SVT

Causes & Triggers

Usually none found but consider:

- Acute illness: infection, hyperthyroidism, PE, hypovolaemia
- Cardiac: abnormalities of conduction system, ischaemic heart disease, pericarditis / myocarditis, alcohol, mitral valve disease, post cardiac surgery
- Drugs: B2 agonists, antiarrhythmics, digoxin toxicity, tricyclics, lithium, cocaine, MDMA, amphetamines – see toxbase
- Metabolic: high or low K or Ca, hypoxia, high CO_2, acidosis, high or low temp

Anti-arrhythmics – cautions & contra-indications:

B-blockers and Ca channel blockers should not be used together

Adenosine: acute bronchospasm, dypyridamole, carbamazepine

Amiodarone: Sino-atrial block and conduction disturbances, severe hypotension, thyroid disease, CCF, pregnancy & breast-feeding.

B-blockers: acute bronchospasm, uncontrolled heart failure, sick sinus syndrome, AV block,

Ca channel blockers: heart failure, hypotension, sick sinus syndrome, heart block, AF with WPW, VT, pregnancy & breast-feeding

Classification of SVT

SVT usually produces a regular narrow complex tachycardia. P waves may not be visible, but if seen may give a clue as to the origin of the SVT:

AVNRT (AV nodal reentry tachycardia):	Accessory pathway within AV node. May see pseudo R in V1, or pseudo S in II, III, aVF. RP shorter than PR
AVRT (AV reentry tachycardia):	Accessory pathway outside AV node (WPW). May see delta wave on resting ECG. Retrograde P waves may be seen in the ST segment. RP shorter than PR.
Junctional tachycardia:	Retrograde P waves before, during or after QRS. P usually inverted in II, III, aVF and upright in aVR, V1
Atrial tachycardia:	Trigger within the atria but outside SA node, AV node or accessory pathway. P waves abnormal morphology. Isoelectric baseline seen between P waves (cf atrial flutter). P waves onften inverted in II, III, aVF. RP longer than PR (cf AVRT, AVNRT)

Summary of Treatment Response

Cardioversion achieved by vagal manouevres, adenosine or DC shock. Rate control achieved with B blockers or verapamil

AVNRT and AVRT may cardiovert with vagal manouevres, adenosine, verapamil or DC shock. B blockers will slow rate

Junctional and atrial tachycardia will not cardiovert with vagal or adenosine, but usually respond to DC shock. Atrial tachycardias respond better to b blockers than Ca blockers

If broad complex – exit pathway, follow ALS protocol

Investigations: FBC & VBG (all), HCG, TFT (if first presentation) & CXR (only if clinically indicated); additional tests if condition requires

Are there signs of shock or acute pulmonary oedema?

Caution: compromise **due** to SVT is rare if structurally normal heart. Consider underlying cause and treat as appropriate eg sepsis

No

Vagal Manouevres

- Valsalva eg blow into syringe
- Carotid sinus massage

Arrhythmia terminated?

No

Adenosine

- 6 mg iv rapid bolus followed by 20 mL rapid 0.9% saline flush
- If unsuccessful, repeat with 12 mg then 18 mg

Arrhythmia terminated?

No

Discuss with ED Senior / Cardiologist

Consider:

1. Metoprolol 5 – 10 mg iv or Esmolol 5 – 10 mg iv

OR

2. Verapamil 5 mg iv (**do not use both**)

Giving with iv calcium chloride 300 mg (3 mL of 10%) or calcium gluconate 1 g (10 mL of 10%) slow iv push 2 minutes before verapamil can offset hypotension in patients with borderline BP

3. Amiodarone 300 mg over 1 hour (only if patient has intercurrent critical illness – interferes with subsequent electrophysiological studies)

4. Consider DC Cardioversion

CAUTION
WPW with AF
Do not use AV node blocking drugs

SENIOR ADVICE
Consider:
DC shock (first line)
Amiodarone
Flecainide

Yes

Synchronised DC Cardioversion

- Senior Dr to review
- Procedural sedation (RSI not essential)
- Synchronised DC shock:

150J biphasic

(consider 100J eg frail, elderly)

Arrhythmia terminated?

Yes

No

Discuss with Cardiologist

Electrophysiology SpR at Barts:
07810 878 2395

Cardiology SpR NUH in hours:
bleep **148**

Consider:

- Adenosine
- Overdrive pacing
- Chemical cardioversion

Discharge Criteria:

No signs ACS or LVF, full recovery post sedation

Follow up: Refer to Rapid Access Heart Rhythm Clinic at Barts Hospital:
fax referral form and a copy of the **ECGs** and **discharge summary** to **0203 465 5769**
Barts Hospital is located in West Smithfield, EC1A 7BE. Nearest tube is St Pauls or Barbican. Enquiries **0203 465 6767**

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Lead Author

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Co-Authors / Collaborators

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Reference Documents

Use of calcium with verapamil in the management of supraventricular tachyarrhythmias; *Weiss et al; International Journal of Cardiology; October 1983*
Treatment of atrial arrhythmias: effectiveness of verapamil when preceded by calcium infusion; *Jacob et al; Archives Internal Medicine; 1986*
Administration of intravenous calcium before verapamil to prevent hypotension in elderly patients with paroxysmal supraventricular tachycardia; *Miyagawi et al; Journal of Cardiovascular Pharmacology; August 1993*
ALS 2010 Resuscitation Guidelines