

## Supraventricular Tachycardia Management in Paediatric Accident Emergency

### Definition

Supraventricular tachycardia is a narrow complex tachycardia.

Typical features

- Heart rate >220
- Narrow complex, regular tachycardia (no beat by beat variability)
- p waves before every QRS complex( may be buried within it)
- Infants may present in Heart failure if tachycardia is persistent.

### Assessment at Triage

#### Symptoms

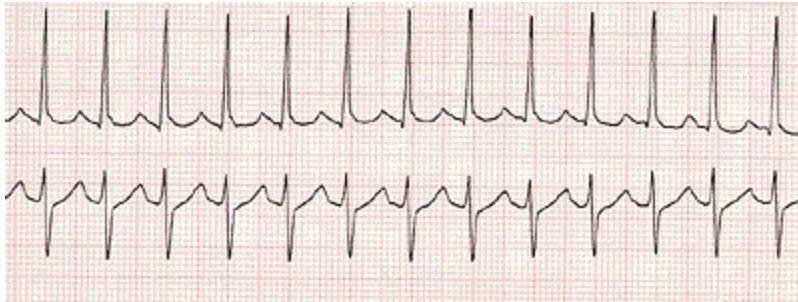
- Infants - pallor, dyspnoea, poor feeding.
- Older children - palpitations , chest discomfort

#### Clinical Assessment and action

- Airway (If sats less than 92%-95% apply oxygen 10 litres / min by face mask)
- Breathing
- Circulation
  - Assess for signs of cardiogenic shock ♣ Prolonged CRT ♣ Low BP ♣ Acidotic Blood Gas ♣ Gallop rhythm ♣ Enlarged liver
  - ECG strip and 12 lead ECG
- Disability Agitation, confusion
- Exposure o Rule out other causes of presentation (as above)
- Electrolytes Check electrolytes (including Mg, PO4, Ca, K), Consider Cardiac enzymes-Troponin, CK, TFTs
- Check drug levels (if ingestion or Digoxin)
- Infection – can be a sign of myocarditis
  - ( Consider antibiotics in neonates)
- Indication for echo- signs of poor ventricular function

## Investigations

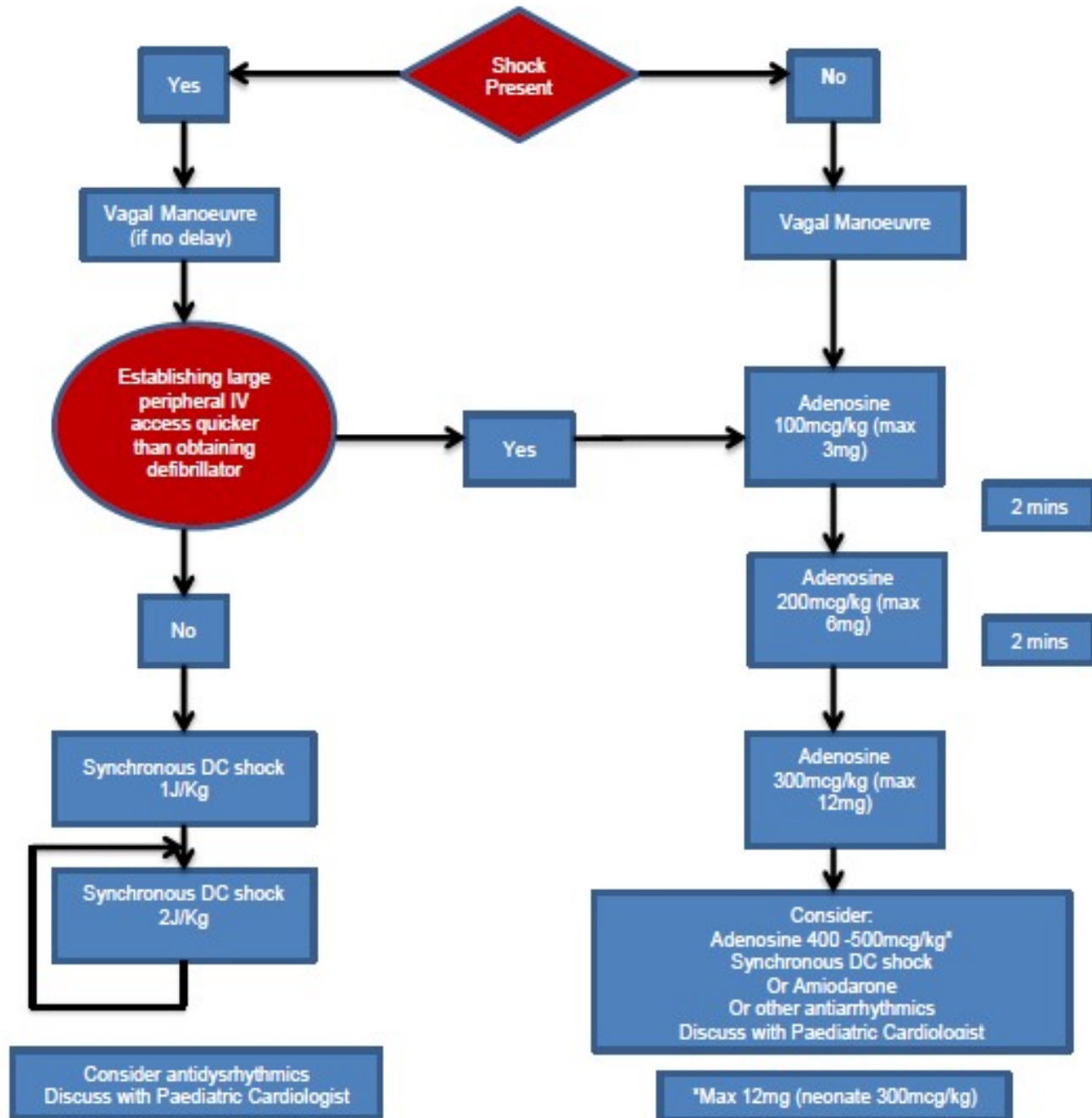
12 lead ECG showing regular narrow complex tachycardia.



## Management:

- Immediate management
- If child is not shocked treat with vagal manoeuvres
- If unsuccessful intravenous adenosine
  - ✓ Diving reflex eliciting by wrapping and dunking in ice bucket
  - ✓ Valsalva manoeuvre in older child
- Follow APLS algorithm below
  - Transfer to HDU or Resus room
  - Call for more senior help
  - Monitor with continuous ECG trace and frequent measurements of blood pressure
  - If child is shocked (ie. hypotensive, poor peripheral perfusion, impaired mental state) proceed to direct current cardioversion (see below)
  - Involve paediatric cardiologist Dr Alison Groves/Dr Tosin Otunla/ Royal Brompton hospital/ Consider involving STRS

## APLS ALGORITHM



**IF ADENOSINE FAILS, DISCUSS WITH PAEDIATRIC CARDIOLOGIST.**

**Further options: Consider whether cardiac dysfunction is present**

Amiodarone has a negative inotropic effect and may compromise cardiovascular state.

Amiodarone infusion, usually start at 25mcg/kg/min for 4 hours and then reduce to 10-15mcg/kg/min

If no cardiac dysfunction: Amiodarone bolus 5 mg/kg over 20 minutes, followed by repeat chemical cardioversion with adenosine if SVT persistent +/- elective DC cardioversion under GA.

**IF DC SHOCK REQUIRED, (rare)**

Indicated in shock when not responding to Adenosine up to 500mcg/kg

12 mg maximum plus other anti-arrhythmics as advised

Young children/infants sedation is usually adequate

Older children/ teenagers will probably require a GA

NB myocarditis and hypotension will affect the choice of induction agent

Start at 1 J/kg and increase to 2J/kg if no response

References:

APLS 5th edition 2010 <https://www.resus.org.uk/resuscitation-guidelines/paediatric-advanced-life-support/SVT>

[http://site.cats.nhs.uk/wp-content/uploads/2016/01/cats\\_svt\\_2015.pdf](http://site.cats.nhs.uk/wp-content/uploads/2016/01/cats_svt_2015.pdf)

(Clinical Guidelines; Supraventricular Tachycardia Children's Acute Transport Service NHS Trust)

<http://www.strs.nhs.uk/resources/pdf/guidelines/arrythmias.pdf> (Clinica Guidelines;  
Supraventricular Tachycardia, STRS)

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*Reviewed: 9<sup>th</sup> December 2019 (Dr Groves)*

*Next Review: December 2022*