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Causes of death in patients with myocardial infarction, and non-ischemic myocardial injury

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Background: Information about causes of death in patients with non-ischemic acute and chronic myocardial injury is limited.

Purpose: To explore causes of death, mortality rates and risks of cardiovascular and non-cardiovascular causes of death in patients with type 1 MI (T1MI), type 2 MI (T2MI), and acute and chronic myocardial injury compared with patients without myocardial injury.

Methods: From a cohort of 39,558 patients who visited the ED at our University Hospital during 2011–2014 and who had high-sensitivity cardiac troponin T (hs-cTnT) levels measured, we identified 3,853 patients with hs-cTnT levels above the 99th percentile value and categorised them into the following groups: i) T1MI, ii) T2MI, iii) acute and iv) chronic myocardial injury. Among these we included all patients who died during follow-up. Causes of death were obtained from the Swedish Cause-of-Death register. All deaths among patients without myocardial injury (n=819) from the same cohort were used for comparison. We calculated incidence rates of cause-specific deaths in the different groups and used logistic regression to estimate odds ratios (OR) with 95% confidence intervals (CIs) adjusted for age and sex for different causes of death, using patients without myocardial injury as referent.

Results: 2,285 patients died during follow-up at a mean age of 76 (±13) years of whom 46% were female. Patients without myocardial injury died at a younger age (mean 70 years) compared with patients in the groups with myocardial injury (mean 79–82 years). The proportion of cardiovascular (CV) deaths were considerably higher in patients with T1MI (48%), T2MI (39%), acute (43%), and chronic (45%) myocardial injury compared with patients with no myocardial injury (25%). 42% of patients without myocardial injury died from cancer, compared with 18% to 24% among patients with different myocardial injury. Age- and sex-adjusted incidence rates for CV-death were similar for T1MI, T2MI and acute myocardial injury (27 per 100 person-years), slightly lower in patients with chronic myocardial injury (22 per 100 person-years) and almost half in patients with no myocardial injury (14 per 100 person-years). The adjusted ORs with 95% CIs for CV death were highest in patients with T1MI (1.99, 1.48–2.69) and acute myocardial injury (1.72, 1.29–2.11), while only marginally lower in patients with T2MI and chronic myocardial injury (1.43, (0.94–2.16), and 1.65, (1.29–2.11) respectively).

Conclusions: Patients with T1MI and acute or chronic myocardial injury have similar risks to die from cardiovascular causes. Patients without myocardial injury died younger and the proportions of cancer-related deaths were twice as high as in the groups with myocardial injury. Proportions and risks of CV-death among patients with T2MI were higher than in patients without myocardial injury, but lower than in patients with T1MI and acute or chronic myocardial injury.