



CardioCase

of the Month

Getting on Track and Staying There!

Treatment Post- Myocardial Infarction

By Peter Hum, BSc, MD, CCFP

CardioCase *Presentation*

On the recommendation of her cardiologist, Ms. Larkin, a 57-year-old woman known for her energy and drive, presents to you 10 days after her discharge from hospital. She has just had a myocardial infarction (MI).

She has not experienced any chest pain since her hospital discharge, however, she feels she has run out of energy. She complains of persistent fatigue and difficulty sleeping. Despite knowing

she has a heart problem, these symptoms worry her. Furthermore, she owns a day-care centre attended daily by 45 children and cannot afford to hire additional staff. She wants to go back to work as soon as possible.

She gives you a sheet summarising the details of her six-day hospitalisation and the cardiologist's recommendations (Table 1).

About the author ...

Dr. Hum is a family medicine practitioner in Edmonton, Alberta. He has also done extensive research in the field of biochemistry.

What's Your CardioCase Diagnosis?

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Additional case information

Examinations

- Electrocardiogram (ECG) anteroseptal akinesia, apical third, middle third, a 50% ejection fraction (N=67 +/- 7), and a mild diastolic function
- Stress test: on a treadmill and according to the Bruce protocol; total minutes: 7 metabolic equivalents (METs)

Table 1

Ms. Larkin's hospital details

Main diagnosis

Uncomplicated anteroseptal infarction
Killip I, with Q wave
No residual angina

Other diagnoses and problems

Mild reactional depression
No other complications

Interventions and treatments

S-T segment myocardial infarction
Thrombolysis with reteplase and heparin started four hours after the onset of pain

Cardiologist's recommendations

Reduce alcohol consumption
Undertake a walking program
Stop working for 12 weeks
See family physician in two weeks to review medication

Medications prescribed

Metoprolol, 50 mg (orally), twice daily
Ramipril, 5 mg (orally), once daily
Simvastatin, 10 mg (orally), once daily
Nitroglycerin, 0.4 mg, as required
Acetylsalicylic acid (ASA), 80 mg (orally), once daily
Estrogen (17-estradiol), stop after one year

- Blood pressure (BP) during stress test: 124/76 mmHg to 142/70 mmHg
- Heart rate (HR) during stress test: 56 beats per minute (bpm) to 100 bpm
- Results of stress test: clinically and electrically negative; reasons for stopping: fatigue
- Height: 1.68 m
- Weight: 72.3 kg
- Body mass index: 26
- Waist circumference: 90 cm
- Regular BP: 110/70 mmHg
- Regular HR: 52 bpm
- Cardiovascular: S₁, S₂, no murmur
- Lungs: clear
- Abdomen: soft; no visceromegaly
- Lower limbs: no edema

Personal history

- Cholecystectomy at age 35
- Hysterectomy because of uterine fibromas at age 45
- Functional dyspepsia
- Essential hypertension treated with hydrochlorothiazide, 25 mg, 1/2 tablet once daily for four years
- Dyslipidemia treated with simvastatin, 10 mg, once daily for six years
- Hormone replacement therapy (HRT) for hot flashes since age 51

Lifestyle

- Stopped smoking more than 10 years ago



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- Consumes one to two glasses of wine per day
- Sedentary

Family history

- Father died of sudden death at age 55
- Mother died at age 80; had diabetes
- Sister had MI at age 52

The 4 Rs in post-MI treatment

Great advances have been made in the field of cardiology in terms of treating post-MI patients and achieving the best possible outcome. There has been significant evolution based on major studies on the management of MI patients. This article will outline the four Rs in post-MI patient management:

- 1) **R**isk stratification;
- 2) **R**isk protection;
- 3) **R**isk factor modification; and
- 4) **R**ehabilitation.

1. Risk stratification

Patients who have had a MI are certainly at a very high risk for cardiovascular symptoms and complications and have, therefore, moved on to secondary prevention. Risk stratification in the post-MI patient allows physicians to have a better idea of the

Antiplatelet agents, including ASA, decrease the number of major and minor cardiovascular events in patients with various cardiovascular risks.

prognosis and the proper treatment plan. Stratification is based on the following factors:

- 1) ventricular function;
- 2) presence of residual ischemia;
- 3) presence of arrhythmia; and
- 4) co-morbid factors.

2. Risk protection

There are very compelling data with respect to risk protection. The therapeutic regimen currently offered to the post-MI patient includes:

- 1) antiplatelet agents, such as acetylsalicylic acid (ASA) and/or clopidogrel;
- 2) beta blockers, which have been used for a long time;
- 3) angiotensin-converting enzyme (ACE) inhibitors; and
- 4) lipid-lowering agents, including statins.

Randomised studies have demonstrated that the use of antiplatelet agents, including ASA, decreases the number of major and minor cardiovascular events in patients with various categories of cardiovascular risk (*i.e.*, low risk, high risk, diabetes, unstable angina, and post-MI patients).

The Clopidogrel in Unstable angina to prevent Recurrent Events (CURE) trial showed that a clopidogrel-ASA combination is more effective than ASA alone. Compared with placebo, clopidogrel demonstrated an 11% to 20% reduction in major cardiovascular events in patients admitted for acute coronary syndrome (unstable angina/non-Q wave MI) with ECG changes. In the past, many studies have also shown positive results with beta blockers in the post-MI patient.

The Heart Outcomes Prevention Evaluation (HOPE) study showed a 22% reduction in major cardiovascular events (MI, stroke, and death) in patients with vascular disease and/or diabetes, over age 55 without heart failure or low ejection fraction, and taking ramipril, 10 mg, once daily. Statin treat-

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ment has been demonstrated in many studies to decrease cardiovascular complications in coronary patients with significant dyslipidemia.

3. Risk factor modifications

Risk factor modifications include measures to help the patient quit smoking, and control BP, as well as to treat dyslipidemia, diabetes, and other co-morbidity factors.

It has also been recommended to screen for depression in the management of a post-MI patient. Studies have shown cumulative post-MI mortality to be higher in depressed patients.

4. Rehabilitation

Rehabilitation includes a healthier diet, more physical activity, and a plan to resume working,

The case of Ms. Larkin

1. What is the patient's risk of dying from complications related to this event in the next year? What is the risk of heart attack or cardiovascular complications for this patient in the next year?

Patients with vascular disease or diabetes with another risk factor for vascular disease are considered at very high risk for death or other cardiovascular complications. Considering her uneventful post-MI course, Ms. Larkin's risk level is in the low to very low range among this very high-risk group.

2. Ms. Larkin has requested a return to work as soon as possible. Her work involves bookkeeping and monitoring the outdoor play of two- to five-year-olds. What should you advise her to do?

Doing the bookkeeping involves low-intensity activity and this would be acceptable in moderation. Monitoring two- to five-year-olds playing outdoors also involves low-intensity activity and is acceptable, as long as the effort is limited to walking and not lifting the children. Caution must still be exercised, however, as unpredictable factors can creep up.

3. How serious should you take this patient's symptoms of fatigue?

Beta blockers can contribute to the patient's symptoms of fatigue; however, fatigue is not always due to beta blockers. We need to monitor for signs of depression, as this is associated with a higher mortality rate in the post-MI patient.

4. Should you consider making a change to Ms. Larkin's treatment with respect to the following medications:

- a) ASA, 80 mg;
- b) Metoprolol, 50 mg, twice daily;
- c) Simvastatin, 10 mg, once daily;
- d) Ramipril, 5 mg, once daily; and
- e) HRT?

This is a patient with high cardiovascular risk and ASA therapy should definitely be maintained. Beta blockers, such as metoprolol, have demonstrated a protective effect in the post-MI patient as well. However, beta blockers may contribute to the patient's fatigue, in which case the dose can be reduced gradually. Statins, such as simvastatin, have been shown to decrease the risk of cardiovascular complications in high-risk patients. Ramipril, an ACE inhibitor, may be maintained or increased. HRT is currently not recommended for cardiovascular prevention. Because this patient has sustained a MI, HRT must be discontinued.

Treatment Post-MI


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driving, and sexual activity.

Certainly dietary changes and weight control are key elements for MI patients. Physical activity can improve a patient's functional ability, as well as his/her quality of life. Energy expenditure, evaluated in metabolic equivalents, is used to determine the functional ability on effort and to guide the patient in the resumption of his/her activities. Evaluation is usually done six to eight weeks after MI and if no complications have developed, the patient can return to work. Resumption of driving and sexual activities are difficult issues for patients and some facilitation in these areas would be a great help to the post-MI patient.

There remain some controversial areas in post-MI treatment, including complications involved with HRT, as well as the differences between treatment of female and male patients. However, regardless of this, through evidence-based medicine, the meaning of secondary prevention in the post-MI patient has

In the CURE trial, clopidogrel showed an 11% to 20% reduction in major cardiovascular events in patients with acute coronary syndrome and ECG changes.

taken on greater importance with respect to quality of life. 

For some frequently asked questions on post-MI treatment, please go to page 23.

Take-home message

- The 4 Rs to focus on in post-MI treatment are risk stratification, risk protection, risk factor modification, and rehabilitation.
- Current therapeutic options for post-MI patients include antiplatelet agents, beta blockers, ACE inhibitors, and statins.
- ASA decreases the number of cardiovascular events in patients with various risks.
- A clopidogrel-ASA combination is more effective than ASA alone.
- Statins decrease cardiovascular complications in patients with dyslipidemia.

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