

Posterior myocardial infarct

Posterior myocardial infarction (MI) is relatively rare compared with anterior and inferior infarction and is usually associated with infarction of other areas too.^[1] When it does occur in isolation, the diagnosis may easily be missed, as ECG changes are often more subtle.^[2]

Pathogenesis

Coronary artery anatomy varies from person to person. About 70% of people have a right coronary artery that supplies the posterior descending artery ("right dominant"); in about 10% of people, the posterior descending artery is supplied by the left circumflex artery ("left dominant"); and in the remaining 20%, both the right coronary and left circumflex arteries supply the posterior circulation ("co-dominant").^[3] Posterior myocardial infarctions can therefore be caused by occlusions in different arteries, dependent on individual anatomy.

Posterior myocardial infarct epidemiology

It is difficult to be sure of the percentage of myocardial infarctions that are posterior because it seems likely that many are missed.^[4] One estimate from a case series is that approximately 3.3% of MIs were isolated posterior infarctions.^[1] The risk factors are the same for any cardiovascular disease, such as smoking, hypertension, diabetes, hyperlipidaemia, etc.

Posterior myocardial infarct symptoms

See the separate [Cardiac-type Chest Pain Presenting in Primary Care](#), [Acute Coronary Syndrome](#) and [Acute Myocardial Infarction](#) articles.^[5]

However, posterior myocardial infarctions may be difficult to diagnose and the diagnosis is thought to be frequently missed or delayed, due to atypical ECG appearances.

Differential diagnosis

See the separate [Acute Coronary Syndrome](#) article. Other causes of similar ECG changes include:

- [Right ventricular hypertrophy](#) can cause large R waves in the early V leads.
- Infarction of the right ventricle is rare but will produce a similar ECG.

Investigations^[4]

Posterior myocardial infarction is difficult to recognise because the leads of the standard 12-lead electrocardiogram are not a direct representation of the area involved. However, abnormalities of depolarisation will cause reciprocal or mirror changes in the anterior leads.

The important leads are V1, 2, 3 – of which V2 is the most important. Possible changes include:

- A tall and slightly wide R wave.
- There may be reciprocal depression of the ST segment but in practice it is often very slight, if at all.
- Prominent, upright T waves.

The diagnosis of posterior myocardial infarction may be facilitated by using the posterior leads V(7) to V(9). Posterior leads can show more typical ECG features, such as ST elevation.

The blood changes of troponins and creatine kinase are as for other areas of myocardial infarction. See the separate [Cardiac Enzymes and Markers for Myocardial Infarction](#) article.

Associated diseases

The inferior wall or the posterior septum may also be involved.

Posterior myocardial infarction treatment and management

General management

See the separate [Acute Coronary Syndrome](#) article.^[5]

Oxygen should be given and rapid transfer to a place where thrombolysis can be given and CPR is readily available.

Pharmacological

Again management is as for any type of myocardial infarction.

Studies on the outcome of posterior myocardial infarction without reciprocal changes in anterior leads and not conforming to the standard indications for thrombolysis have not been done. There is no definitive evidence for thrombolysis in these cases.

Surgical

Coronary angiography with a view to percutaneous transluminal coronary angioplasty (PTCA) or coronary artery bypass grafting (CABG) can be performed as in other myocardial infarction.

Complications

- The risk of ventricular aneurysm, rupture and death may be greater than with myocardial infarctions at other sites.^[6]
- Rupture of chordae tendinae can lead to valve incompetence.
- Rupture of the septum appears to be a special risk with a high mortality despite surgical repair.^[7]

Prognosis

The suggestion that these patients tend to be older and have more risk factors, might account for the higher rate of complications and death in those with a posterior myocardial infarction. Delay in diagnosis may also contribute.^[8]

Prevention

See the separate [Prevention of Cardiovascular Disease](#) article.

Further reading

- [ECG Image Index](#); ECG Learning Center
- [ACC/AHA Clinical Competence in ECG Diagnoses](#); ECG Learning Center
- [True Posterior MI and Right Ventricular MI](#)

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