Long term outcomes in different etiologies of perioperative myocardial infarction/injury after noncardiac surgery

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Background: Perioperative myocardial infarction/injury (PMI) occurring in the first 48h following noncardiac surgery is a frequent cardiac complication. Better understanding of the underlying etiologies is urgently needed.

Aim: To explore the association of different etiologies of PMI with long term outcomes.

Methods: In this prospective multicenter observational study, PMI etiology was centrally adjudicated and hierarchically classified by two independent physicians based on all information obtained during clinically indicated PMI work-up including cardiac imaging among consecutive high-risk patients undergoing major noncardiac surgery. PMI etiology was classified into “extracardiac” if caused by a primarily extracardiac disease such as severe sepsis or pulmonary embolism; and “cardiac”, further subtyped into type 1 myocardial infarction (T1MI), tachyarrhythmia, acute heart failure (AHF), or likely type 2 myocardial infarction (lT2MI). Major adverse cardiac events (MACE) including T1MI, AHF (both only from day 3 to avoid inclusion bias), life-threatening arrhythmia, and cardiovascular death as well as all-cause death were assessed during 365-days follow-up.

Results: PMI occurred in 1016/7754 patients (13.1%). At least one MACE occurred in 684/7754 patients (8.8%) and 818/7754 patients died (10.5%) within 365 days. MACE and all-cause death occurred in 51% (95% CI 31–60) and 38% (95% CI 29–47), 41% (95% CI 28–51) and 27% (95% CI 16–34), 57% (95% CI 41–69) and 40% (95% CI 25–53), 64% (95% CI 45–76) and 49% (95% CI 30–62), as well as 25% (95% CI 22–28%) and 17% (95% CI 14–20) of patients with extracardiac PMI, T1MI, tachyarrhythmia, AHF, and lT2MI, respectively. These associations were confirmed in multivariable analysis.

Conclusion: At 365 days, most PMI etiologies have unacceptably high rates of MACE and all-cause death, highlighting the urgent need for more intensive treatments.

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