

ECG ABNORMALITIES • 1/3

SINUS TACHYCARDIA

Recognition and assessment

- Sinus rhythm (P wave precedes every QRS complex) with a heart rate above normal limit for age and gestation

Causes

- Fever
- Infection
- Low haemoglobin
- Pain
- Prematurity
- Hypovolaemia
- Hyperthyroidism
- Myocarditis
- Drugs (e.g. caffeine and salbutamol)

Management

- Treat the cause
- If myocarditis suspected – echocardiogram

SINUS BRADYCARDIA

Recognition and assessment

- Sinus rhythm (P wave precedes every QRS complex) with a heart rate below normal limit for age and gestation

Differential diagnosis

- Hypoxia (most likely cause)
- Vagal stimulation
- Post-intubation
- Hypovolaemia
- Hypothermia
- Metabolic derangement
- Hypopituitarism
- Obstructive jaundice
- Drugs passed from mother to baby (labetalol)
- Maternal SLE

Immediate management

- Manage airway and breathing
- If intubation required, optimise ETT position
- If bradycardia occurs post-intubation, use atropine (see **Neonatal Formulary**)
- Correct hypovolaemia
- Correct metabolic derangement
- If persistent, obtain 12-lead ECG
- Evaluate and treat underlying cause

PREMATURE ATRIAL BEAT

Recognition and assessment

- Most common form of arrhythmia
- In a regular sinus rhythm at a normal rate, a P wave occurring before next expected P wave is a premature atrial beat
- Usually has a different morphology (P wave different in shape and size to normal P wave)
- Most premature atrial beats are benign

Management

- 12-lead ECG
- Follow-up ECG aged 1 month (small risk of SVT)
- if premature atrial contractions persist, seek cardiology advice

ECG ABNORMALITIES • 2/3

PREMATURE VENTRICULAR BEAT

Recognition and assessment

- Premature abnormal QRS complex not preceded by a premature P wave

Investigations

- 12-lead ECG
- Measure QTc interval on ECG during period of sinus rhythm
- Echocardiogram to rule out structural abnormality of heart

Immediate treatment

- Seek advice from paediatric cardiologist

SUPRAVENTRICULAR TACHYCARDIA

Recognition and assessment

- Rapid regular tachyarrhythmia
- Heart rate >230 bpm
- ECG:
 - P waves commonly absent. When present they almost always have an abnormal morphology
 - narrow QRS complex
 - in fast sinus tachycardia, P waves can be very difficult to see
 - look for delta waves consistent with Wolff-Parkinson-White syndrome as this can affect the choice of anti-arrhythmic agent used
- For further information see **Supraventricular tachycardia** guideline

VENTRICULAR TACHYCARDIA

Recognition and assessment

- Heart rate >200 bpm
- Wide QRS complexes
- ≥ 3 repetitive complexes

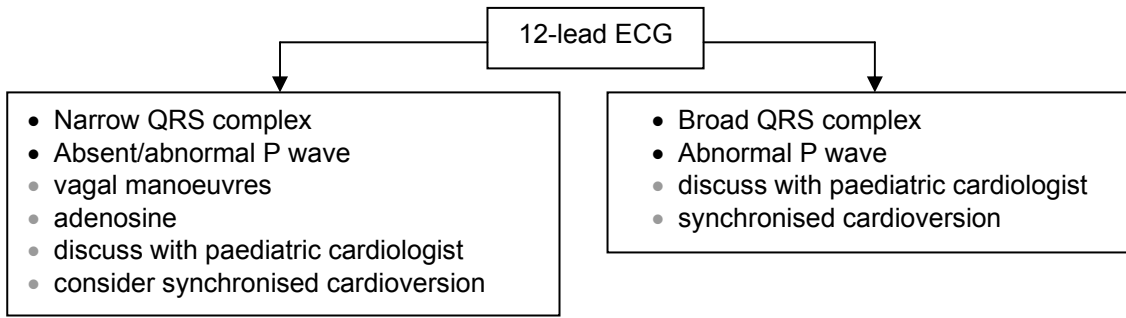
Immediate management

- Manage airway and breathing
- Correct hypoxia
- Correct electrolyte disturbance
- Discuss with paediatric cardiology centre
- Consider synchronised cardioversion (in very fast heart rates, defibrillators cannot synchronise with the patient and unsynchronised will be required) if intubated, with analgesia
- Amiodarone 5 mg/kg over 30 min IV (repeat if necessary)
- If no response, lidocaine 0.5–1 mg/kg IV. May be repeated after 5 min. Maximum cumulative dose 3 mg/kg

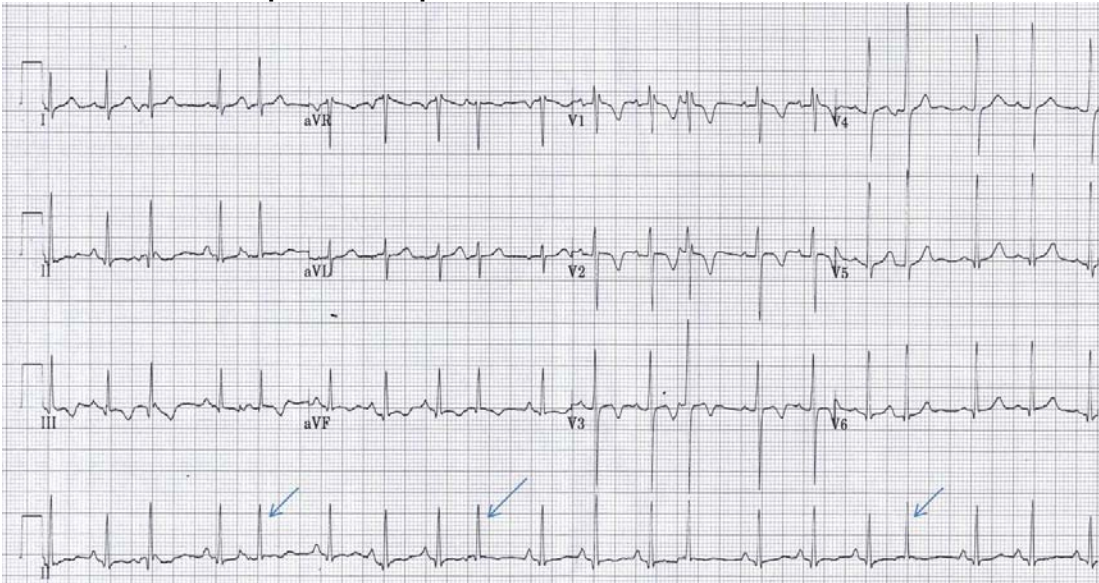
TACHYARRHYTHMIA

- True heart rate?
- Is baby crying/in pain?
- Check airway and breathing
- Check saturation
- Consider arterial/capillary gas
- Check perfusion
- Check blood pressure
- Manage airway and breathing
- Correct hypoxia
- Correct electrolyte disturbance

ECG ABNORMALITIES • 3/3



Premature atrial complexes with pauses



Premature ventricular complex



Supraventricular tachycardia

