Presence of coronary artery calcifications on CT is associated with PE-related mortality in patients with acute PE

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Introduction

• RV ischemia has been proposed as a mechanism for RV dysfunction in acute pulmonary embolism (PE).

• History of coronary artery disease has been associated with adverse events in patients with acute PE.

• Coronary artery calcifications (CAC) on CT as a risk factor for adverse events has not been fully investigated.
Study Purpose

To evaluate the association of CAC on CT with PE-related mortality in patients with acute pulmonary embolism.
Methods

• IRB approved, retrospective study

• Online medical record search

• May 2007 to December 2014

• Consecutive patients with an International Classification of Disease (ICD) inpatient code for acute PE
Methods

• Inclusion of patients with CT-verified acute PE and CT images available in PACS.

• 479 patients
  • 53% women
  • Mean age 63±16 years
  • 47% with smoking history
Methods

• Cardiothoracic radiologist visually graded CAC
  • Absent
  • Mild
  • Moderate
  • Severe

• 30 day PE-related mortality

• Association of CAC with PE-related mortality was tested using logistic regression analysis.
Results

53% of patients with CACs

- Mild 30%
- Moderate 19%
- Severe 4%

Patients with CAC were

- Older (P<0.001)
- More frequently male (P=0.008)
- More frequently smokers (P=0.001)
Outcome

• Overall PE-related mortality was 4%.
  • 2% (4/226) of those without CAC.
  • 6% (15/253) patients with CAC.
    • Mild 5% (7/143)
    • Moderate 7% (6/89)
    • Severe 10% (2/21)

• Mortality was significantly higher in patients with CAC (OR 3.5 [CI 1.1-10.7]; p=0.028).
  • Mild OR 2.9 (CI 0.8 – 9.9) p=.099
  • Moderate OR 4.0 (CI 1.1 – 14.6) p=.035
  • Severe OR 5.8 (CI 1.0 – 34.0) p=.049
Conclusion

• Among patients with acute PE, the presence of CAC was associated with an increased rate of PE-related mortality.

• With increasing severity of CAC, PE-related mortality also increased.

• Simple visual assessment of CAC on CT may be utilized as an additional prognostic parameter for early risk stratification in patients with PE.
References


