



Clinical Guidelines

Supraventricular Tachycardia

Document Control Information

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Supraventricular Tachycardia

Initial management

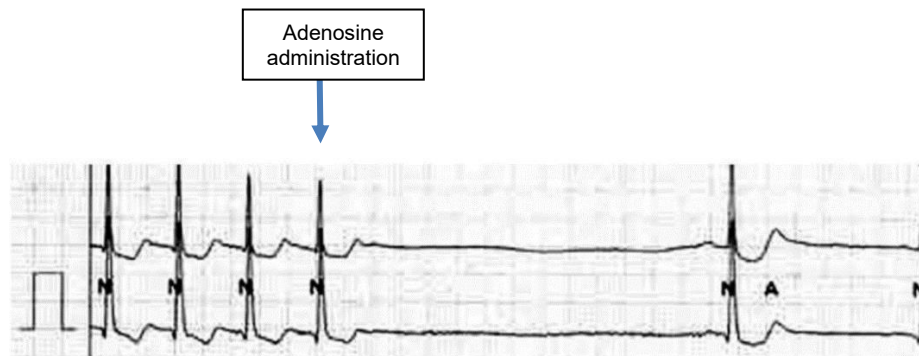
- Ensure airway protection and respiratory support as required.
- Assess for signs of cardiogenic shock such as prolonged CRT, enlarged liver, gallop rhythm, hypotension, acidosis and high lactate.
- 12 lead ECG is *mandatory* - during tachyarrhythmia and especially while giving any treatment as it could be helpful for understanding the underlying cause later.
- Early discussion with cardiology and CATS.
- Early IV access: ideally insert 2 IV cannulas: the largest possible size in a large proximal vein e.g. antecubital fossa. If unsuccessful: consider IO.
- Bloods: send FBC, biochemistry including renal and thyroid function, monitor electrolytes (including Mg, PO₄, Ca, K).
- Treat fever and electrolytes disturbances (aim for iCa >1.0, K >4.0, Mg >1.0)
- Rule out other causes for presentation
- Monitor drug levels, e.g. theophylline and digoxin.
- Consider antibiotics.

Emergency treatment for SVT

- **Patient haemodynamically unstable** – synchronised cardioversion is recommended (see below) with appropriate sedation + analgesia – IV access attempts must not delay cardioversion.
- **Patient haemodynamically stable** –
 - **Vagal maneuvers** (this should not delay the adenosine administration)
 - Diving reflex: apply facecloth soaked in ice cold water to face for 30 seconds.
 - One-sided carotid sinus massage.
 - In older children: valsalva maneuvers, e.g. blowing through a syringe, ideally in supine position with passive leg rise.
 - **Adenosine IV.**
 - Run ECG strip recorder *before, during and after* adenosine administration.
 - Depression of sinoatrial node function is to be expected but prolonged bradycardia is unusual (see example ECG below).

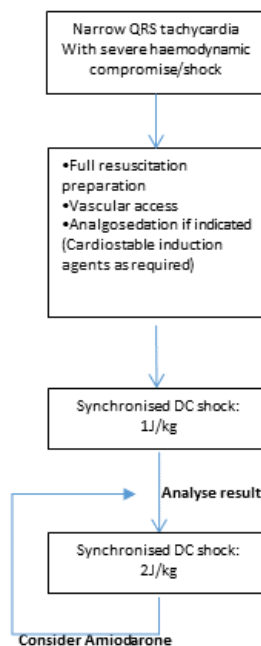


- Give as a rapid bolus followed by a rapid saline flush using a 3-way tap.
- Adenosine has a very short plasma half-life (8-10 secs). Thus, repeat administration is safe within 1 minute of last dose.
- Adenosine can cause hypotension, chest tightness, facial flushing and bronchospasm – should be given with caution in asthmatic patients.
- **Dosing:** starting dose: 150 mcg/kg (max 12mg). Increase following doses by 50-100 mcg/kg each time, up to a maximum of 500 mcg/kg (300 mcg/kg for under 1 month of age) (max dose 12mg).



• Cardioversion

- Indicated in refractory SVT or haemodynamic instability.
- Make sure the defibrillator is on “synchronised” mode.
- Involve anaesthesia – for procedural sedation and analgesia +/- airway management.
- **Dosing:** 1st shock of 1 J/kg, followed by 2J/kg. Subsequent attempts could be increased up to 4J/kg after discussion with cardiology.



Alternative anti-arrhythmic drugs include beta-blockers (propranolol, esmolol, etc.), flecainide



and amiodarone. Each of these medications has specific side effects and contraindications and should only be used after discussion with a Paediatric Cardiologist.

- **Amiodarone**

- Negative inotropic effect. Can cause significant vasodilation and arterial hypotension if rapid administration. - ***The use of a rapid bolus or a loading dose over a 20–30-minute period is strongly discouraged due to the high risk of cardiac arrest.***
- **Dosing:** Loading dose in < 50kg: 25mcg/kg/min over 4 hours; for those ≥ 50kg: 300mg over 4hrs. Then the infusion should be reduced to maintenance dose: 10-15mcg/kg/min (max: 37.5mg/hour).
- This loading dose is a slower infusion than the recommendation in BNFc.
- Suggested concentration, via peripheral line: 100mg in 50ml of Glucose 5% running at 0.75 ml/kg/hr (= 25 mcg/kg/min) for 4 hours and then drop to 0.15 ml/kg/hr (= 5 mcg/kg/min).
- The half-life after a single I.V. dose is 20 to 47 days.
- Adverse effects include chemical hepatitis, worsening sinus node dysfunction, thyroid dysfunction (hypo or hyper), and pulmonary fibrosis (long-term use).

Indication for intubation

- Consider in adenosine resistant SVT if need for DC cardioversion.
- Cardiogenic shock.
- Impending cardiorespiratory collapse.

Approach for intubation

- Induction drugs with minimal cardiovascular effects are preferable, e.g. fentanyl or ketamine.
- Vasoactive agents should be previously prepared and attached in case of potential deterioration during/post-intubation. Be aware that vasoactive drugs may precipitate further dysrhythmias - discuss use with CATS consultant.
- Ensure adequate filling – give cautious fluid boluses of 5-10ml/kg with balanced isotonic crystalloid and reassess carefully after each bolus.
- Continuous capnography is mandatory to confirm ETT placement and monitoring the ventilatory support and cardiac output. ETT position should still be confirmed with CXR.
- Continue to liaise with the paediatric cardiologist.

Intractable SVT

If SVT is intractable and associated with severe acidosis, consider transport to an ECMO centre for further support (discuss with CATS and ECMO consultants).



References

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