

Factfile: Atrial Fibrillation – diagnosis and management

Summary

- Atrial fibrillation (AF) is the commonest sustained arrhythmia.
- AF increases the risk of heart failure and stroke, thereby impacting on long term survival.
- Most patients will require oral medication to reduce thromboembolic risk.
- A rhythm control strategy should be attempted in younger patients and in those with symptoms.
- Many patients with AF can now be successfully treated with catheter ablation.

Introduction

Atrial fibrillation (AF) is the commonest sustained arrhythmia and affects almost a million people in the UK. In 2000, the direct and indirect costs associated with the management of AF were £1.3 billion, which accounted for almost 2.5% of total NHS expenditure. As AF is more likely to affect the elderly, its prevalence is likely to increase significantly in the next few decades.

Causes of AF

The majority of cases of AF are associated with hypertension, valvular disease or some other form of structural heart disease. Obesity is a well-recognized risk factor. However, in a significant minority no associated cardiac condition can be identified ('Lone AF').

In most patients AF originates from rapidly firing cells located at the junction of the pulmonary veins with the left atrial musculature. This has led to the development of ablation procedures directed at these sites (see below).

Impact of AF

Several large studies have shown that AF is associated with a doubling of the mortality risk, and that a diagnosis of AF may be associated with a shortening of the life span by around 5 years for men and 8 years for women.² There are 3 main reasons for this:

- AF increases the risk of stroke 5-fold – the strokes associated with AF are also more likely to be disabling and fatal.
- AF results in loss of atrial contraction and decreases cardiac output by almost a quarter.
- The fast and erratic heart rates in AF can result in deterioration in LV function over time. Due to these latter two factors, AF is associated with a greater than 3 fold increased risk of heart failure.

Diagnosis

Patients may present with either paroxysmal AF or with persistent AF.

Patients with paroxysmal AF usually present with episodic palpitations lasting minutes to hours. Obtaining ECG diagnosis can be difficult and requires a high index of suspicion. Attempts should be made to record an ECG at the time of symptoms, and ECG event loop recorders have a higher diagnostic yield compared to Holter monitoring. In difficult cases, implantable Loop recorders may be required.

Persistent AF is the more advanced stage of the disease, and is defined as continuous AF that is sustained beyond seven days. This is sometimes detected incidentally as irregular pulse measurements. A simple ECG should be diagnostic in these cases.

Management strategies for patients with AF

There are two broad approaches to the treatment of atrial fibrillation:

- Rhythm Control: using strategies to restore and maintain sinus rhythm. These have historically included cardioversion and/or treatment with antiarrhythmic drugs. Since 2000, catheter ablation has also been increasingly used for this purpose.
- Rate Control: this allows atrial fibrillation to persist, but the heart rate is controlled with drugs.

BHF resources

You may find the following resources helpful to you and your patients:

[Atrial fibrillation](#)

[Heart rhythms](#)

[Warfarin](#)

Our research

You will find information about the [research](#) we are funding in our pages on our website bhf.org.uk/research.



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Three large prospective randomized trials (AFFIRM, RACE, STAF) compared these two treatment strategies. They studied mostly elderly patients with persistent or permanent AF with minimal symptoms, and showed broadly equal outcomes in the two management strategies. These studies had several limitations. The antiarrhythmic drugs used to try and maintain normal rhythm proved ineffective in more than half the cases. This limited efficacy significantly jeopardized the rhythm control groups in comparative analysis. Antiarrhythmic drug therapy was associated with significantly *increased* mortality. It has since been proven that the drugs used can increase the risk of sudden cardiac death by prolonging the QT interval and predisposing to ventricular arrhythmias. More patients in the rhythm control groups had interruptions in anti-coagulation treatment. These studies predated the advent of catheter ablation.

Many physicians misinterpreted the headline results of these studies that atrial fibrillation and sinus rhythm are associated with equal survival rates. To the contrary, post-hoc analysis of study data showed that presence of normal rhythm was strongly associated with a better survival rate. As such, current scientific opinion is now agreeing on the fact that rhythm control to normal sinus rhythm should be the preferred goal for most patients, especially for those with limiting symptoms and in younger patients.

Rhythm control

Antiarrhythmic drugs

Flecainide and Sotalol are effective but are contraindicated in patients with ischaemic heart disease and those with impaired ventricular function. The most effective agent is Amiodarone but this is associated with significant side effects and requires regular monitoring of both liver and thyroid function. Dronedarone has modest efficacy in paroxysmal AF, but has been associated with safety concerns when used for non-paroxysmal AF.

Electrical Cardioversion

This is the most common mode of trying to achieve rhythm control and works acutely in >90% patients, especially if patients are started on anti-arrhythmic drug therapy beforehand. However, AF recurs over time in many patients, and so this treatment should not be assumed to be definitive. Consideration should be given to referring patients for ablation therapy rather than performing electrical cardioversion repeatedly.

Ablation therapy

The discovery of the pulmonary veins as the site for initiation of AF has led to the development of curative catheter-based procedures. These involve the delivery of radiofrequency energy with an aim to isolate the pulmonary veins electrically from the left atrium. There has been an evolution of such techniques since 1997 and currently the expected success rate is around 80% in experienced hands. This can often only be achieved with the use of multiple procedures and at a 3-4% potential risk of procedural complications such as groin complications, cardiac tamponade, and stroke.

A number of studies have shown that catheter ablation is superior to antiarrhythmic drugs in maintaining sinus rhythm. Latest clinical guidelines support the use of ablation therapy as first line treatment for patients with lone paroxysmal AF and as second line treatment for persistent AF. The success rates with ablation are highest in patients with paroxysmal AF, and in persistent AF of less than 12 months duration. Ablation is less likely to be successful in the presence of advanced structural heart disease, or in long standing persistent AF. There has been an exponential increase in number of ablation procedures for AF worldwide, and this trend is likely to gather even more pace in the coming years.

Rate control treatment

Rate control drugs include: Digoxin, beta-blockers or Calcium Channel blockers such as Verapamil to get a resting heart rate of less than 100-110 bpm. Often a combination of these drugs is needed for satisfactory rate control. Ablation of the AV node is an alternative that is very effective in abolishing/reducing symptoms. It is, however, a palliative procedure, requires pacemaker implantation and continued anticoagulation as the atria continue to fibrillate.

Anticoagulation in patients with AF

The most important decision to be made with a patient in AF is whether or not they should be anticoagulated, and if so with which drug(s). This will be covered in detail in the next Factfile on AF.

References

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