Atrial Fibrillation

(excluding atrial fibrillation in acute coronary syndrome)

If adverse signs present seek senior assistance immediately

Systolic BP <90 Chest Pain
Conscious level Heart Failure

Perform 12 lead ECG, Confirm rhythm, assess ventricular rate. Connect to cardiac monitor

Onset < 24 hours

Treat reversible causes
(Cardioversion is unlikely to be successful in maintaining sinus rhythm if the precipitant is still present)

No Reversible cause identified or reversible cause treated

Anticoagulate with Low Molecular Weight Heparin if not already anticoagulated.

Attempt cardioversion to sinus rhythm

Amiodarone may be used as 300mg infusion IV through a large bore peripheral cannula. It is mildly negatively inotropic and should be used with care in acute left ventricular failure. If the initial bolus fails to cardiovert, an infusion of 900mg over 23 hours may be commenced. This must be delivered via a central catheter e.g. femoral line. / PICC line

Flecainide may be used in a dose of 2mg/kg IV (max 150mg) in young patients with structurally normal hearts, in the absence of pulmonary congestion, chest pain or other concerning features. Patients must be closely monitored in CCU / Telemetry during therapy.

DC cardioversion under sedation / general anaesthesia is the option of choice in patients with adverse signs of. It is also useful in patient in whom the above chemical measure have failed. Patients should be fasted and discussed with CCU.

If unsuccessful see control rate

Cause persists

Onset >24 hrs or uncertain

Assess ventricular rate

Ventricular Rate > 100bpm (or inappropriate for clinical state)

Ventricular Rate < 100bpm

Control rate

Beta-blocker e.g. IV metoprolol 5mg followed by 25 mg po tds if no signs LVF or hypotension.

OR

Calcium Antagonist e.g. Verapamil 5 mg IV if contra-indications to beta-blockade and not hypotensive or likely LV impairment.
NB DO NOT use with beta-blockers

OR

Digoxin 500 micrograms po with 500 micrograms 6 hours later if contra-indications to beta-blockade / Ca antagonists

Treat cause, if present
Anticoagulate with Low Molecular Weight Heparin
Consider formal anticoagulation (see reverse)

Consider long term strategy, see over

Maintaining sinus rhythm

Patients who have a solitary episode of atrial fibrillation, or in whom a reversible cause is identified, usually do not require anti-arrhythmic therapy.

In patients who present with a further episode of atrial fibrillation antiarrhythmic drug therapy can be considered. This should be selected dependent on patients specific circumstances, and usually after discussion with a cardiologist. Patients should usually be commenced on a beta-blocker or rate limiting calcium antagonist initially

Investigations

Routine bloods including: FBC, U&E, Mg2+, LFTs, TFTs, Bone group, Cardiac markers

Chest X-Ray is useful to assess pulmonary congestion / cardiothoracic ratio

Echocardiogram to exclude valvular abnormalities This may also influence subsequent therapy Please check notes for previous imaging prior to requesting. Check LA size & LV function

Devised Dr. D. Elder 2007
Approved Dr G McNeill & Dr. P. Currie
Revision due 2010

See over for details on drug doses / routes of administration

Long term Management

Persistent Atrial Fibrillation

Patients who remain in AF, who have no identifiable cause, may be considered for elective DC Cardioversion. They should be considered for anti-coagulation with warfarin (range 2.0 –3.5) and referred to cardiology.

Permanent Atrial Fibrillation

Patients in atrial fibrillation in whom there is little likelihood of successful cardioversion should be considered for anticoagulation with Warfarin and rate control.

Drug Therapies & routes of administration

Beta-blockade

Beta-blockers should be considered first line therapy to control the ventricular rate in patients with atrial fibrillation. They may also help to stabilise rhythm in patients with paroxysmal atrial fibrillation. They are preferred to Digoxin which is ineffective at limiting rate during exercise / sympathetic drive.

Metoprolol is preferred for intravenous administration given its short half life, it is given as a bolus injection, without dilution at a rate not exceeding 1 mg per minute. Titrate up to 5 mg initially, reassess after 5 minutes and repeat if required. If no ill effects observed, administer 25 mg orally and commence 2.5 mg bisoprolol once daily as regular therapy. This can be titrated up to a maximum dose of 20 mg once daily

Bisoprolol is the preferred oral therapy in patients with continuous atrial fibrillation. It is cardio-selective and offers good control of the ventricular rate. Starting dose is 2.5mg (1.25 mg in the elderly)

Sotalol is a beta blocker which possessed class III antiarrythmic properties in high doses. Starting dose is 40 mg bd, titrated up to 160 mg bd. It should be noted that sotalol may cause QT prolongation and should be used with caution. Although it may be of use in paroxysmal atrial fibrillation, it is not superior to bisoprolol in sustained AF.

Rate limiting calcium antagonists

Verapamil and diltiazem are useful alternatives to beta-blockers where patients have contra-indications or side effects. They should be avoided in patients with impaired LV function and Verapamil should never be co-administered with a beta-blocker.

Verapamil should be started as 40mg tds and converted to the once daily preparation (Verapamil SR at 120mg). This can be titrated up to maximum dose of 480 mg daily. Intravenous Verapamil is useful and can be given as a slow IV injection of 5 mgs over 2 – 3 mins. This can be repeated after 10 mins if desired effect not achieved.

Diltiazem should be prescribed by preparation e.g. Tildiem LA as different preparations have different efficacy. Starting dose is usually Tildiem LA 200mg

Digoxin

Digoxin is useful in limiting ventricular rate in patients with atrial fibrillation. It is particularly useful in sedentary patients, or those with cardiac failure. It should be noted, however that whilst Digoxin will limit ventricular rate at rest, tachycardia often results during periods of exertion and thus beta-blockade / rate limiting calcium antagonists are preferred first line therapy. Digoxin can be a useful adjunct in patients whose rate is difficult to control

Intravenous therapy – The rate of onset of the rate limiting effects of Digoxin orally is reasonable, and as such intravenous route should only be used where the oral route is compromised or in patients who require rapid digitalisation. Time to onset of effect is usually 10 mins when given IV. Dose – 500 micrograms over 2 hours as intravenous infusion. (IV dose is approx. 2/3 of the oral dose)

Oral therapy – initiation 500 micrograms initially with 250- 500 micrograms 6 hours later dependent on body habitus / ventricular rate. Maintenance therapy thereafter using 62.5 micrograms – 250 micrograms / day dependent on weight, height, age and renal function. Digoxin levels should be checked if toxicity is suspected

Amiodarone

Amiodarone is a very useful antiarrythmic that possesses class III properties. It is irritant and extravasation can be serious.

Intravenous Therapy, For initial attempts at cardioversion in a stable patient, 300mg should be diluted in 250 mls of 5% dextrose and run through a **new**, proximal cannulae, in a large peripheral vein e.g. anticubital fossa.

If initial bolus is unsuccessful then an infusion of 900mg over the following 23 hours may be commenced. This should always be administered through a central cannulae, e.g. PICC line, femoral or neck line. This should be diluted in a 500mls bag of 5% dextrose and administered through an infusion pump at 21.7 mls / hour.

Oral therapy regular oral therapy should only be commenced after discussion with consultant or cardiology staff as patients should be fully counselled regarding the risks of long term Amiodarone therapy.

Flecainide

Flecainide is a potent antiarrythmic which possesses class Ic properties. Its use in atrial fibrillation is restricted to chemical cardioversion and preservation of sinus rhythm. It should be noted that like all antiarrhythmics flecainide can also be pro-arrhymic in patients with normal hearts and ECG monitoring is mandatory during intravenous administration / oral initiation.

Intravenous therapy – 2 mg /kg (max 150mg) intravenously over 30 minutes. This may be followed by an infusion at a rate of 1.5 mg/kg/hour for 1 hour, reduced to 250 micrograms /kg.hour for up to 24 hours – max cumulative dose = 600mg

Oral therapy – should be commenced only after discussion with cardiology , dose is usually 50 mg bd with maximum dose of 150mg bd. Flecanide should always be co-administered with a rate control agent e.g. beta-blocker

Patients should have serial ECGs to monitor PR interval and ORS duration. Patients with pacemakers or implantable defibrillators in situ should be discussed with cardiology prior to the administration of flecainide as this drug may affect the devices ability to deliver therapy adequately.