Impact of Chronic Kidney and Diabetes on Survival of General Medicare Patients after Percutaneous Coronary Intervention

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Introduction

- Chronic kidney disease (CKD) and diabetes (DM) magnify the risk of death in elderly patients with cardiac disease.
- CKD and DM are associated with increased mortality after coronary revascularization.
- There are few data comparing the relative impact of CKD and DM on long-term survival after percutaneous coronary intervention (PCI).

Purpose

- To compare the relative impact of CKD and DM on survival after PCI.

Study design

- Retrospective cohort study
- Data sources: General Medicare 5% sample data (n=3,124,206)
- Study population: General Medicare patients who had their first PCI in 1995-2002
- Continuously enrolled in Medicare both Part A and B for at least 1 year before PCI

Methods

- Age 66 years or older
- Patients diagnosed with ESRD before PCI were excluded.
- Identification of PCI
- ICD-9-CM procedure codes in Part A institutional claims: 36.01, 36.02, 36.05, and 36.08
- Exposure: CKD and/or DM before PCI
- Identification method
  - Had ≥2 claims carrying diagnosis codes of CKD or DM in Part A outpatient, skilled nursing facility, or home health agency claims, or had ≥2 claims in Part A outpatient or Part B physician/supplier claims during one year before PCI
  - ICD-9-CM diagnosis codes
    - DM: 250.x, 251.x, 252.x, 253.x, 254.x, 255.x, 256.x, 257.x, 258.x, 259.x, 260.x
- Outcomes: All-cause mortality
- Sample Size: n=54,221

Results

- Four patient groups were constructed based on their CKD and DM status before PCI: 1) having both CKD and DM; 2) having CKD only; 3) having DM only; and 4) having neither CKD nor DM.
- Patients baseline characteristics among the four subgroups were compared using Chi-square tests.
- Long-term survival was estimated by Kaplan-Meier method and survival of subgroups was compared using log-rank test.
- The impact of CKD and DM on survival after PCI was estimated by Cox proportional hazards model, with adjustment for patient characteristics.
- Patient characteristics included age, gender, race, year of first PCI, and comorbidities (identified from Medicare Part A and B claims using the same method for identifying CKD & DM).

Conclusions

- Approximately one million General Medicare patients had their first PCI in 1995-2002 (of whom two-thirds had no CKD or DM, and one-quarter had DM only).
- The two year mortality after PCI: 10.6% (CKD-/DM-)
- 15.2% (DM)
- 30% (CKD)
- 35.2% (CKD+DM)
- DM alone, CKD alone, and CKD+DM were independently associated with a 34%, 80%, and 131% increased risk of death, respectively.

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