Impact of medications on outcomes in patients with acute myocardial infarction and chronic obstructive pulmonary disease: A nationwide cohort study

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ABSTRACT

Background: Various inhaled bronchodilators have cardiovascular safety concerns. The aim of this study is to investigate the long-term impact of chronic obstructive pulmonary disease (COPD) and the safety of COPD medications in patients after their first acute myocardial infarction (AMI).

Methods: A nationwide cohort study using the data from the Taiwan National Health Insurance Research Database was conducted. The patients hospitalized between 2000 and 2012 with the primary diagnosis of first AMI were included and divided into three cohorts (AMI, ST-elevation myocardial infarction [STEMI], and non-STEMI [NSTEMI]). Each cohort was matched 1:1 with patients without COPD using the propensity score. Cox proportional hazards regression model was used to estimate the hazard ratios (HRs) with 95% confidence intervals (95% CIs).

Results: In total, 186,112 AMI patients were enrolled, and COPD was diagnosed in 13,065 (7%) patients. The Kaplan-Meier curves found that patients with COPD had a higher risk of mortality than those without COPD in all cohorts, including AMI, STEMI and NSTEMI. The HR of mortality in AMI patients with COPD, STEMI patients with COPD, and NSTEMI patients with COPD was 1.12 (95% CI: 1.09-1.14), 1.20 (95% CI: 1.14-1.25), and 1.07 (95% CI: 1.04-1.10), respectively. Short-acting inhaled bronchodilators and corticosteroids increased mortality in all three cohorts. However, long-acting inhaled bronchodilators reduced mortality in AMI [long-acting beta-agonist (LABA), HR: 0.87, 95% CI: 0.81-0.94; long-acting muscarinic antagonist (LAMA), HR: 0.82, 95% CI: 0.69-0.96] and NSTEMI patients (LABA, HR: 0.89, 95% CI: 0.83-0.97; LAMA, HR: 0.80, 95% CI: 0.68-0.96).

Conclusion: This study demonstrated that AMI patients with COPD had higher mortality compared to AMI patients without COPD. The use of inhaled short-acting bronchodilators and corticosteroids reduced the survival, whereas long-acting bronchodilators posed survival benefits in AMI and NSTEMI patients. Appropriate COPD medications during acute AMI were crucial.