

3-9 Cardiac tamponade v.1

Caused by an accumulation of blood, pus, effusion fluid or air.

Most commonly seen in context of cardiothoracic surgery, trauma or iatrogenic causes, e.g. central line placement.

START

- 1 Call for help and inform clinical team of problem. Note the time.
- 2 If indicated, start CPR immediately.
- 3 Give 100% oxygen, ventilate and exclude tension pneumothorax:
 - Maintain the airway and, if necessary, secure it with tracheal tube
- 4 Rapid diagnosis and rapid drainage are vital, so:
 - Call for ultrasound machine.
 - Call for pericardiocentesis kit (eg 18G Luer spinal needle + 3-way tap + 20 ml syringe or a purpose made kit).
 - Call for cardiac arrest trolley.
 - Diagnostic features are shown in Box A.
- 5 Consider whether there is time to wait for someone with expertise in pericardiocentesis, or whether thoracotomy is a better treatment option.
- 6 Consider the following temporising measures:
 - Fluid bolus (Adult: 500 - 1000 ml, Child: 20 ml.kg⁻¹).
 - Inotropic drugs.
 - Low tidal volume, low/no PEEP ventilation strategy.
- 7 If clinically indicated, perform pericardiocentesis (Box B).
- 8 After pericardiocentesis, re-assess using ultrasound examination and vital signs.
- 9 Reassess continually in case tamponade recurs.
- 10 Plan definitive management of underlying cause, including specialist referral.
- 11 Plan transfer of the patient to an appropriate critical care area.

Box A: DIAGNOSTIC FEATURES

- **ULTRASOUND DIAGNOSIS IS THE PREFERRED TECHNIQUE**
- Unexplained dyspnoea/tachypnoea and agitation if conscious
- At least one of 'Beck's Triad':
 - Jugular venous distension
 - Muffled heart sounds
 - Hypotension
- Other signs: Pulsus paradoxus; ECG → low voltage QRS / electrical alternans / pulseless electrical activity; chest X-ray → enlarged cardiac silhouette

Box B: EMERGENCY PERICARDIOCENTESIS (sub-xiphoid approach)

ULTRASOUND GUIDANCE IS THE PREFERRED TECHNIQUE

WARNING: Myocardial rupture, aortic dissection and severe bleeding disorder are *relative* contraindications.

- Identify tip of xiphoid
- Prep and drape overlying skin
- Infiltrate local anaesthetic (if necessary and if time)
- Ideally use ultrasound to identify pericardial fluid
- Insert pericardiocentesis needle immediately to left of tip of xiphoid
- Attach 3-way tap and 20 ml syringe
- Direct needle generally toward left shoulder but using ultrasound to direct needle toward the largest pericardial collection
- Aspirate and drain – aspiration of a small volume may cause a dramatic clinical improvement

Box C: CRITICAL CHANGES

Cardiac arrest → **1-A**