BSH Heart Failure Nurse and Healthcare Professional Study Day 2017

Presentation title: Malignant Arrhythmias

Speaker: Derek Connelly

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MALIGNANT ARRHYTHMIAS

British Society for Heart Failure
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JL  ♂  age 68

- LVSD, prior CABG
- ICD implant for sustained VT
- Shocks from ICD – commenced on sotalol
- Further shocks – sotalol dose increased
- Admitted to local DGH with multiple shocks
Vent rate 54 bpm
PR interval 182 ms
QRS duration 134 ms
QT/QTc 652/610 ms
P-R-T axes 25 53 95

Unconfirmed

Sinus bradycardia with frequent premature ventricular complexes
Non-specific intraventricular block
Inferior infarct, age undetermined
Anterolateral infarct, age undetermined
Abnormal RCG
AD  ♂  Age 54

- Inferolateral STEMI age 29
- ICD implant for sustained VT 2010
- Further VT
  - Antitachycardia pacing initially successful
  - Recent failed ATP requiring shocks
  - Slow VT 120/min (500 ms)
  - On amiodarone + carvedilol
- Transferred to regional cardiac centre having had >60 shocks recently
AD  
♂  
Age 54

- ATP programming had been left on “nominal” settings
  - Commencing at 80% of tachycardia cycle length, 3 bursts, 10ms decrement between bursts
  - For VT at 500ms, ATP delivered at 400ms (150/min) then 390 then 380ms
- VT terminated by “manual burst” of ATP at 280ms (213/min, 56% of TCL)
AD ♂  Age 54

- ATP settings reprogrammed
- First burst at 60% of TCL
  - For VT at 500ms, burst at 300ms (200/min)
  - Decrements of 20ms
  - Second burst at 280ms, third (if required) at 260ms
  - Condition stabilised
- But still having daily episodes of VT requiring ATP
- Urgent VT ablation (Dr G A Wright)
VANISH trial

- VT ablation v escalation of antiarrhythmic drugs
- 259 patients
  - Ablation in 132
  - ↑ AA drugs in 127
- Results stratified for prior amiodarone use

KT  ♂  Age 25

- January 2014 - Sudden onset dyspnoea and palpitation
- Admitted to local DGH *in extremis*
- ECG:
Atrial fibrillation with rapid ventricular response with premature ventricular or abnormally conducted complexes.

Left atrial deviation.

Right bundle branch block.

Voltage criteria for left ventricular hypertrophy.

Inferior infarct, age undetermined.

Marked T wave abnormality, consider lateral ischemia.

Absent RCD.
Pathway Block During RFA
JH  女  Age 43

- Hypertrophic cardiomyopathy
- Underwent primary prevention ICD implant
- Subsequent shocks for sustained monomorphic VT 170-180/min
- Multiple shocks for AF with ventricular rate 180-200/min
- What are the options?
MT  ♀  age 45

- Hypertrophic cardiomyopathy; atrial flutter & fibrillation
- Severe symptoms in AF / A FI
- Controlled on amiodarone
- Admitted to local hospital with wide QRS tachycardia
Specific QRS Morphologies
Tachycardia of RBBB pattern

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Wellens, Bar & Lie *Am J Med* 1978, **64**: 27-33
Specific QRS Morphologies

Tachycardia of LBBB pattern

- Criteria for Ventricular Tachycardia:
  - R in V1 or V2 > 30 ms duration
  - Any Q in V6
  - > 60 ms from QRS onset to S nadir in V1 or V2
  - Notched downstroke S in V1 or V2

Specific QRS Morphologies

- Absence of any RS complex in chest leads is highly specific for diagnosis of VT
- If an RS complex is present, an RS interval of >100 ms is highly specific for VT
- New criteria used in algorithm and 554 tachycardias analysed (384 VT, 170 SVT)
  - Sensitivity 0.987, specificity 0.965

Brugada et al *Circulation* 1991; 83: 1649-59
Brugada Algorithm

- VT with Aberrant conduction
- Morphology criteria for VT in V1-2 and V6?
- AV Dissociation?
- RS interval >100 ms in one precordial lead?
- Absence of an RS Complex in all Precordial leads?
SH  Age 3

- June 2012 – “pneumonia” with pleural effusion
- Noted to have “sinus tachycardia” 180/min
- Severe dyspnoea September 2012
  - Transferred as emergency from home (Shetlands) to Aberdeen, then Edinburgh, then RHSC Glasgow
  - Emergency ablation at weekend
16-year-old boy with severe heart failure
Incessant atrial tachycardia
Post-ablation LV function returned to normal
74 year old male
- Light-headedness & blurring of vision
- Decides to visit optician
- 74 year old male
- Light-headedness & blurring of vision
- Decides to visit optician
Conclusions

- Get the diagnosis right
  - ECG interpretation

- Consider all appropriate modalities of treatment:
  - Rx of underlying condition
  - Antiarrhythmic drugs
    - Beware pro-arrhythmia
  - Devices
    - And appropriate programming of devices
  - Ablation
  - (IABP, VAD, ECMO, transplant)