Atrial Fibrillation

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KEYWORDS

• Atrial fibrillation • Atrial flutter • Cardioembolic stroke

KEY POINTS

- Atrial fibrillation (AF) is the most common dysrhythmia diagnosed in US emergency departments.
- Rate control and rhythm control management strategies carry equal mortality and stroke risk.
- All patients with AF must have their cardioembolic risk assessed, even if sinus rhythm is restored.
- Novel oral anticoagulants (NOAs) may be considered instead of vitamin K antagonists (VKAs) for anticoagulation in patients with nonvalvular AF.

OVERVIEW

AF is a supraventricular tachyarrhythmia that results from the chaotic depolarization of atrial tissue. AF is the most common sustained cardiac dysrhythmia and the most common dysrhythmia diagnosed in US emergency departments (EDs).[1] AF affects between 1% and 2% of the general population, with a peak prevalence of 10% in those older than 80 years.[2,3] It is estimated that by 2050 nearly 16 million US patients will have AF.[4]

AF is an independent risk factor for stroke, congestive heart failure (HF), and overall mortality.[5] Rates of ischemic stroke in nonvalvular AF average 5% annually, 2 to 7 times the rate in the population of patients without AF.[6] In a 20-year follow-up study of patients with AF, women had a 5-fold increased risk of cardiovascular events and men has a 2-fold increase compared with patients without AF. Most of the adverse events were related to stroke and HF.[7] Overall mortality in patients with AF is almost double that of patients with normal sinus rhythm.[8]

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In addition to its significant health impact, AF also places a formidable economic burden on the health care system, accounting for $6.65 billion annually in direct and indirect costs.[9]

There are many terms used to describe the various types of AF. The classification scheme endorsed by the American College of Cardiology Foundation (ACCF), American Heart Association (AHA), and the European Society of Cardiology (ESC) is based on the duration of the episode of AF, its recurrences, and the patient's clinical course[10] (**Table 1**). Emergency medicine (EM) physicians are often tasked with management of new-onset or paroxysmal AF.

Management strategies have traditionally encompassed rate control, rhythm control, and anticoagulation, but a lack of solid evidence has led to wide variation in ED physician practice.[11]

The recommendations included below are derived from a combination of existing guidelines, additional evidence, and consensus.

CAUSES

It is imperative for the EM physician to identify and treat the serious and reversible underlying causes of AF.

AF is most commonly associated with cardiovascular disease. Hypertension, coronary artery disease, cardiomyopathy, valvular disease, myocarditis, and pericarditis are the most common associations. AF may also occur after cardiac surgery.

Dangerous causes of AF that must be considered are myocardial infarction (MI), pulmonary embolism (PE), and hyperthyroidism. If these are the suspected causes of the dysrhythmia, then the AF is secondary and the primary cause should be addressed first.

AF may also result from another supraventricular tachycardia, Wolff-Parkinson-White (WPW) syndrome, in which rapid hemodynamic collapse may occur as a result of accessory pathway conduction. The management of AF with WPW focuses exclusively on the treatment of WPW. Many of the standard treatments of AF (such as β-blockers and nondihydropyridine calcium channel antagonists) are contraindicated with this cause.

Hyperthyroidism, hypokalemia, sympathomimetic use, electrocution, and pulmonary disorders, including pulmonary embolism and obstructive sleep apnea, are all noncardiac secondary causes of AF. Excessive alcohol intake, termed holiday heart syndrome, another noncardiac cause of AF, typically occurs after an alcohol binge in someone who is not accustomed to drinking large volumes of alcohol.

AF in patients younger than 60 years with no underlying cardiovascular disease is termed lone AF. This condition is particularly common in patients with paroxysmal AF, wherein no underlying cardiac disease is identified in up to 45% of cases.[12]

Table 1
AF classification

Term	Definition
Recurrent	≥2 episodes
Paroxysmal	Duration≤7 d, spontaneous resolution
Persistent	Duration>7 d; not self-terminating
Permanent	Duration>7 d & cardioversion has failed or not been attempted
Lone	Age<60 y; no clinical or echocardiographic evidence of cardiopulmonary disease

Used for episodes of AF greater than 30 s without a reversible cause.