

Optimal management

post myocardial infarction

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While the mortality from acute myocardial infarction (MI) has fallen, it remains a leading cause of mortality and morbidity in the Western world. Data from the CSO in 1994 reveal that there were 7,809 deaths from ischaemic heart disease. Some 50% of deaths from acute MI occur in the first hour prior to admission to hospital which emphasises the importance of primary and secondary prevention. The Eurospire¹ and Aspire² studies suggest that we have some way to go in this regard. This review will discuss the role of pharmacology, lifestyle changes and risk factor modification in the post MI patient.

Pharmacological intervention

Aspirin

Aspirin in a dose of between 75-325mgs daily should be administered to all post MI patients unless there is an absolute contraindication, such as allergy. The use of aspirin results in a 25% reduction in the risk of recurrent infarction, stroke or vascular death.³ When a MI occurs in a patient on aspirin, it is more likely to be non Q wave and smaller.⁴

Warfarin has been shown to have a beneficial effect post MI.⁵ However it has not been shown to be superior to aspirin.⁶ A combination of aspirin and warfarin has been studied and while bleeding complications were slightly higher in the treatment group, ischaemic events were significantly reduced.⁷ Despite this, warfarin should be reserved for patients with a clear indication such as mural thrombus, ventricular aneurysm or atrial fibrillation.

Nitrates

All patients on discharge should be given sublingual nitrates for the relief of anginal symptoms. While they probably exert an antiplatelet effect there is no evidence that they reduce mortality in patients with ischaemic heart disease. However, they have been shown to prolong life in patients with heart failure.

Beta-blockers

These agents have been extensively studied in over 20 trials¹³ and prior to the advent of thrombolysis have been shown to improve long-term survival after MI. Again the benefits are greatest in the high risk groups and agents such as carvedilol (Kredex) may have an interesting role in the future of in-patients with class I or II heart failure. The American Heart Association guidelines issued in 1995 are to start a beta-block-

er in high risk MI patients and to continue it for at least six months and to use beta-blockers as needed for the management of angina or hypertension. They should be withdrawn cautiously as this may precipitate an ischaemic event.

ACE inhibition

There is evidence from eight trials involving over 100,000 patients that angiotensin-converting enzyme (ACE) inhibition post MI improves mortality and reduces the incidence of congestive cardiac failure, ischaemic events and hospital admissions. The benefits are additive to beta-blockers and aspirin and are greater in high risk patients¹² such as those with anterior MI, congestive cardiac failure or low ejection fraction. In the high risk groups treatment should be indefinite.

Calcium channel blockers

These are not routinely recommended post MI and care should be taken with the shorter acting agents of the dihydropyridine group (nifedipine, nicardipine, isradipine).

Antiarrhythmics

In the past many post MI patients were routinely prescribed antiarrhythmic agents. Both the CAST⁸ and SWORD⁹ studies which looked at flecainide, encainide, moricizine and sotalol respectively were stopped prematurely due to increased mortality in the active treatment group. A meta-analysis of trials involving amiodarone post MI¹⁰ have shown a mortality benefit but as the side-effect profile is so significant this is not routinely recommended.

Hormone replacement therapy

The menopause is associated with an increased risk of developing atheromatous disease. Epidemiological studies have suggested a cardioprotective role for HRT and it has been shown to have a beneficial effect on lipid profiles. While its use remains controversial, the mortality benefit caused by a reduction in cardiovascular disease would seem to outweigh any increase in breast cancer risk in the general population. Individual cases with family histories of breast cancer should be considered carefully.

Lifestyle advice

Return to work

Patients who have had an uncomplicated recovery from their

MI and have sedentary jobs are fit to return to work within six weeks.¹⁴ Those with manual jobs should defer work for 8-12 weeks. Symptom limited treadmill testing can be extremely useful to determine the risk of return to work.¹⁵

Travel

Air travel should be deferred for at least six weeks post MI.¹⁶ Patients that get dyspnoea or chest pain on minimal exertion may become symptomatic while flying as the cabin pressure is equivalent to an altitude of 6-8,000 feet. It is important to ensure an adequate supply of medication, appropriate insurance and it is wise to inform the airline to minimise any hassles encountered.

Driving should not be attempted for at least four weeks post MI and for those with heavy goods vehicle or passenger service vehicle licenses it will be necessary to inform the driving licence authority or their employer.

Exercise

Physical activity is known to increase longevity and be inversely proportional to the incidence of cardiovascular disease. The need for safe, effective exercise has led to the concept of an exercise prescription.¹⁷ This has four components which are listed below.

Exercise prescription

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|--------------|--|
| 1. Frequency | At least 3 times a week. |
| 2. Intensity | 65-75% of target rate (220-age). |
| 3. Time | Between 30 and 60 minutes. |
| 4. Mode | Low intensity aerobic exercise, such as walking. |

A common-sense approach may be adopted with walking short distances slowly, and adding to this in an incremented fashion.

Diet

Dietary advice should be broadly aimed at low fat intake, high in antioxidants with a body mass index of less than 25.

Dietary recommendations¹⁸

INCREASE INTAKE	REDUCE
Bread	Total fat
Legumes	Saturated fat
Oily fish	Salt intake
Fruit	Alcohol intake
Vegetables	
Nuts	
Grains	

Sexual activity

Sexual dysfunction post MI is extremely common and occurs in 50-75% of patients.¹⁹ This is multifactorial and can relate to lack of confidence, fear of another MI or medications. In many cases it predates the MI. Unfortunately this problem tends to be inadequately dealt with by healthcare professionals.

Despite the general conception, the heart rate and blood pressure only rise by a modest amount during sexual activity. There are no definite guidelines but if the patient is able to

walk one mile or to climb two flights of stairs without symptoms they are generally safe to return to sexual activity. This equates to 5-6 mets of energy expenditure in exercise testing. General advice should include the avoidance of sex in stressful situations, in an uncomfortable environment or with an unfamiliar partner. Alcohol, heavy meals and the patient on top position should be avoided. The combination of Viagra and nitrates is contraindicated. Viagra should be prescribed with caution in patients with heart disease.

Risk factor modification

Hypertension

In patients with documented coronary artery disease, the joint European Societies recommendation (20) provides a useful target for therapy: i.e. blood pressure (BP) of <140/90 and in diabetics aim for a BP of <130/85. Once appropriate lifestyle modifications are made the agents which are most suitable are beta-blockers and ACE inhibitors.

Hypercholesterolaemia

The joint European guidelines²⁰ aim for a total cholesterol of <5mmol/L (190mg/dl) and a LDL chol of <3mmol/L (115mg/dl). Dietary advice is critical but most patients will benefit from a human menopausal gonadotropin (HMG) CoA reductase inhibitor (a statin). Data from the 4-S²¹, CARE²² and LIPID²³ studies show a significant reduction in all end points even with moderately raised cholesterol levels at initiation. It would seem that these agents have anti-inflammatory and plaque stabilising effects which improve prognosis independent of cholesterol reduction.

Hypertriglyceridaemia

This should mainly be controlled by dietary means which should be low in alcohol and high in omega-3 polyunsaturated fatty acids. Diabetes should be strictly controlled and sugar intake reduced. If pharmacological intervention is required many of the statins have a beneficial effect. Alternatively, agents such as fibrates or nicotinic acid could be considered.

Diabetes mellitus

Diabetic patients have double the mortality of the non diabetic patient post MI²⁴ and cardiovascular death accounts for 80% of the mortality in diabetics. Diabetics require a more aggressive approach to secondary prevention. Good evidence exists to suggest that diabetics should receive a higher dose of aspirin and that those with a total cholesterol >4 should be treated with statins. Intensive therapy with insulin-glucose infusions followed by multidose subcutaneous insulin therapy post discharge confers an impressive survival benefit up to three to five years post MI.²⁵ In this study one life was saved for every nine patients treated this way.

Obesity

This is an independent risk factor but is closely related to NIDDM, diet and low levels of physical activity. These have been considered in other sections.

Smoking

Smoking is responsible for 50% of all avoidance deaths; half of these are from cardiovascular diseases.²⁰ The effect of smoking is multiplicative on other risk factors, but particular-

ly on lipid profiles. The effect of passive smoking is as yet unclear but it may be significant. Survivors of MI who continue to smoke have twice that rate of recurrent MI and cardiac death compared to those who stop. Within three years of MI, survivors who have stopped smoking have the same risk of reinfarction as those who never smoked.

Cardiac rehabilitation programmes

These should be multidisciplinary programmes involving doctors, nurses, cardiac technicians, dietitians, pharmacists and psychologists. As well as a structured exercise programme with cardiac monitoring aimed at optimising exercise capability, this approach enables the patient's concerns to be dealt with by the appropriate people in the early post-infarct period.

Future trends

There are ongoing studies on the use of angiotension II receptor blockers either alone or in combination with ACE inhibitors post MI. Newer antiplatelet agents such as ticlopidine (Tielid) or clopidogrel (Plavix) which act on adenosine diphosphate-induced platelet activation have great potential alone or in conjunction with aspirin. Oral glycoprotein-IIb IIIA antagonists are agents which bind to the platelet receptor thus blocking the final common pathway to platelet aggregation (studies continue).

Summary

The management of post MI patients presents many challenges and also many opportunities to improve prognosis. It is vital to assess risk factors and to deal with them appropriately. If a patient post MI is not on aspirin, beta-blockers, ACE inhibitors or statins the question should be if not why not.

EU heart disease mortality rates (Persons aged 0-64 years)

Ireland	59
United Kingdom	54
Denmark	39
Germany	36
Luxembourg	32
The Netherlands	31
Greece	30
Portugal	25
Belgium	23 (1992)
Italy	22
Spain	20
France	14
EU average	31

0 10 20 30 40 50 60 70

Standardised mortality rates
(per 100,000 population for 1993)

Irish Heart Foundation

Source: WHO, HFA database

Many of the issues in post MI care are dealt with in organised rehabilitation programmes and, where available, patients derive physical and psychological benefit from them.

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