Management of Acute Arrhythmias 2017

Royal College of Physicians & Society of Physicians in Wales

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Dr. Peter O’Callaghan
Consultant Cardiologist & Hon Senior Lecturer
Excellent
Clear

ESC Clinical Practice Guidelines
Atrial Fibrillation 2016 (Management of)

Despite good progress in the management of patients with atrial fibrillation (AF), this arrhythmia remains one of the major causes of stroke, heart failure, sudden death, and cardiovascular morbidity in the world. These 2016 Atrial Fibrillation Guidelines are based on the current state of the art evidence in 2016.
Case 1
Case 1

72 year old man, remote Hx MI (2010), Chronic HF on ACE I, beta blocker, spironolactone. P/C palpitations. O/E BP 110/70mmHg, cold & clammy. Chest is clear.
How Will you Manage the Patient?

72 year old man, remote Hx MI (2010), Chronic HF on ACE I, beta blocker, spironolactone. P/C palpitations. O/E BP 110/70mmHg, cold & clammy. Chest is clear.

1. Contact anaesthetic team and request emergency DCCV
2. Insert central line, give amiodarone bolus followed by IV amiodarone (1.2g/24 hours)
3. Give IV adenosine
4. Transfer to CCU for cardiac monitoring
**Figure 1. Adult tachycardia (with pulse) algorithm**

- **Synchronised DC Shock**
  - Up to 3 attempts
  - Seek expert help
  - Amiodarone 300 mg IV over 10-20 min
  - Repeat shock
  - Then give amiodarone 900 mg over 24 h

- **Assess using the ABCDE approach**
  - Monitor SpO₂ and give oxygen if hypoxic
  - Monitor ECG and BP, and record 12-lead ECG
  - Obtain IV access
  - Identify and treat reversible causes (e.g. electrolyte abnormalities)

- **Adverse features?**
  - Shock
  - Syncope
  - Myocardial ischaemia
  - Heart failure

- **Is QRS narrow (< 0.12 s)?**
  - No - Stable
  - Narrow QRS
    - Regular
      - Sinus rhythm achieved?
        - Yes: Probable re-entry paroxysmal SVT
          - Record 12-lead ECG in sinus rhythm
          - If SVT recurs treat again and consider anti-arrhythmic prophylaxis
        - No: Seek expert help
          - Possible atrial flutter:
            - Control rate (e.g. with beta-blocker)
    - Irregular
      - Probable AF:
        - Control rate with beta-blocker or diltiazem
        - If in heart failure consider digoxin or amiodarone
        - Assess thromboembolic risk and consider anticoagulation

- **Broad QRS**
  - Is QRS regular?
    - Irregular: Seek expert help
      - Possibilities include:
        - AF with bundle branch block treat as for narrow complex
        - Pre-excited AF consider amiodarone
    - Regular: If VT (or uncertain rhythm):
      - Amiodarone 300 mg IV over 20-60 min then 900 mg over 24 h
      - If known to be SVT with bundle branch block:
        - Treat as for regular narrow-complex tachycardia
**Treatment options**

Depending on the nature of the underlying arrhythmia and clinical status of the patient (in particular the presence or absence of adverse features) immediate treatment options can be categorised under four headings:

1. No treatment needed
2. Simple clinical intervention (e.g. vagal manoeuvres, fist pacing)
3. Pharmacological (drug treatment)
4. Electrical (cardioversion for tachyarrhythmia or pacing for bradyarrhythmia).

Most drugs act more slowly and less reliably than electrical treatments, so electrical treatment is usually the preferred treatment for an unstable patient with adverse features.
Haemodynamic Effects of IV Amiodarone?

Amiodarone + Polysorbate 80 + Benzyl alcohol

Acute cardiac depressant effects in patients with significant LV dysfunction

Kosinski E. JACC 1984
Unstable Tachycardia
+
Vasodilator (300mg IV amio bolus)

Haemodynamic Collapse

Diagnosing the tachycardia mechanism is best left to the post-take ward round, after SR is restored. In the acute setting management is based on presence or absence adverse features.
Case 2

65 year old woman P/C palpitations. Warm & well perfused, BP 130/70mmHg, chest clear
Case 2

Adenosine 6 mg IV

What will you do next?

1. Request emergency DCCV
2. Give 12mg adenosine IV
3. Start a rate control medication
Case 2

Adenosine 6 mg IV

What will you do next?

1. Request emergency DCCV  X
2. Give 12mg adenosine IV   X
3. Start a rate control medication √
Adenosine Test

AV node dependent
- AVNRT
- AVRT (AP)
  - Abrupt termination
  - No change in R-R intervals

Not AV node dependent
- Atrial tachycardia
- Atrial Flutter
- Atrial fibrillation
  - R-R intervals prolong
  - P waves unmasked
Case 3
78 year old male, 2 x T-LOC with no prodrome
Pale & motionless, quick recovery
Case 3

How will you manage this patient?

1. Order a 24 hour tape
2. Order a 1 week event monitor
3. Refer for an implanted loop recorder
4. Refer to Cardiology for device implantation
Clinical Features

Syncope?
- Prodromal symptoms
  - Motionless
  - Pallor

Reflex/BP regulatory?
- Identifiable trigger
- Autonomic Features
- Post event fatigue

Cardiac?
- No identifiable trigger
- Abrupt onset
- Quick recovery
Causes of Cardiac Syncope

- Bradycardia/Asystole
- Tachycardia (Scar related VT)
- Mechanical obstruction
Complete LBBB = Failure of 2/3 Fascicles
Risk of Intermittent Complete Heart Block
Clinical Management

Cardiac Syncope

 Significant conduction system disease

 Echocardiogram

 Good LV

 PPM

 Poor LV

 ICD
Case 4

- 75 year old female
- Recurrent persistent AF x 5 years
- 4 hospitalisations x 2 years due to AF + rapid ventricular rates → CHF + Pul oedema
- Bisoprolol 5mg → Symptomatic bradycardia
- P/C AF + Rapid ventricular rates on bisoprolol 2.5mg OD
Case 4

How will you manage this patient?

1. Add digoxin 0.125mg OD
2. Switch to oral amiodarone and proceed to DCCV
3. Refer patient for Permanent Pacemaker
4. Switch to diltiazem 90mg BID
5. Increase bisoprolol to 3.75mg OD
Recommendations for Permanent Pacing in Sinus Node Dysfunction

CLASS I

1. Permanent pacemaker implantation is indicated for SND with documented symptomatic bradycardia, including frequent sinus pauses that produce symptoms. *(Level of Evidence: C) (53–55)*

2. Permanent pacemaker implantation is indicated for symptomatic chronotropic incompetence. *(Level of Evidence: C) (53–57)*

3. Permanent pacemaker implantation is indicated for symptomatic sinus bradycardia that results from required drug therapy for medical conditions. *(Level of Evidence: C)*
Staged Pace & Ablate Strategy

Tachy-Brady Syndrome

Permanent Pacemaker (Day-case)

Aggressive Rate control/Medical Tx

AV node Ablation (Day-case)
Ablate and Pace Strategy

MD visits/yr

Hospitalisations/yr

A+E attendance/yr

Antiarrhythmics
Figure 6: Pacemaker New Implant Rate 2015

Pacemaker new implant rate per million population

Western European Average: 739
Case 5
Case 5

17 year old male, palpitations and dizziness.
No prior cardiac history
Case 5

How will you manage this patient?

1. Adenosine IV
2. Emergency DCCV
3. IV amiodarone
4. IV metoprolol
5. Carotid Sinus Massage
FBI = Pre-excited AF
AF in a normal Heart

Ventricular Response
Rate < 250/min
AF in WPW Syndrome

Atrial Rate > 300/min

Ventricular Fibrillation
Case 5

How will you manage this patient?

1. Adenosine IV X
2. Emergency DCCV √
3. IV amiodarone X
4. IV metoprolol X
5. Carotid Sinus Massage X
Acute Arrhythmia Management

1. Unstable BCT → DCCV
2. Adenosine → Transient R-R prolongation
   → Don’t give further adenosine
3. Cardiac Syncope + complete LBBB
   → Device work-up
4. Tachycardia-Bradycardia Syndrome
   → Phased Pace & Ablate strategy
5. Don’t mess with the “FBI” → DCCV