



Management of Atrial Fibrillation – Part 1

Maintenance of sinus rhythm and control of heart rate

Atrial fibrillation (AF) is the commonest sustained cardiac arrhythmia and is a major cause of morbidity and mortality, principally through its association with cerebral embolism. AF presents in three principal forms, for which the management is significantly different:

- **Paroxysmal** – self-terminating episodes of atrial fibrillation
- **Persistent** – atrial fibrillation does not terminate spontaneously, but reverts to sinus rhythm with electrical or pharmacological cardioversion.
- **Permanent** – return of sinus rhythm is not feasible.

AF is associated with valvular or ischaemic heart disease, hypertension and heart failure as well as with thyrotoxicosis, alcohol excess and acute infections. Many patients with AF have no underlying heart disease (lone AF).

How do we maintain rhythm in paroxysmal AF?

Infrequent, well-tolerated attacks do not require specific intervention. If anti-arrhythmic drug therapy is required, either beta-blockers or Class 1C anti-arrhythmic drugs (eg flecainide, propafenone) are used as first line treatment. Class 1C drugs should not be used in patients with ischaemic heart disease or left ventricular dysfunction, and should be started under hospital supervision. Amiodarone may be considered in the event of failure of other drug therapy. Digoxin is of no benefit in paroxysmal atrial fibrillation.

How do we restore sinus rhythm in persistent atrial fibrillation?

Cardioversion is most likely to be successful in younger patients, those with structurally normal hearts and when duration of atrial fibrillation is short

(less than three months). Precipitating factors (eg. chest infection, thyrotoxicosis, alcohol, mitral valve disease and heart failure) must be identified and treated. If AF is known to have been present for two days or less, cardioversion may be attempted immediately. If the duration is longer, or is unknown, anti-coagulant cover is necessary and cardioversion is deferred (see part 2). Direct current cardioversion requires a general anaesthesia or deep sedation, but is a low risk procedure provided the patient is a reasonable anaesthetic risk. Drug cardioversion with flecainide is an alternative if the patient has no significant underlying heart disease and if AF is of short duration. Amiodarone is a preferred alternative if left ventricular function is impaired. Relapse of atrial fibrillation is commonest in the first month after cardioversion, and patients should be considered for repeat cardioversion if it is felt that sinus rhythm is likely to be achieved long-term. Additional anti-arrhythmic therapy is likely to be achieved long-term. Additional anti-arrhythmic therapy may be necessary if relapses occur after cardioversion.

Management of permanent atrial fibrillation

Haemodynamic impairment in AF results principally from an uncontrolled ventricular rate, which may cause, or exacerbate, heart failure. If sinus rhythm cannot be achieved, the ventricular rate should be controlled to less than 90 per minute at rest and less than 180 per minute on exertion. Digoxin alone commonly fails to control ventricular rate on exercise, and additional rate control medication with low dose beta-blockade or a rate limiting calcium channel blocker (e.g diltiazem or dilitazem) may be preferred and can help to avoid the use of toxic doses of digoxin. If the medical therapy fails to control heart rate, radio frequency ablation of the atrioventricular node and permanent pacemaker implantation may be considered.

Further Reading:

1. Cobbe SM(Ed): Atrial fibrillation in hospital and general practice: the Sir James MacKenzie centenary consensus conference. Proc R Coll Physicians Edinb 1999;29 Suppl 6:1-34
2. Lip GY, Watson RD, Singh SP. ABC of atrial fibrillation. Cardioversion of atrial fibrillation. BMJ 1996;312:112-115.
3. Lip GY, Watson RD, Singh SP. ABC of atrial fibrillation. Drugs for atrial fibrillation. BMJ 1995;311:1631-1634.
4. Roy D, Talajic M, Dorian P, Connolly S, Eisenberg MJ, Green M, et al. Amiodarone to prevent recurrence of atrial fibrillation. Canadian Trial of Atrial Fibrillation Investigators. N Engl J Med 2000;342:913-920.