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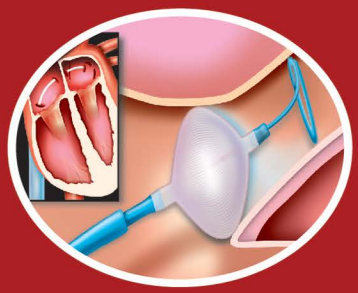
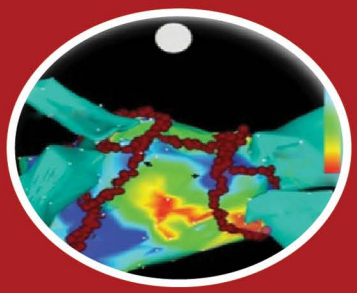
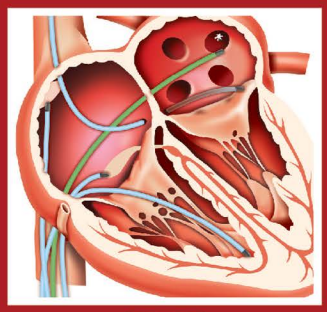
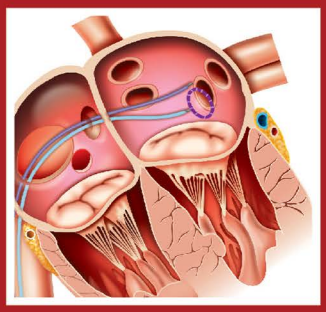
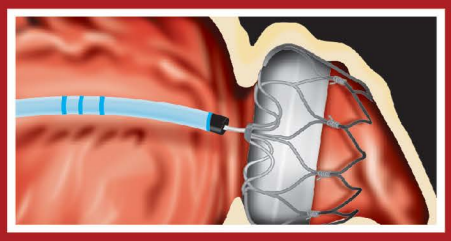
Atrial Fibrillation Update

A Textbook of Cardiology

HK Chopra • GS Wander
Praveen Chandra • Viveka Kumar

Forewords

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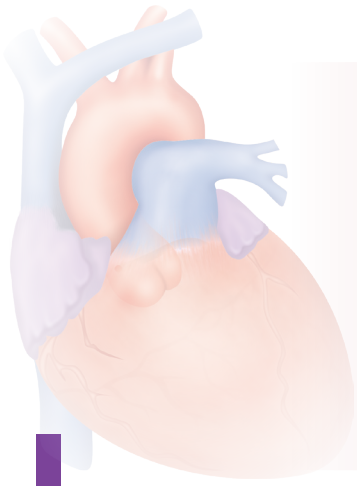
CHAPTER 1



Atrial Fibrillation: An Overview

Rohit Goel, Nagender S Chouhan, Praveen Chandra

INTRODUCTION

Atrial fibrillation (AF) is the most common sustained arrhythmia-needing hospital admissions.[1] It is characterized by low amplitude fibrillatory waves on ECG and an irregularly ventricular rhythm.

Its incidence increases with advancing age as shown in the ATRIA[2] study, a cross-sectional study of around 1.9 million subjects in the United States. The overall prevalence of AF was 1%; 70% were at least 65 years old and 45% were ≥75 years old. The prevalence of AF ranged from 0.1% among adults less than 55 years of age to 9% in those ≥80 years of age. Its prevalence is also higher in men than women (1.1 vs 0.8%), a difference which is seen across all age groups. Among subjects over 50 years, AF was more frequent in Whites than Blacks (2.2 vs 1.5%).

Incidence: It also increases with advancing age and varies from 0.5 per 1000 person-years before age 50 to 9.7 per 1000 person years after age 70.[3]

The lifetime risk for the development of AF was analyzed in the Framingham Heart Study.[4] A total of 8725 patients were followed from 1968 to 1999 of which 936 developed AF. The risk of developing AF from age 40 to 95 was 26% for men and 23% for women.

RISK FACTORS

Hypertensive heart disease and coronary heart disease (CHD) are the most common chronic disorders seen in patients with AF in developed countries. However in developing countries, rheumatic heart disease, although uncommon in developed countries, is associated with a much higher incidence of AF.

In a study of approximately 1100 patients with rheumatic heart disease, the prevalence varied with the type of valve disease:[5]

Mitral stenosis (MS), MR, and tricuspid regurgitation – 70%

MS and MR – 52%

Isolated MS – 29%

Isolated MR – 16%

Other risk factors include heart failure, hypertrophic cardiomyopathy (HCM), sleep apnea, obesity, diabetes mellitus, thromboembolism, congenital heart disease, chronic kidney disease, cardiac and noncardiac surgery, hyperthyroidism, and alcohol, familial and genetic mainly polygenic inheritance.

CLASSIFICATION

Atrial fibrillation classification is based on American Heart Association/American College of Cardiology/Heart Rhythm Society guidelines on AF management:[6]

- *Paroxysmal (i.e. self-terminating or intermittent) AF:* It is defined as AF that terminates spontaneously or with intervention within seven days of onset. Episodes may recur with variable frequency.
- *Persistent AF:* It is defined as AF that fails to self-terminate within seven days. Episodes often require

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pharmacologic or electrical cardioversion to restore sinus rhythm. While a patient who has had persistent AF can have later episodes of paroxysmal AF. AF is generally considered a progressive disease.

- *Long-standing persistent AF:* AF that has lasted for more than 12 months.
- *Permanent AF:* This term is used to identify individuals with persistent atrial fibrillation where a joint decision by the patient and clinician has been made to no longer pursue a rhythm control strategy.
- *Lone AF:* AF seen in patients less than 60 years with no evidence of structural heart disease. This entity carries a low risk of thromboembolic complications obviating the need for therapeutic anticoagulation.

CLINICAL FEATURES

Typical symptoms include palpitations, tachycardia, fatigue, weakness, dizziness, lightheadedness, reduced exercise capacity, increased urination, or mild dyspnea.

More severe symptoms include dyspnea at rest, angina, presyncope, or infrequently, syncope.

In addition, some patients may present with an embolic event or left sided/right-sided heart failure (as manifested by peripheral edema, weight gain, and ascites).

A complete history and physical examination should be performed for all the patients to look for any reversible causes of AF. Diagnosis is confirmed on 12 lead ECG. Echocardiography is performed to rule out any structural heart disease, evaluate the size of left and right atria and left ventricular function. Trans-esophageal echo is done to look for any left atrium/left atrial appendage (LA/LAA) clot prior to cardioversion.

In case of intermittent AF diagnosis can be established by 24 hours Holter or prolonged recording by using external loop recorder.

MANAGEMENT

Adequate management of AF patients is very essential. It is associated with five-fold increased risk for stroke and two fold increased risk for all-cause mortality. It is also associated with increased risk of heart failure.

Patients with AF have two management issues. One is the need for therapeutic anticoagulation and other is the treatment of arrhythmia per se either by a rate control strategy or rhythm control.

The need for therapeutic anticoagulation has been facilitated by the use of CHA2DS2-VASc score. With score more than 1 indicating the need for therapeutic anticoagulation. Also higher is the score more is the risk for thromboembolic complications and more necessity in need of anticoagulation.

Regarding rate control versus rhythm control strategy, it is determined based on the severity of symptoms, presence of structural heart disease, and adequacy of rate control during episodes of atrial fibrillation, and the patient's preference for using antiarrhythmic drug therapy or undergoing ablation-based interventions.

To summarize, it is the most common arrhythmia seen in clinical practice and needs optimal medical attention. If left untreated or inadequately treated, it may lead to severe morbidity and increased mortality. Physician's inertia in initiating anticoagulation due to bleeding risk also needs to be addressed. Hence, a team approach which involves primary care physicians as well as the cardiologists is needed for the adequate management of such patients.

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