients ruled out) for multiple combinations of sex-specific rule-out cutoffs. We calculated net reclassification improvement compared to universal rule-out cutoffs of 5ng/L (the assays limit of detection) and 6ng/L (the FDA-approved limit of quantitation for US laboratories).

Results: 7130 patients, including 3931 men and 3199 women, were included. The 7-day incidence of AMI was 7.38% among men and 3.78% among women. Universal cutoffs of 5 and 6 ng/L ruled out AMI with 99.7% sensitivity in 33.6 and 42.2% of patients. The best-performing combination of sex-specific cutoffs (8g/L for men and 6ng/L for men) ruled out AMI with 98.7% sensitivity in 51.9% of patients. Conclusion: Sex-specific hsTnT cutoffs for ruling out AMI at ED arrival may achieve substantial improvement in classification performance, enabling more patients to be ruled out at ED arrival, while maintaining acceptable diagnostic sensitivity for AMI. Universal and sex-specific rule-out cutoffs differ by only small changes in hsTnT concentration. Therefore, these findings should be confirmed in other datasets.

Keywords: myocardial infarction, cardiology, Troponin