The QRS width is less than three small squares so is not broad or prolonged.

5 Is atrial activity (P waves) present?

P waves are not present.

6 How is atrial activity related to ventricular activity?

There is no obvious atrial activity.

This rhythm is a narrow complex tachycardia. It originates above the ventricles, is identified by narrow QRS complexes and is classed as a supraventricular tachycardia. The absence of any obvious atrial activity and the slight irregularity of the QRS may lead clinicians to suspect atrial fibrillation. Diagnosis requires a 12-lead ECG. Causes of narrow complex tachycardia include cardiac ischaemia and digoxin toxicity (Box 3).

Patients should be observed for adverse signs and assessed using the airway, breathing, circulation, disability, exposure (ABCDE) framework (Resuscitation Council (UK), 2011). The Resuscitation Council (UK) (2010b) has produced guidelines for managing tachyarrhythmia but specific diagnosis should only be made using a 12-lead ECG. Basic ECG analysis is aided by the structured, six-step approach but specific diagnosis should be undertaken by senior clinicians only. Senior medical review is still required if no adverse signs are present as patients may deteriorate over time.

Rhythm strip 4

1 Is electrical activity present?

There is no electrical activity present.

Proceeding to the other steps is futile as this rhythm strip represents asystole, meaning the patient is in cardiac arrest. Cardiac arrest should be confirmed and immediate resuscitative measures commenced in line with the Resuscitation Council (UK) (2004) algorithm for adult advanced life support.

Asystole and cardiac arrest can be caused by hypoxia, tension pneumothorax and cardiac tamponade (Box 4). Identifying the cause of the asystolic rhythm is integral to resuscitation management.

Conclusion

Cardiac arrhythmias are common signs of acute and chronic illness. They can have subtle or extremely serious effects. Basic ECG analysis is aided by the structured, six-step approach but specific diagnosis should only be made using a 12-lead ECG. While the aetiology of cardiac arrhythmias can be multifactorial, the common causes should be considered and treated first.

The patient should be assessed using the ABCDE framework to identify adverse signs of cardiac arrhythmias; treatment should be initiated accordingly. NT

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References


Digoxin can cause ventricular fibrillation

BOX 2. VENTRICULAR FIBRILLATION CAUSES

- Acute coronary syndromes
- Hypertensive heart disease
- Valve disease
- Drugs, such as antiarrhythmics, tricyclic antidepressants or digoxin
- Inherited cardiac diseases
- Acidosis
- Abnormal electrolyte concentrations, for example of potassium, magnesium and calcium
- Hypothermia
- Electrocutation

Source: Resuscitation Council (UK) (2011)

Digoxin Tablets 125mg Each tablet contains 125mg of Digoxin.

BOX 3. NARROW COMPLEX TACHYCARDIA CAUSES

- Cardiac ischaemia
- Digoxin toxicity
- Re-entry conduction pathways
- Electrolyte/metabolic imbalance
- Acidosis

Source: Resuscitation Council (UK) (2011)

Digoxin can cause ventricular fibrillation

BOX 4. ASYSTOLE AND CARDIAC ARREST CAUSES

- Hypoxia
- Hypovolaemia
- Hypothermia
- Hypo/hyperkalemia or other electrolyte or metabolic imbalance
- Tension pneumothorax
- Cardiac tamponade
- Toxicity (poisoning)
- A thromboembolic event

Source: Resuscitation Council (UK) (2011)