EDITORIAL

Updated European Guidelines on the management of acute myocardial infarction in patients presenting with ST-segment elevation

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The European Society of Cardiology (ESC) has published a new guideline statement regarding the treatment of patients with ST-segment elevation myocardial infarction (STEMI), replacing the 2003 ESC STEMI guideline document.[1,2] Major updates from the previous guideline are reviewed below. There were no new recommendations for treating pump failure, mechanical complications, arrhythmias, or conduction disturbances. Likewise, management of later in-hospital complications, risk assessment recommendations, and discharge advice were relatively unchanged.

1. Pre-hospital care Similar to the American College of Cardiology/American Heart Association guidelines,[3,4] this document emphasizes the necessity of establishing a regional prehospital system of care network of hospitals connected with efficient ambulance services. Shared written protocols, prehospital electrocardiogram (ECG) diagnosis and treatment, and fast transport to the most appropriate hospital facility by ambulance or helicopter are key for optimal management. Early activation of the emergency medical system, public education in cardiopulmonary resuscitation, and a well-trained ambulance service are important components. The ability to treat out-of-hospital cardiac arrest with prompt cardiopulmonary resuscitation, early defibrillation, and advanced cardiac life support is the greatest opportunity for increasing survival with STEMI. Rapid diagnosis and early risk stratification of patients with acute chest pain more quickly identifies patients who are candidates for reperfusion therapy.

2. Reperfusion therapy In addition to treating STEMI patients within 12 hours of symptom onset, reperfusion therapy should be considered if there is clinical and/or ECG evidence of ongoing ischemia greater than 12 hours after symptom onset. Percutaneous coronary intervention (PCI) may be considered in stable patients from 12–24 hours after symptom onset, but is contraindicated after 24 hours if the artery is totally occluded and there are no signs of ischemia.

3. Primary percuteneous coronary intervention The time from first medical contact to balloon inflation has been increased from 90 to 120 minutes, but should be <90 minutes for patients who present within 2 hours with a large infarct and low bleeding risk. Catheter thrombus aspiration and administration of abciximab, a platelet glycoprotein IIb/IIIa receptor antagonist, decrease the risk for microvascular obstruction, but embolic protection devices do not. Routine coronary stent implantation decreases the need for subsequent target vessel revascularization, but does not reduce death or reinfarction rates. Drug-eluting stents further reduce the risk of reintervention, compared with bare metal stents, without changing the risk for stent thrombosis, reinfarction, or death. However, they should generally be avoided in patients who need oral anticoagulation (atrial fibrillation, left ventricular thrombus, mechanical valves) because of the bleeding risk associated with triple antithrombotic therapy.

4. Fibrinolytic therapy If primary PCI cannot be performed, a fibrin-specific lytic agent is the preferred reperfusion strategy, unless there are contraindications, and pre-hospital initiation is encouraged when possible. Fibrinolytic therapy

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should be administered within 30 minutes of first medical contact.

5. Rescue PCI Failed fibrinolysis can be assumed when there is <50% ST-segment resolution in the lead with the highest ST-segment elevation 60–90 minutes after the start of fibrinolytic therapy. Rescue PCI should be considered if there is clinical or ECG evidence of a large infarct and the procedure can be performed within 12 hours of symptom onset. Facilitated PCI, defined as a pharmacological reperfusion treatment delivered prior to planned PCI in order to decrease time-to-treatment, cannot be recommended based upon clinical trial results.

6. Coronary angiography When it is likely that fibrinolysis was successful (ST-segment resolution >50% at 60–90 minutes, typical reperfusion arrhythmia, resolution of chest pain), coronary angiography within 3–24 hours is recommended if there are no contraindications. Early PCI decreases the risk and complications of infarct artery reocclusion. In patients who did not receive reperfusion therapy, angiography is recommended before hospital discharge.

7. Antiplatelet therapy Clopidogrel should be added to aspirin as dual antiplatelet therapy in all STEMI patients. With fibrinolytic therapy, a 300 mg oral loading dose if age is ≤75 years or the 75 mg maintenance dose if age is >75 years is recommended. The loading dose with primary PCI should be 300–600 mg. Non-steroidal anti-inflammatory drugs (NSAIDs) and selective cyclo-oxygenase (COX-2) inhibitors increase the risk of death, reinfraction, cardiac rupture, and other complications and should be discontinued.

8. Antithrombin therapy Bivalirudin is an alternative to unfractionated heparin with primary PCI, but fondaparinux should be avoided as the sole anticoagulant because of the risk of catheter thrombosis. Enoxaparin is an alternative to unfractionated heparin with fibrin-specific lytic agents. Fondaparinux or enoxaparin are alternatives to unfractionated heparin with streptokinase or in patients not receiving reperfusion therapy. For age >75 years, enoxaparin should be started at a reduced dose (0.75 mg/kg) without an intravenous bolus.

9. Routine prophylactic therapies in the acute phase There is no support for the early routine use of nitrate or intravenous β-blocker therapy, although they can be useful in treating hypertension. Oral β-blockers and angiotensin-converting enzyme (ACE) inhibitors should be started in stable patients within 24 hours if no contraindications are present. No benefit has been demonstrated with routine use of calcium channel blockers, magnesium, lidocaine, or glucose-insulin-potassium infusions.

10. Secondary prevention and lifestyle changes Aspirin (75–100 mg) daily should be continued for life. Clopidogrel 75 mg daily should be continued for 12 months. Oral anticoagulants should be given to patients who do not tolerate aspirin and clopidogrel and to those with clinical indications. Oral β-blockers, ACE inhibitors or angiotensin receptor inhibitors, and statins should be administered to all patients without contraindications. Aldosterone blockade may be considered with left ventricular ejection fraction <40% and heart failure or diabetes, if the creatinine is <2.5mg/dL in men and <2.0/dl in women, and the potassium is ≤5.0 mEq/l. All patients should receive influenza immunizations. Indications for cardiac resynchronization therapy and implantation of an implantable cardioverter-defibrillator are reviewed. Aggressive targets for managing hypertension (blood pressure <130/80 mm Hg), diabetes (HbA_{1c} <6.5%), and LDL-cholesterol (<100 mg/dl, <80 mg/dl in high-risk patients) have been established. Smoking cessation, diet, weight control, and aerobic exercise at least 5 times per week are important lifestyle interventions.

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