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CLINICAL RESEARCH

Efficacy and safety of prehospital administration of unfractionated heparin, enoxaparin or bivalirudin in patients undergoing primary percutaneous coronary intervention for ST-segment elevation myocardial infarction: Insights from the ORBI registry

Efficacité et sécurité d'emploi de l'administration pré-hospitalière d'héparine non fractionnée, d'énoxaparine ou de bivalirudine chez des patients présentant un syndrome coronarien aigu avec sus-décalage persistant du segment ST traités par angioplastie primaire : données du registre ORBI

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Abbreviations: ATOLL, Acute myocardial infarction treated with primary angioplasty and intravenous enoxaparin or unfractionated heparin to lower ischemic and bleeding events at short- and long-term follow-up; BARC, Bleeding Academic research consortium; BRAVE, Bavarian reperfusion alternatives evaluation; BRIGHT, Bivalirudin vs heparin with or without tirofiban during primary percutaneous coronary intervention in acute myocardial infarction; CABG, Coronary artery bypass graft; CI, Confidence interval; COPD, Chronic obstructive pulmonary disease; ECG, Electrocardiogram; ECMO, Extracorporeal membrane oxygenation; EUROMAX, Bivalirudin vs heparin with or without tirofiban during primary percutaneous coronary intervention in acute myocardial infarction; FAST-MI, French registry on acute ST-elevation and non ST-elevation myocardial infarction; GPI, Glycoprotein IIb/IIIa inhibitors; HEAT-PPI, How effective are antithrombotic therapies in primary percutaneous coronary intervention; HORIZONS-AMI, Harmonizing outcomes with revascularization and stents in acute myocardial infarction; LBBB, left bundle branch block; LVEF, Left ventricular ejection fraction; MACE, Major adverse cardiovascular events; MICU, Mobile intensive care unit; NACE, Net adverse clinical events; OR, Odds ratio; ORBI, Observatoire régional breton sur l'infarctus [Brittany regional infarction observatory]; PCI, Percutaneous coronary intervention; RR, Risk ratio; STEMI, ST-segment elevation myocardial infarction; TIMI, Thrombolysis in myocardial infarction; UFH, Unfractionated heparin.

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KEYWORDS
ST-segment elevation myocardial infarction;
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Outcomes

Summary
Background. — Despite numerous studies in recent years, the best anticoagulant option for primary percutaneous coronary intervention (PCI) remains a matter of debate.
Aims. — To compare in-hospital outcomes after prehospital administration of low-dose unfractionated heparin (UFH) ± glycoprotein IIb/IIIa inhibitors (GPIs), enoxaparin ± GPIs, or bivalirudin in patients undergoing primary PCI for ST-segment elevation myocardial infarction (STEMI).
Methods. — A total of 1720 patients (median age 62.0 years, 79.2% male) who had been enrolled in a prospective registry and received an injectable anticoagulant in physician-staffed mobile intensive care units before primary PCI were included in the study. The main outcomes were in-hospital major adverse cardiovascular events (MACE) (a composite of all-cause mortality, non-fatal myocardial infarction, stroke or definite stent thrombosis) and in-hospital major bleeding (Bleeding academic research consortium type 3 or 5).
Results. — UFH was administered in 420 (24.4%) patients, enoxaparin in 1163 (67.6%) patients and bivalirudin in 137 patients (8.0%). Rates of in-hospital MACE were 7.4% with UFH, 6.0% with enoxaparin and 6.6% with bivalirudin, with no significant differences between groups ($P = 0.628$). In-hospital major bleeding occurred in 1.7% of patients on UFH, 1.4% on enoxaparin and 1.5% on bivalirudin ($P = 0.851$). By multivariable analysis, the prehospital anticoagulant used was not an independent predictor of MACE or major bleeding.
Conclusion. — In this prospective registry, there were no significant differences in the rates of in-hospital MACE or major bleeding after prehospital initiation of UFH, enoxaparin or bivalirudin in patients treated by primary PCI for STEMI.

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