Chapter 17 Pericardial disease

Clinical case 17.1 Chest pain in a young patient

Miss Jones is an otherwise healthy 31-year-old woman who presented to A&E with a 4-day history of severe retrosternal chest pain. The pain was sharp and pleuritic in nature, worse on lying down and improved with sitting forward. There was radiation to the neck and shoulders. The chest pain was constant and not related to exertion. On physical examination, a pericardial friction rub was heard at end-expiration with the patient leaning forward. An ECG was done and other investigations were carried out.

1. What is the working diagnosis from the history given and which features of the presenting complaint and examination point towards this diagnosis? What would you expect to find on the ECG?

*Working diagnosis:* acute pericarditis.

*Features:*
- 4-day history (acute presentation)
- Retrosternal
- Sharp and pleuritic
- Worse on lying down and improved on sitting forward
- Constant and not related to exertion
- Pericardial friction rub at end-expiration with the patient leaning forward

*ECG:* saddle-shaped ST elevation across all leads with PR depressions

*Additional information 1:* During her stay in hospital, Miss Jones spikes a temperature of 39.0°C. A bacterial aetiology is suspected.

2. Given the possibility of pericardial effusion in this condition, the consultant asks you to assess for the presence of cardiac tamponade. What findings would you assess for?

*Sighs of cardiac tamponade include:*
- Beck’s triad: low BP, raised JVP, muffled HS
- Pulsus paradoxus: pulse fades on inspiration
- Kussmaul’s sign: JVP rises on inspiration

*Additional information 2:* All non-invasive investigations carried out so far are negative; there is no sign of cardiac tamponade. It is decided that Miss Jones should undergo a pericardiocentesis for diagnostic purposes.

3. Name two other indications for pericardiocentesis.

- Haemodynamic compromise and cardiac tamponade
- No haemodynamic compromise and effusions >20 mm in diastole on echocardiography

*Additional information 3:* Miss Jones is finally diagnosed with idiopathic disease. She is placed on a higher dose of anti-inflammatory agents and remains as an inpatient to monitor her response and observe for complications.

4. How long should be the duration of her treatment? What complications are you aware of given the diagnosis, and what forms of imaging would diagnose these complications?
Duration: 4 weeks aiming to relieve chest pain and other inflammatory symptoms

**Complications of acute pericarditis:**
- Pericardial effusion
- Cardiac tamponade
- Pericardial constriction
- Recurrent pericarditis

**Imaging:** Imaging with TTE or chest CT can help diagnose complications such as constrictive pericarditis or pericardial effusion

**Additional information 4:** After 2 weeks of maximal therapy with ibuprofen and omeprazole, Miss Jones is still complaining of chest pain.

5. **In what way should her management be changed?**
- If chest pain has not resolved in 2 weeks, a different NSAID for 4 weeks plus colchicine for 3 months should be given
- Colchicine 0.6 mg twice daily for 1–2 days then 0.6 mg once daily
- Switch to either ibuprofen or indomethacin depending on which NSIAD was used initially

**Additional information 5:** Miss Jones is a keen cyclist and she has a competitive marathon coming up in 2 months. She asks you about pursuing her activities.

6. **What should you advise her?**
- Vigorous exercise should not be performed until after her chest pain resolves
- Miss Jones should be temporarily excluded from all competitive and amateur sporting events until after clinical resolution (at least 3 months following clinical presentation)
- Only once there is no clinical evidence of active disease and serum inflammatory markers have normalized can Miss Jones resume her sporting activities

**Clinical case 17.2 An iatrogenic complication**

Mrs Goodacre is a 52-year-old woman who presents to her oncologist with decreased exercise tolerance. She was diagnosed with breast cancer 4 years ago and has undergone radical mastectomy, radiation and aggressive chemotherapy. Despite her treatment, Mrs Goodacre was recently diagnosed with metastatic disease. Today she is anxious and has noticed some bilateral ankle oedema in the past week. On examination she has an elevated JVP, and a decreased apical impulse with a diastolic pericardial knock.

1. **What is the working diagnosis, describing the pathophysiology and aetiology of the disease?**

**Working diagnosis:** constrictive pericarditis

**Pathophysiology:**
- Granulation tissue: may develop during pericardial healing or the resorption of a chronic effusion
- Fibrosis: develops due to ongoing inflammation decreasing pericardial compliance
- Ventricular filling: decreases due to impaired ventricular dilatation against a stiffened pericardium
- Venous congestion: results from back pressure; causes fluid transudation and resulting oedema

**Aetiology:**
- Infection
• Idiopathic
• Previous cardiac surgery
• Mediastinal radiotherapy
• Chronic renal failure

2. What aspects of the history and examination given above lead you towards this diagnosis?

• Heart failure signs and symptoms: decreased exercise tolerance and bilateral ankle oedema
• Elevated JVP
• Decreased apical impulse
• Diastolic pericardial knock
• History predisposing pericardial injury: mediastinal radiation predating clinical presentation by years

Additional information 1: The oncologist sends Mrs Goodacre to have some imaging. A CXR shows pericardial calcifications and cardiac enlargement.

3. What other imaging modalities would this patient benefit from and why?

Transthoracic echocardiogram:
• Allows for direct visualization of the heart and surrounding vessels
• Allows for measurement of the pericardial thickness

CT/MRI heart:
• Allows for accurate measurement of pericardial thickening

4. The oncologist refers Mrs Goodacre to a specialist cardiologist for further management. What treatment options would be available to her?

Medical:
• NSAIDs: can be considered if there is a substantial inflammatory component
• Diuretics: to alleviate congestive symptoms

Interventional:
• Pericardiectomy: definitive treatment for permanent constriction