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ACUTE CORONARY SYNDROMES

BIVALIRUDIN VERSUS HEPARIN FOR ACS

Previous studies to compare bivalirudin with unfractionated heparin for patients undergoing invasive procedures for an acute coronary syndrome (ACS) have yielded conflicting results. Investigators in the MATRIX Antithrombin study sought to determine whether bivalirudin was superior to unfractionated heparin in patients with ACS for whom percutaneous coronary intervention (PCI) was anticipated. In the subsequent MATRIX Treatment Duration study, prolonged bivalirudin administration plus a post-PCI infusion was compared with short-term bivalirudin treatment without a post-PCI infusion. Findings from these studies have now been presented at the ESC Congress 2015 and published in *The New England Journal of Medicine*.

Eligible patients were randomly assigned to receive bivalirudin or unfractionated heparin. Patients in the bivalirudin treatment group were further assigned to receive a post-PCI bivalirudin infusion or no post-PCI infusion. All patients were followed up for 30 days. The primary end point for the MATRIX Antithrombin study was major adverse cardiovascular events (composite of death from any cause, myocardial infarction, or stroke) and net adverse clinical events (composite of non-CABG-surgery-related major bleeding or major adverse cardiovascular events). For the MATRIX Treatment Duration study, the primary end point was a composite of urgent target-vessel revascularization, stent thrombosis, or adverse clinical events.

In total, 7,213 patients were recruited in the study. Bivalirudin-treated patients had similar rates of major adverse cardiovascular events as heparin-treated patients (10.3% versus 10.9%; relative risk [RR] 0.94, 95% CI 0.81–1.09, $P=0.44$); the rate of net adverse clinical events was also not significantly different between the groups (11.2% versus 12.4%, RR 0.89, 95% CI 0.78–1.03, $P=0.12$). Post-PCI bivalirudin infusion for at least 4 h after the intervention did not affect the primary study outcome.

"The difference between the findings of our study and those of other studies may reflect the way in which nonfatal periprocedural ischaemic events and bleeding events were defined," explain the investigators. Given the present results, none of the "null hypotheses of the [MATRIX] programme could be rejected".

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Original article Valgimigli, M. *et al.* Bivalirudin or unfractionated heparin in acute coronary syndromes. *N. Engl. J. Med.* doi:10.1056/NEJMoa1507854