Atrial Fibrillation: Focus on Drug Therapy

Atrial fibrillation (AF) is a common public health threat and represents the most common sustained arrhythmia in adults. The prevalence of the disease is expected to increase approximately 3-fold over the next 30 years. Therapies to control symptoms of AF have changed greatly over time. The purpose of this review is to provide an update of appropriate drug therapy options for patients with AF. If you need further information, please contact the Center for Healthcare Innovation and Patient Outcomes Research (CHIPOR) at chipor@samford.edu.


Introduction

- The prevalence of AF in the United States is around 5.2 million, and it is expected to increase to 12.1 million by the year 2030.
- The financial impact of AF in the US is $16-$26 billion annually.
- Compared with similar patients, patients with AF have an estimated incremental medical cost (e.g., inpatient, outpatient, and pharmacy costs) of $8705 per patient per year.
- Increased age is a risk for the development of AF, as the risk of AF doubles with each decade of life.
- The incidence of AF has been stable in patients older than 65 years over the past decade.
- Whites have an increased risk for AF compared to African Americans, Hispanics, and Asians; however, African Americans have higher prevalence for risk factors for AF than do Whites.
- Female patients exhibit more symptoms from AF and have longer paroxysmal AF episodes and faster ventricular response rates than men.
- Modifiable risk factors for AF include congestive heart failure (CHF), hypertension (HTN), diabetes mellitus (DM), obesity, alcohol consumption, and obstructive sleep apnea (OSA).

Rhythm vs. rate control

- Rate control strategies involve the use of atrioventricular nodal blockage with beta-blockers, calcium channel blockers, and/or digitalis.
- A goal resting heart rate <110 beats/min appears to be as effective as strict control (<80 beats/min).
- Rhythm control strategies may be best for those who are young (<50 years, those with uncomplicated AF, and those with significant symptoms despite appropriate rate control).
- Strategies to control rhythm include medications, electrical cardioversion, and/or invasive procedures.
- No mortality data is associated with rhythm control and is recommended for symptom control and improvement in quality of life.

Antiarrhythmic drug (AAD) therapy

- Choice of drug therapy is dependent on if the patient has structural heart disease and/or other comorbid conditions (e.g., HF, renal insufficiency, and LV hypertrophy).
- Success rates for AADs range between 30%-50%. Amiodarone appears to have the best efficacy.
- Patients without structural heart disease may benefit from the following medications: dofetilide, dronedarone, flecainide, propafenone, and sotalol. Amiodarone can be used for patients without CHF.
- Patients with structural heart disease and coronary artery disease (CAD) may receive dronedarone, dofetilide, or sotalol as first-line agents. Amiodarone is reserved for second-line administration.
- Patients with structural heart disease and CHF should receive amiodarone or dofetilide.
Antiarrhythmic drug therapy considerations
- Class 1c agents (e.g., flecainide and propafenone) should only be used in patients with structurally normal hearts and should not be used in those with a previous myocardial infarction.
- Some class III agents (e.g., sotalol and dofetilide) should not be used in patients with creatinine clearance less than 20 mL/min or baseline corrected QT interval >440 ms. Dofetilide is initiated in the hospital and required 3 days of inpatient monitoring.
- Dronedarone should not be used in patients with advanced HF or recent HF exacerbation.
- Left ventricular dysfunction should be treated with amiodarone or dofetilide.
- Amiodarone has several toxicities including those of the lung, thyroid, liver, skin, and eye.

Stroke risk and prevention
- AF is associated with a 5-fold increase in stroke.
- The most commonly used tool to assess stroke risk and bleeding is the CHA₂DS₂-VASc. This tool assesses the following factors associated with an increased risk of stroke and bleeding: Congestive heart failure, hypertension, age >75 years, diabetes mellitus, stroke, vascular disease, age 65-74, female gender and HAS-BLED [Hypertension, abnormal liver/renal function, stroke, bleeding risk, labile INRs, elderly (age ≥65), drugs/alcohol use].
- Patients with a CHA₂DS₂-VASc ≥ 2 are considered high risk and should receive anticoagulants.
- No anticoagulant therapy is recommended for patients with a CHA₂DS₂-VASc = 0.
- Aspirin may be an option for patients with a CHA₂DS₂-VASc ≤1.
- Warfarin may be associated with a 40% reduction in the risk of stroke in systematic embolism.
- Novel oral anticoagulant agents (NOACs; dabigatran, rivaroxaban, edoxaban, apixaban) use is dependent on efficacy, safety, and renal impairment.
- Apixaban can be used in patients receiving dialysis.
- Despite normal sinus rhythm, long-term use of OACs may be needed.

Conclusion
- AF is a significant public health issue.
- Drug therapy for this disease may consist of agents to control rate or rhythm. Anticoagulants may be needed to decrease the risk of stroke.
- Future directions will focus on identifying anticoagulants with a reduced bleeding risk and increased efficacy profile.

Prepared by: Maisha Kelly Freeman, Pharm.D, MS, BCPS, FASCP