Current Approaches And Future Prospects Of Intravenous Antiplatelet Therapy In Patients With Cardiogenic Shock

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Abstract:

Relevance: Cardiogenic shock (CS), which complicates 5-10% of cases of acute myocardial infarction (AMI), remains a condition with an extremely high mortality rate (40-60%). Despite modern advances in reperfusion therapy, the key problem is microcirculatory dysfunction caused by thrombotic complications. In CS, platelet hyperactivation occurs due to the release of catecholamines, leading to stimulation of $P2Y_{12}$ receptors, expression of tissue factor due to hypoxia, triggering a coagulation cascade, as well as the release of thromboxane A_2 due to inflammation. The effectiveness of oral antiplatelet agents acting on various parts of the thrombosis cascade in patients with CS is reduced by reducing their bioavailability due to gastroparesis and hypoperfusion of the gastrointestinal tract. In critical conditions, their use may be untimely, in particular in patients undergoing mechanical ventilation after resuscitation before the nasogastric tube is inserted. Given the slow onset of the maximum effect of classical antiplatelet agents (aspirin, clopidogrel, ticagrelor) after 2-4 hours, all this increases the risk of thrombotic complications and microvascular dysfunction (in 30-40% of cases of percutaneous coronary interventions (PCI) in CS, the phenomenon of no-reflow occurs — the result of microthrombosis and vasospasm).

Glycoprotein IIb/IIIa receptor inhibitors (GP IIb/IIIa) are powerful intravenous antiplatelet agents that block the final pathway of platelet aggregation and have several advantages due to their instantaneous action, reversibility of most molecules, and effectiveness in aspirin/clopidogrel