## SUPRAVENTRICULAR TACHYCARDIA

### Epidemiology

- In 2% patients following MI

### Aetiology

- 60% due to AVN re-entry, 30% accessory pathways (especially <5yrs), 10% sino-atrial/intra-atrial
- Other causes: RHD, pericarditis, MI, MVP; alcohol, caffeine, stimulants, hypokalaemia, pregnancy, cannabis

### Assessment

- **History:** chest tightness (common; doesn’t indicate ischaemia unless onset before palpitations, severe, persists after reversion or associated with STE/TWI)
- **Examination:** for cause; careful re-examination after reversion to detect signs of structural disease
- **Investigations:** usually not needed in young person with recurrent SVT; CXR, U+E, FBC, TFT, cardiac biomarkers

### ECG

- **AVNRT:** 150-250bpm; usually not diseased heart; microreentry; precipitated by ectopic atrial beat being conducted down abnormal pathway; responds to adenosine; rate >220 suggests accessory pathway; P wave may be evident at end of QRS in up to 30%; ST elevation in aVR (70% sensitive and specific for accessory pathway); ST depression common and does not mean ischaemia (suggest ETT to Ix); ST changes may persist for days after reversion; electrical alternans – in 10-20%; lack of HR variability
- **AVRT (orthodromic):** less common; macroreentry; responds to adenosine; difficult to distinguish from AVNRT; associated with WPW and Lown-Ganong-Levine syndrome

### Complications

- Syncope, CCF

### Management

- **Vagal manoeuvres:** try 1 before using drugs; revert 30%
  - Carotid sinus massage contraindicated if: >75yrs, carotid bruit on either side, sick sinus syndrome, carotid sinus syndrome; may cause prolonged AV block if on digoxin
- **Adenosine:** 6, 12, 18 (0.1mg/kg, 0.2mg/kg, 0.3mg/kg) rapid with flush; 3mg if CVL
  - **Pathophysiology:** shortens atrial AP, decreases effective refractory period, stimulates carotid body chemoreceptors; blocks SAN and AVN
  - **Indication:** best if BP <100 / CCF / <2yrs
  - **Effect:** reverts 90%; 15% recur; less effective with HR >175
  - **Side Effects:** in 30%; usually <30secs; weird feelings; bronchoconstriction; transient sinus arrest >4secs in 5%; bifascicular block, complete heart block; ventricular ectopy; non-sustained VT
  - **Contraindications:** when additional SNS stimulation (eg. Sympathomimetics, aortic dissection, ICH, APO), WPW, sick sinus syndrome, 2nd/3rd degree HB, long QT syndrome, decompensated heart failure, asthma, drug induced
  - **Interactions:** decrease adenosine dose if dipyridamole, carbamazepine, theophylline, caffeine
- **Verapamil:** 5mg IV slowly → repeat if needed
  - **Indication:** Use if OK BP (will decrease SBP by 20; can be prevented with 10% calcium gluconate first), no CCF, >2yrs
  - **Effect:** 5mg IV 80% reversion; 10mg IV 95% reversion; less effective with HR >175
  - **Contraindications:** <1yr age
- **Flecainide:** 2mg/kg over 30-45mins → asystole after 1-3mins; must have structurally normal heart
- **IV diltiazem** not available in NZ; **beta-blockers** especially if thyrotoxicosis suspected
- **Electrical:** synchronised; 20-100J (0.5J/kg)
- **Radio-frequency ablation:** decreases recurrences <1yr from 60% → 5%; 1-2% risk of complete heart block