Therapy after Myocardial Infarction

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Editorial

Treat Modifiable Risk Factors

After myocardial infarction (MI), patients should have their modifiable coronary risk factors intensively treated. On the basis of the available data, patients who smoke should be strongly encouraged to stop smoking because it will reduce cardiovascular mortality and all-cause mortality after MI. The American College of Cardiology Foundation (ACCF)/ American Heart Association (AHA) 2011 guidelines recommend that patients should be asked about tobacco use at every office visit [1]. A smoking cessation program should be recommended to smokers. Patients should be advised at every office visit to avoid exposure to environmental tobacco smoke at work, at home, and at public places [1].

Hypertension is present in 69% of patients with a first myocardial infarction [2]. Patients with hypertension should be treated with salt restriction, weight reduction if necessary, cessation of drugs that increase blood pressure, avoidance of alcohol and tobacco, increase in physical activity, reduction of dietary saturated fat and cholesterol, and maintenance of adequate dietary potassium, calcium, and magnesium intake [3]. A meta-analysis of 147 randomized trials including 464,000 persons with hypertension showed that beta blockers were the best drugs to use in patients after MI [4].

Patients with prior MI should be treated with beta blockers and angiotensin-converting enzyme (ACE) inhibitors [1,3-6]. If a third drug is needed, aldosterone antagonists may be used [7]. Patients treated with aldosterone antagonists should not have significant renal dysfunction or hyperkalemia. After MI, the blood pressure should be lowered to 130-139 /80-89 mm Hg in patients younger than 80 years and the systolic blood pressure to 140-145 mm Hg if tolerated in patients aged 80 years and older [3].

The 2013 ACCF/AHA guidelines on treatment of hypercholesterolemia recommend that the diet should be low in cholesterol (less than 200 mg daily) [8]. Less than 30% of total caloric intake should be fatty acids. Saturated fatty acids should comprise less than 7% of total calories, polyunsaturated acids up to 10% of total calories, and monounsaturated fatty acids 10% to 15% of total calories. The diet should also be high in fiber and high in fruits and vegetables. Patients with clinical atherosclerotic cardiovascular disease should be treated with high-dose statins [8]. High-dose statins lower serum low-density lipoprotein cholesterol 50% or more and include atorvastatin 40 to 80 mg daily and rosuvastatin 20 to 40 mg daily [8].

Diabetics after MI should be treated with dietary therapy, weight reduction if necessary, and appropriate drugs if needed to control hyperglycemia. Hypertension should be treated with an ACE inhibitor or by an angiotensin receptor blocker [1,3]. Metformin should be the initial drug to treat hyperglycemia in most patients [1,9]. The hemoglobin A_{1c} level should be reduced to <7% in patients with diabetes mellitus [1]. Hypoglycemia must be avoided.

Obese patients who have had a MI must undergo weight reduction [1]. Weight reduction is also a first approach to controlling hyperglycemia, mild hypertension, and dyslipidemia. Regular aerobic exercise should be added to diet in treating obesity. The body mass index should be reduced to 18.5 to 24.9 kg/m^2 [1].

Physical inactivity is associated with obesity, dyslipidemia, hyperglycemia, and hypertension. Exercise training programs improve endurance and functional capacity in older patients after MI [10]. The goal to be achieved is at least 30 minutes of exercise daily for 7 days per week with a minimum of 5 days of physical exercise per week [1].

Drug Therapy

On the basis of the available data, all patients should receive aspirin in a dose of 160 mg to 325 mg daily on day 1 of an acute MI and continue aspirin in a dose of 75-162 mg daily for an indefinite period unless there is a specific contraindication to its use [1]. The ACCF/AHA guidelines recommend the use of clopidogrel in postinfarction patients who cannot tolerate aspirin for an indefinite period unless there is a specific contraindication to its use [1]. The ACCF/AHA guidelines recommend as Class I indications for long-term oral anticoagulant therapy after MI 1) secondary prevention of MI in post-MI patients unable to tolerate daily aspirin or clopidogrel; 2) in post-MI patients with persistent atrial fibrillation; and 3) post-MI patients with left ventricular thrombus [1]. Long-term warfarin should be administered in a dose to achieve an INR between 2.0 and 3.0 [1].

Beta blockers are very effective antianginal and antiischemic agents and should be given to all patients with angina pectoris or silent myocardial ischemia due to coronary artery disease (CAD) unless there are specific contraindications to their use [11]. The ACCF/AHA guidelines recommend that patients without a clear contraindication to beta blocker therapy should receive beta blockers within a few days of MI (if not initiated acutely) and continue them indefinitely [1]. Carvedilol, metoprolol succinate, and bisoprolol are recommended [1]. All patients should also receive high-dose statins after MI regardless of serum lipids, age, or gender unless there are contraindications to use of these drugs [8].

Long-acting nitrates are effective antianginal and antiischemic drugs [12]. These drugs should be administered along with beta blockers to patients after MI who has angina pectoris. If stable angina pectoris persists despite treatment with beta blockers, long-acting nitrates, and calcium channel blockers, ranolazine can be added to the therapeutic regimen [13].

On the basis of the available data, ACE inhibitors should be administered to all patients after MI unless there are specific contraindications to their use [1]. The ACCF/AHA guidelines recommend an aldosterone antagonist in patients after MI treated with ACE inhibitors plus beta blockers if they have a left ventricular ejection fraction (LVEF) ≤40% with either congestive heart failure or diabetes mellitus if they do not have significant renal dysfunction or hyperkalemia [1]. There are no Class I indications for use of calcium channel blockers after MI [1].

Beta blockers are the only antiarrhythmic drugs which have been demonstrated to reduce mortality in patients with nonsustained ventricular tachycardia or complex ventricular arrhythmias after MI in patients with normal or abnormal LVEF [14,15]. Class I indications for implantation of an automatic implantable cardioverter-defibrillator include a LVEF <35% due to prior MI at least 40 days previously and New York Heart Association class II or III and a LVEF <30% due to prior MI at least 40 days previously and New York Heart Association class I [16].

On the basis of the available data, hormone replacement therapy should not be used in women after MI [1]. The ACCF/AHA guidelines recommend influenza immunization with inactivated vaccine administered intramuscularly as part of secondary prevention in patients with CAD or other atherosclerotic vascular disease with a Class I indication [1,17].

Medical therapy alone is the preferred treatment in patients after MI. The two indications for coronary revascularization in patients after MI are prolongation of life and relief of unacceptable symptoms despite optimal medical management [18].

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