Catheter Directed Thrombolysis As A Modality of Management For Pulmonary Embolism: Risk Stratifying with Pulmonary Embolism Severity Index

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INTRODUCTION AND JUSTIFICATION
- Pulmonary Embolism (PE) affects more than 600,000 Americans annually with an estimated death rate of 10%–30%.
- According to the American Heart Association (AHA), risk stratification of PE’s is categorized as either massive (MPE), submassive (SPE), or non-massive based on various hemodynamic and clinical factors.
- The Emergency Department (ED) is often utilized for management and subsequent prevention of further adverse outcomes of PE, but diagnostic and therapeutic challenges arise due to variability in presentation and response to treatment.
- The Pulmonary Embolism Severity Index (PESI) is a composite metric that can also be used to determine prognosis of PE in the ED as a 30-day outcome, informing treatment options through a 5-point scale.
- AHA supports Catheter-Directed Thrombolysis (CDT) or Systemic Thrombolysis (ST) involving alteplase administration for management of an MPE, which has been shown to raise the risk of adverse outcomes post intervention with no standard of care recommended for SPE.

METHODS
- In this retrospective study, data was obtained via 2 methods
  - Inclusion criteria: Patient > 18 years of age presenting with an MPE or SPE and received treatment based on their group
  - Both prisoners and pregnant patients were excluded from this study
  - EMR data was reviewed twice by different teams across all metrics
  - PESI was spit into low risk (tiers 1,2) and high biomarkers (e.g. troponin and NT-proBNP)

RESULTS
- The Pulmonary Embolism Severity Index (PESI) is a composite metric that can also be used to determine prognosis of PE in the ED as a 30-day outcome, informing treatment options through a 5-point scale.
- The objective of this study is to analyze CDT or ST/no treatment for both MPE and SPE patients. This analysis can inform ED management and cardiovascular interventions for a spectrum of healthcare professionals.

RESULTS CONT.

CONCLUSIONS
- While the integrity of the propensity matching was determined to be viable, it can be strengthened by controlling for more variables.

FUTURE DIRECTIONS
- Define further comparators to strengthen comparison as well as produce a nuanced analysis on hypothesized outcomes to determine further characteristics that can influence adverse or positive outcomes among SPE and MPE patients.
- Use this analysis to develop a novel decision-making algorithm for ED physicians to effectively administer treatment for better prognosis while also saving crucial time.