

Atrial fibrillation: a common arrhythmia with possible dire consequences

by Robert G Xuereb

The diagnosis of atrial fibrillation (AF) is clinched on the electrocardiogram with the finding of fine baseline oscillations, absent P waves and irregular ventricular rhythm.¹ It is the most common type of arrhythmia requiring medical care, with a prevalence of 1-2%.² More than half of AF episodes are detected by continuous ambulatory ECG monitoring. Although uncommon in the younger age groups, less than 0.5% in 40-50 year olds, it affects 5-15% of the population by the age of 80 years.

Classification of atrial fibrillation

- First diagnosed AF is AF presenting for the first time.
- Paroxysmal AF is recurrent and self-terminating AF.
- Persistent AF lasts more than 7 days or is terminated by either electrical or pharmacological cardioversion.
- Permanent AF is longstanding AF.

Predisposing factors

Hypertension is found in approximately 2/3 of all patients with AF.³ Uncontrolled blood pressure predisposes to AF. Heart failure is found in 30% of AF patients.³ It can be a consequence of or a cause of AF. Other causes of AF include valvular heart disease especially mitral valve disease, cardiomyopathies, atrial septal defects, coronary artery disease, thyrotoxicosis, obesity, metabolic syndrome, and sleep apnoea. Diabetes mellitus is found in 20% of patients with AF, chronic obstructive pulmonary disease is found in 10% of patients with AF, and chronic renal disease is found in 10-15% of patients with AF.

Dire consequences of atrial fibrillation

Death rate is doubled in patients with AF.⁴ Not only are approximately 20% of strokes due to AF, but these strokes are more severe than strokes of other origins.⁵ AF also often results in left ventricular dysfunction and in reduced quality of life and exercise capacity.⁶

Pharmacological therapy for atrial fibrillation

The principles of pharmacological therapy for AF are: (i) antithrombotic therapy, (ii) treatment of underlying condition, (iii) termination of AF, (iv) maintenance of sinus rhythm, and (v) control of ventricular rate during AF.

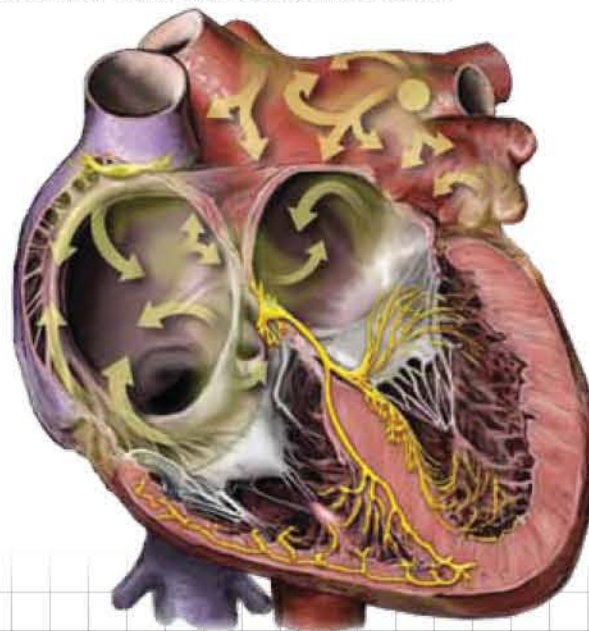
Antithrombotic therapy

Antithrombotic therapy is based on the risk category of stroke or systemic embolism. Oral anticoagulation

therapy with a vitamin K antagonist aiming for an INR of 2-3 is recommended in those patients with one 'definitive' risk factor – previous stroke, transient ischaemic attack, systemic embolus, the elderly (aged > 75) or valvular disease (mitral stenosis or prosthetic heart valves). It is also recommended in those patients with 2 or more 'combination' risk factors – heart failure, hypertension, diabetes mellitus, female gender, age 65-74 years, and vascular disease. If 1 'combination' risk factor is present, either oral anticoagulation therapy or aspirin may be opted for. If no risk factors are present, aspirin 75-325mg daily is recommended.

Antiarrhythmic therapy

The choice of the antiarrhythmic drug for cardioversion as well as for long-term management of AF depends on the underlying heart disease.¹ Class IC agents propafenone and flecainide and the class III agent sotalol are recommended in patients with moderate structural heart disease and hypertension without left ventricular hypertrophy. Amiodarone is the drug of choice in patients with advanced underlying heart disease such as history of heart failure, myocardial infarction, and left ventricular hypertrophy. The class IA antiarrhythmic agents quinidine and procainamide are less commonly used due to their side-effect profile including hypotension, anticholinergic action, AV node blockade, and torsade.



Dronedarone is a structural analogue of amiodarone which is devoid of iodine atoms. It has a better side-effect profile with less risk of pulmonary fibrosis, ocular adverse effects, and skin photosensitivity. The ATHENA investigators have shown that dronedarone reduces the incidence of hospitalization due to cardiovascular events or death in patients with AF.⁷

Electrical cardioversion

Direct-current cardioversion of AF, the delivery of an electrical shock synchronized with the intrinsic activity of the heart, was first reported by Lown in 1963.⁸ It is contraindicated in the presence of digitalis toxicity and hypokalaemia, and adequate anticoagulation prior to cardioversion is mandatory.

Ablation of atrial fibrillation

Achieving and maintaining sinus rhythm by antiarrhythmic therapy depends on their limited efficiency and adverse side-effects. A reproducible and effective treatment option of symptomatic patients with paroxysmal AF is catheter ablation with pulmonary vein isolation. Success rates of 70-90% have been reported.⁹

Conclusion

AF is a growing health problem which is posing a significant economic burden. With an ageing population, the number of patients with AF is expected to double in the next few decades. Effective and early treatment of hypertension and heart failure may reduce the occurrence of AF by delaying damage to the atria. The future of the treatment of AF is promising with the emergence of new antithrombotic medications, better antiarrhythmic agents, and improved ablation techniques.

References

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