

Impact of periprocedural myocardial infarction on 10-year mortality after percutaneous coronary intervention or coronary artery bypass grafting for multivessel or left main coronary artery disease

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Background: Periprocedural myocardial infarction (PMI) occurs frequently after both percutaneous coronary intervention (PCI) and bypass grafting surgery (CABG) in patients with complex coronary artery disease (CAD), and PMI has been shown to have a detrimental impact on mortality. On the other hand, long-term impact of PMI on mortality has not been fully evaluated.

Purpose: This study aimed to assess the impact of PMI according to SCAI definition on 10-year all-cause death in patients with complex CAD.

Methods: The SYNTAX Extended Survival (SYNTAXES) study evaluated vital status up to 10 years in 1800 patients with de novo three-vessel disease and/or left main coronary artery disease randomized to treatment with CABG or PCI in the SYNTAX trial. Blood was sampled for creatine kinase (CK) pre- and post-revascularisation, and the cardiac specific MB iso-enzyme (CK-MB) was determined only if the CK ratio $\geq 2 \times$ the upper limit of normal (ULN). If the CK ratio < 2 ULN, CK-MB assessment was not mandated. In this analysis, patients with at least one blood sampling within 48 hours of the procedure were included. PMI was defined as follows; peak CK-MB measured within 48 hours of the procedure $\geq 10 \times$ ULN, or $\geq 5 \times$ ULN with new Q-waves in 2 contiguous leads or new persistent left bundle branch block.

Results: Of 1800 patients, 1679 (93.2%) patients were included. Of 877 patients treated with PCI, PMI occurred in 26 patients (3.0%), whereas 14 (1.7%) PMIs were observed in 802 patients treated with CABG. Compared with patients without PMI, patients with PMI presented with unstable angina more frequently (45.0% vs. 28.7, $p=0.033$), and had a higher rate of bifurcation lesion (87.5% vs. 72.5, $p=0.046$). PMI was associated with a higher all-cause mortality at 10 years compared with no PMI (55.3% vs. 25.4%; Log-rank $p<0.001$, Figure), which was mainly driven by a high mortality rate within 1 year. In patients undergoing PCI, the mortality rates were significantly higher in patients with PMI not only within 1 year (Log-rank $p<0.001$) but also beyond one year (Log-rank $p=0.016$), compare to patients without PMI (Figure). On the other hand, in patients undergoing CABG, a higher mortality rate in patients with PMI was observed until 1 year (Log-rank $p<0.001$), but the impact of PMI on mortality beyond one year after CABG subsided (Log-rank $p=0.308$) (Figure 1).

Conclusion: PMI was associated with a poor prognosis at 10 years. The impact of PMI on mortality was strong within one year. Of note, the impact of PMI on mortality persisted beyond 1 year only in patients undergoing PCI. Patients who were treated with PCI and suffered PMI need careful follow-up beyond one year after revascularization.

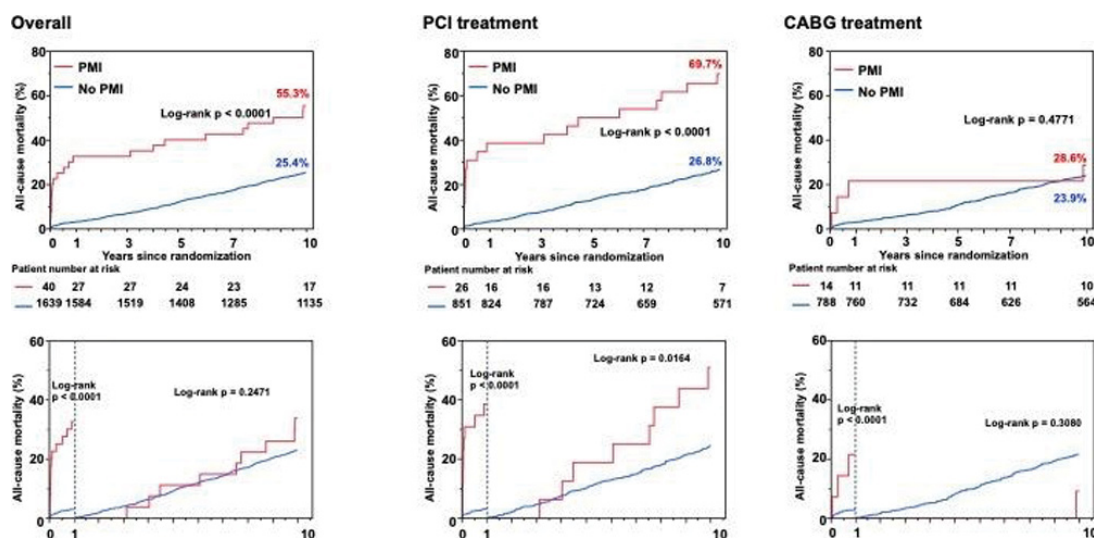


Figure 1