

## DISEASES OF THE PERICARDIUM

The pericardium limits distension of the heart, contributes to the haemodynamic interdependence of the ventricles, and acts as a barrier to infection.

### ACUTE PERICARDITIS

#### Aetiology

Pericardial inflammation may be due to infection, immunological reaction, trauma or neoplasm and sometimes remains unexplained. Pericarditis and myocarditis often coexist, and all forms of pericarditis may produce a pericardial effusion which, depending on the aetiology, may be fibrinous, serous, haemorrhagic or purulent. A fibrinous exudate may eventually lead to varying degrees of adhesion formation, whereas serous pericarditis often produces a large effusion of turbid, straw-coloured fluid with a high protein content. A haemorrhagic effusion is often due to malignant disease, particularly carcinoma of the breast, carcinoma of the bronchus and lymphoma.

#### AETIOLOGY OF ACUTE PERICARDITIS

##### **Common**

- Acute myocardial infarction
- Viral (e.g. Coxsackie B, but often not identified)

##### **Less common**

- Uraemia
- Malignant disease
- Trauma (e.g. blunt chest injury)
- Connective tissue disease (e.g. SLE)
  
- Rheumatic fever
- Tuberculosis

#### Clinical features

The characteristic pain of pericarditis is retrosternal, radiates to the shoulders and neck and is typically aggravated by deep breathing, movement, a change of position,. A low-grade fever is common.

A pericardial friction rub is a high-pitched superficial scratching or crunching noise produced by movement of the inflamed pericardium, and is diagnostic of pericarditis; it is usually heard in systole

#### Investigations

The ECG shows ST elevation with upward concavity over the affected area, which may be widespread. PR interval depression is a very sensitive indicator of acute pericarditis. Later, there may be T-wave inversion,

particularly if there is a degree of myocarditis.

#### Management

The pain is usually relieved by indometacin (25 mg 8-hourly) may be required. Corticosteroids may suppress symptoms but there is no evidence that they accelerate cure.

In viral pericarditis, recovery usually occurs within a few days or weeks,

### PERICARDIAL EFFUSION

An effusion is difficult to detect clinically; although the heart sounds may become quieter, pericardial friction is not always abolished.

The QRS voltages on the ECG are often reduced in the presence of a large effusion. The QRS complexes may alternate in amplitude due to a to-and-fro motion of the heart within the fluid-filled pericardial sac (electrical alternans). Chest X-rays may show when there is a large effusion the heart a globular or pear-shaped appearance. Echocardiography is the definitive investigation

#### Cardiac tamponade

This term is used to describe acute heart failure due to compression of the heart by a large or rapidly developing effusion. Typical physical findings are of a markedly raised jugular venous pulse, hypotension, pulsus paradoxus and oliguria. Atypical presentations may occur when the effusion is loculated as a result of previous pericarditis or cardiac surgery.

This is due to a collection of fluid or blood in the pericardial sac, compressing the heart; the effusion may be small and is sometimes < 100 mL. Tamponade may complicate any form of pericarditis but can be due to malignant disease. Other causes include trauma and rupture of the free wall of the myocardium following MI.

#### **Clinical features of pericardial tamponade**

- Dyspnoea
- Collapse
- Tachycardia
- Hypotension
- Gross elevation of the JVP
- Soft heart sounds with an early third heart sound
- Pulsus paradoxus (a large fall in BP during inspiration when the pulse may be impalpable)
- Kussmaul's sign (a paradoxical rise in the JVP during inspiration)

An ECG may show features of the underlying disease, such as pericarditis or acute MI. When there is a large pericardial effusion, the ECG complexes are small and there may be electrical alternans: a changing axis with alternate beats caused by the heart swinging from side to side in the pericardial fluid. A chest X-ray shows an

The diagnosis may be confirmed by aspiration of the fluid and direct examination or culture for tubercle bacilli. Treatment requires specific antituberculous chemotherapy; in addition, a 3-month course of prednisolone (initial dose 60 mg a day, tapering down rapidly) has been shown to improve outcome.

## CHRONIC CONSTRICTIVE PERICARDITIS

Constrictive pericarditis is due to progressive thickening, fibrosis and calcification of the pericardium. In effect, the heart is encased in a solid shell and cannot fill properly; the calcification may extend into the myocardium. The condition often follows an attack of tuberculous pericarditis but can also complicate haemopericardium.

### Clinical features

The symptoms and signs of systemic venous congestion are the hallmarks of constrictive pericarditis; atrial fibrillation is common and there is often dramatic ascites and hepatomegaly. Breathlessness is not a prominent symptom because the lungs are seldom congested.

The condition is sometimes overlooked and should be suspected in any patient with unexplained right heart failure and a small heart. A chest X-ray, which may show pericardial calcification, and echocardiography often help to establish the diagnosis. CT and MRI are also useful techniques for imaging the pericardium.

## CLINICAL FEATURES OF CONSTRICTIVE PERICARDITIS

- Fatigue
- Rapid, low-volume pulse
- Elevated jugular venous pulse (JVP) with a rapid y descent
- Kussmaul's sign (a paradoxical rise in the JVP during inspiration)
- Loud early third heart sound or 'pericardial knock'
- Hepatomegaly

- Ascites
- Peripheral oedema
- Pulsus paradoxus (an excessive fall in blood pressure during inspiration), present in some cases

#### Management

Surgical resection of the diseased pericardium can lead to a dramatic improvement but carries a high morbidity