

Evaluation of the Incidence of Acute Kidney Injury and Short- Term Mortality after STEMI

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Background and Aim

- Background:
 - Acute kidney injury (AKI) has been shown to increase the risk of immediate and delayed requirement for renal replacement therapy and reduce both short and long term survival in patients with critical illness
 - IV contrast is routinely administered to STEMI patients during cardiac catheterization regardless of underlying predisposition for kidney injury
 - The incidence of AKI in the setting of emergent contrast administration is not well defined
- Aim:
 - The authors sought to determine the incidence of AKI and short-term mortality following an activated STEMI alert at a tertiary referral and academic center

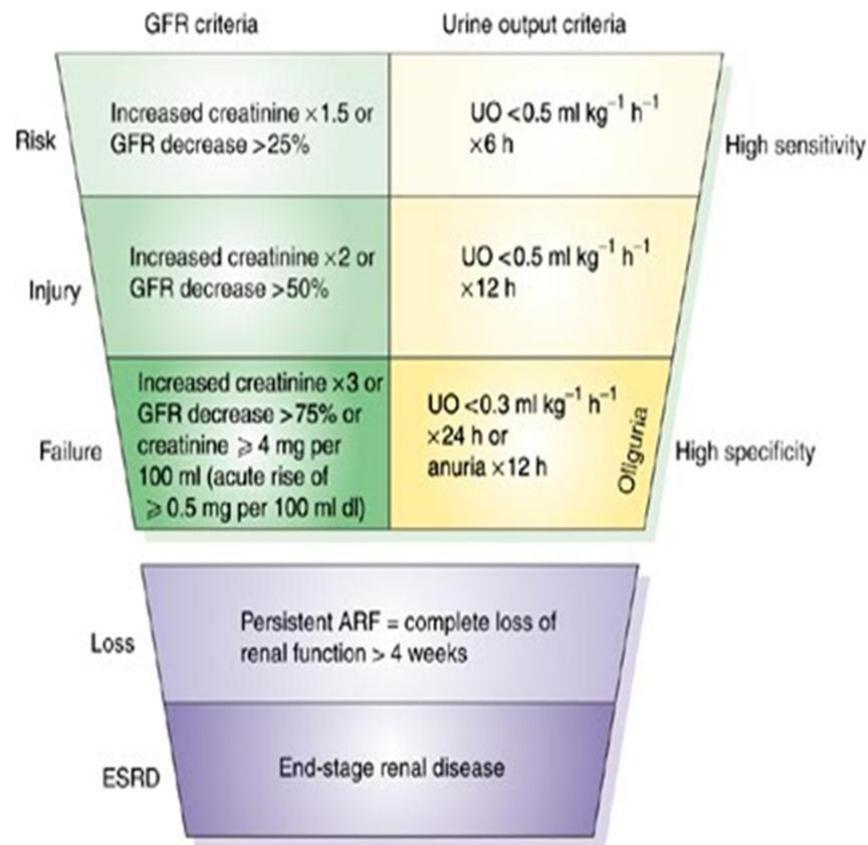
Methods

- Retrospective chart review from January 2010-March 2012
- All patients taken for emergent cardiac catheterization as part of a STEMI protocol activation were assessed for AKI after the contrast-dye load
 - Patients already receiving hemodialysis due to end-stage renal disease (ESRD) were excluded
- Patient demographics, contrast dose, in-hospital mortality, serum creatinine in the ED (just prior to dye administration) and during hospitalization, were recorded and analyzed

Methods continued

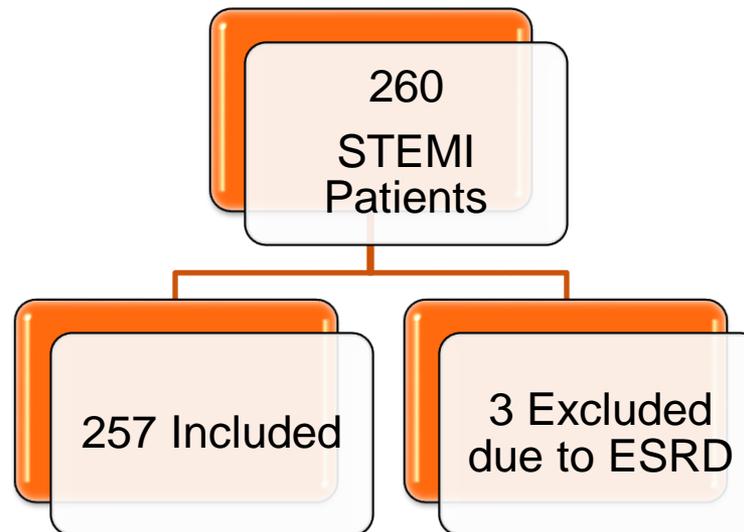
- Using the RIFLE criteria, assessment of the degree of AKI was performed based on the patient's baseline and peak serum creatinine

- Risk
- Injury
- Failure
- Loss
- ESRD



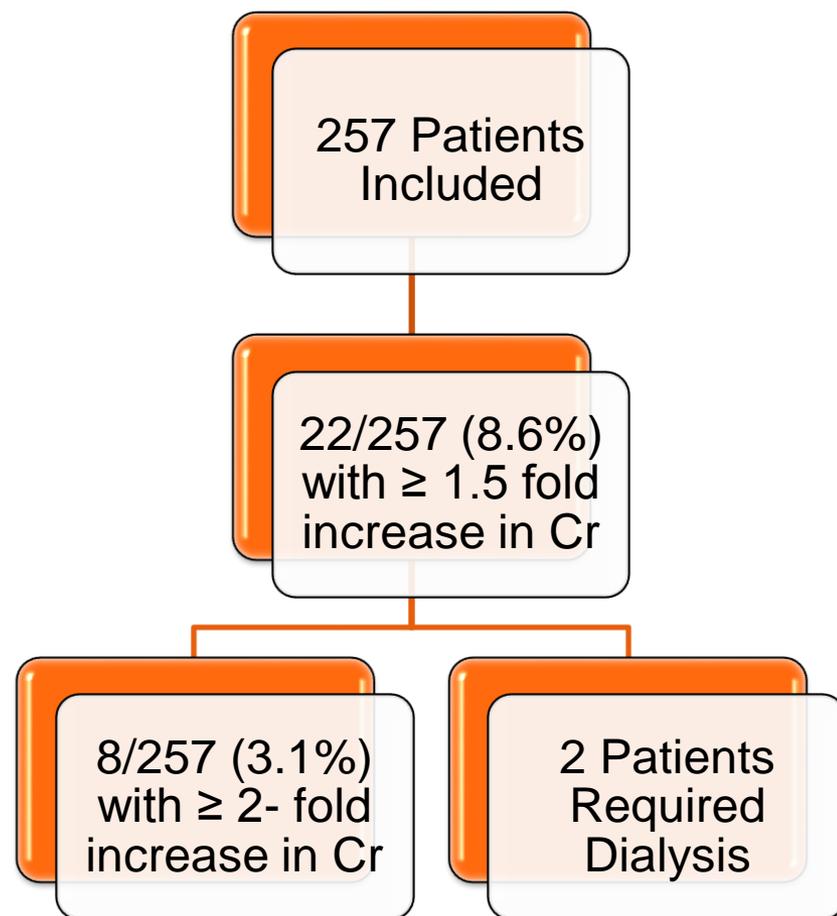
Results

- 260 patients underwent STEMI protocol activation over the study period
 - Three patients with current ESRD undergoing hemodialysis were excluded
 - 77% Male
 - 78% White, 17% Black, 4% Hispanic, 1% Asian



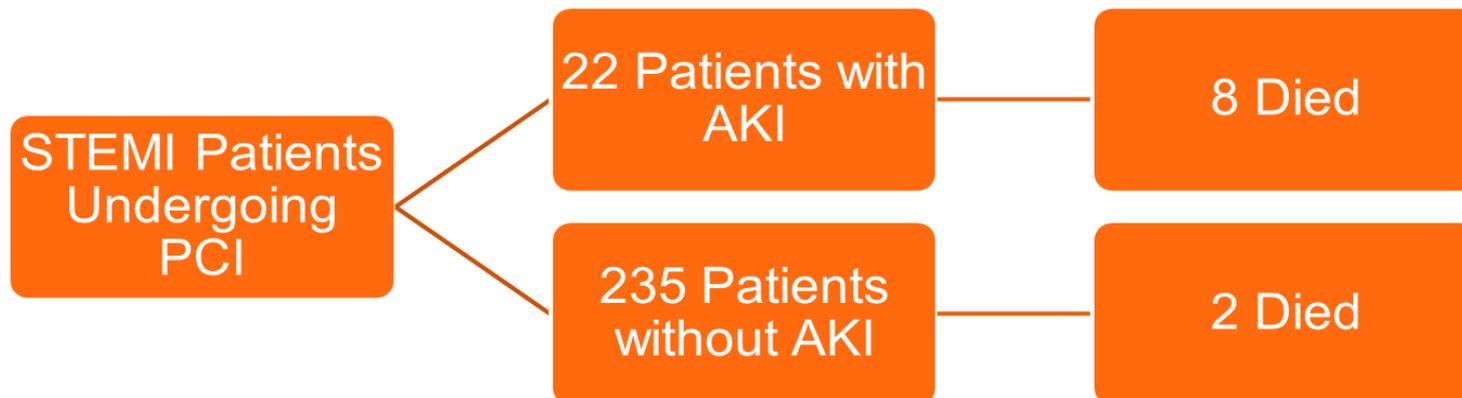
Results, continued

- 22/257 (8.6%, 95% CI 5.2-12.0%) suffered a ≥ 1.5 -fold increase in serum creatinine from baseline
- 8/257 (3.1%, 95% CI 1.0-5) experienced a ≥ 2 -fold increase in creatinine
- 2 patients met criteria for RIFLE stage F (failure) and required hemodialysis



Results, continued

- 8/22 patients with AKI died in-hospital
 - 36.4% (95% CI 16.3-56.5%)
- 2/235 patients without AKI died
 - 0.9% (95% CI:-0.3-2.0%)
- ***Patients with AKI had an OR of death 66.6 times that of patients without AKI***
 - 95% CI: 12.9- 343.4



Conclusions

- In this single center study of patients with STEMI, nearly 10% developed AKI following emergent administration of IV contrast
- AKI was associated with a 66-fold increase in risk of in-hospital mortality
- Further studies are needed to evaluate the impact of AKI on adverse outcome among critically ill patients
- Preventative studies aimed at mitigating the risk of developing AKI from unavoidable administration of nephrotoxic medications in the ED are needed