Atrial Fibrillation in Postmenopausal Women: Risk Factors, Diagnosis and Management

Anita M. Kelsey, MD, FACC, FASE
Director, Echocardiography
Director, Women’s Heart Program
Medical Director, School of Cardiac Ultrasound
Saint Francis Hospital and Medical Center, Hartford, Connecticut
Associate Professor of Medicine (SFHMC) University of Connecticut
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Objectives

• Background information about gender and atrial fibrillation (AF)
• Risk factors for AF
• Diagnosis of AF
• Management of AF

Gender and Electrophysiology

• Women have
  - higher resting heart rates
  - shorter sinus node recovery times after overdrive pacing
  - longer corrected QT interval: \( QT_C = \frac{QT\text{ Interval}}{\sqrt{RR\text{ interval}}} \)

• Boys and girls begin with similar QTc intervals
  - After puberty the male QTc interval shortens

Increasing Prevalence

• Approximately 2.3 million US adults currently have atrial fibrillation
• Estimated to increase to greater than 5.6 million by 2050
• >50% of affected individuals will be >80 years old


Cha YM, et al. Arrhythmias in Women Diagnosis and Management 2014
**Men vs Women**

- Approximately equal numbers of men and women affected
- Higher prevalence among men

**Advanced Age**

- 60% of patients with AF over age 75 are women

**Variable Clinical Presentation**

Women at first AF presentation:
- 5 years older
- Faster rate
- Fewer h/o MI
- More HTN

**Stroke in Women vs. Men +/- AF**

Hazard Ratio of AF on stroke in women vs. men 4.5 (95% CI 2.2 to 9.2)

Hazard Ratio of AF on cardiovascular mortality in women vs. men 2.9 (95% CI 1.7 to 4.8)

**RISK FACTORS**
Risk Factors for AF

- More prevalent in women than men
- Often poorly controlled in older women (23% of women, 38% of men >80 years have BP <140/90)

Hypertension

- JNC 8 Goal <140/90
- Except DM, CKD, <130/80

Smoking

- Rotterdam Study
- Current and former smoking increases risk
- No difference between men and women

Ischemic Heart Disease

- Most common underlying disorder in patients with AF in developed countries
- Less common but frequently underdiagnosed in women
- AF may be seen during acute MI but rarely in the absence of additional signs or symptoms.

Valvular Heart Disease

- Any stenotic heart valve predisposes a woman to AF
- Rheumatic heart disease, now uncommon in developed countries still represents significant global risk factor
- MS, MR, TR in combination is associated with the highest incidence of AF

Heart Failure

- Women with AF are more likely to have HFrEF and less likely to have systolic dysfunction
- Chronic AF can lead to HF
- Chronic HF can predispose to AF.
Hyperthyroidism

- Must check a TSH (tx if < 0.1 microunit/ml)
- Also increased risk for AF with subclinical hyperthyroidism especially in patients over 65 years, postmenopausal with low bone mass, tachyarrhythmias or heart disease


Obesity

- Risk of AF in women with BMI 30-35 was 2.0 x a normal weight woman
- Risk of AF in women with BMI > 35 was 3.5 x that of a normal weight woman
- Mechanism is left atrial dilation


Diabetes

- Framingham Heart Study: DM was associated with increased risk of development of AF in men and women (OR 1.1 and 1.5)
- Increased LV mass and increased LV stiffness have been put forth as possible mechanisms


Menopause

- Framingham Heart Study: Early menopause was not associated with increased risk of AF
- WHI: A modest, statistically significant increase in the risk of atrial fibrillation (AF) was evident for women who had previously undergone hysterectomy and were treated with estrogen monotherapy compared with placebo.


Other Factors

- Family History
- Genetic Factors
- Birth Weight
- Inflammation and infection
- Pericardial Fat
- Autonomic dysfunction
- Corrected QT interval
- PAC’s
- HOCM
- Metabolic Syndrome
- Chronic Kidney Disease
- Surgery

- Congenital Heart Disease
- SVT
- Low serum Magnesium
- Caffeine
- Fish and Fish Oil Supplements
- Medications
- Regular physical exercise
- Air pollution
- Venous thromboembolic disease
- OSA
- Ethnicity
- ETOH

Risk factors HTN, BMI, DM, smoking and CVD were categorized into optimal, borderline or elevated levels for mean f/u 17.1 years, 14,598 pts

As with other forms of cardiovascular disease, more than half of the AF burden is potentially avoidable through the optimization of cardiovascular risk factors levels

Annals of Internal Medicine

Guidelines for the Prevention of Stroke in Women
A Statement for Healthcare Professionals from the American Heart Association/American Stroke Association


Class I:
- Considering the increased prevalence of AF with age and the higher risk of stroke in elderly women with AF, active screening (in particular of women >75 years of age) in primary care settings using pulse taking followed by an ECG as appropriate is recommended.

Level of Evidence B

Guidelines

What is the rhythm?

Atrial Fibrillation

- P waves absent.
- Atrial activity is totally irregular.
- Fibrillatory (f) waves of varying amplitude, duration and morphology, cause random oscillation of the baseline.
- Ventricular rate is 100-180 bpm (unless controlled by medication).
- Ventricular rhythm is irregularly irregular.
What is the rhythm?

Atrial Flutter

- Rapid regular atrial undulations (flutter or “F” waves) at 240-340 bpm.
- Typical atrial flutter morphology usually presents in Leads II, III, AVF: Inverted F waves without an isoelectric baseline (“picket-fence” or “sawtooth” appearance).
- AV conduction ratio (of flutter waves to QRS complexes) is fixed, usually 2:1, 4:1.
- Ventricular rate may be regular.

General Evaluation

- History and Physical
- Chest X Ray
- ECG
- Transthoracic Echocardiogram
- Thyroid function tests
- Comprehensive metabolic panel
- In the proper clinical setting, cardiac enzymes

MANAGEMENT

Goals of Treatment

- Reduce risk of thromboembolism
- Rate control + Rhythm Control

Guidelines

Class I:
- In patients with AF, antithrombotic therapy should be individualized based on shared decision making after discussion of the absolute risks and relative risks of stroke and bleeding and the patient’s values and preferences.

Level of Evidence: C
Guidelines

- Warfarin to target INR (2-3 or 2.5-3.5)
  - Mechanical heart valve
  - Significant valve disease

American College of Cardiology AnticoagEvaluator

Nonvalvular AF Anticoagulation CHA₂DS₂VASc

Low risk (0)
- No therapy

Intermediate risk (1)
- ASA = Aspirin 75-325
- OAC = well controlled warfarin (INR 2-3), or (apixaban, rivaroxaban or dabigatran)

High risk (2)

New Oral Anticoagulants

Appropriate Tx Underprescribed

Class I

- New oral anticoagulants are a useful alternative to warfarin for the prevention of stroke and systemic thromboembolism in women with paroxysmal or permanent AF and prespecified risk factors (according to the CHADSVASc) who do NOT have a prosthetic heart valve or hemodynamically significant valve disease, severe renal failure (CrCl <15 mL/min), lower weight (<50kg) or advanced liver disease (impaired baseline clotting function).

Level of Evidence A

RATE VS RHYTHM CONTROL

Rate Control

Atrial Fibrillation

No Other CV Events
Hypertension or HTN
AF
Heart Failure or HF
Atrial Fibrillation
Anticoagulation

End Points (HF, thromboembolic complications, and adverse effects of antiarrhythmic drugs)

Strategies for Rhythm Control

No Structural Heart Disease
Structural Heart Disease

Rate Control

Rate vs Rhythm Control

Strategies for Rhythm Control

Female Patients Male Patients

End point (%) p=0.001 p=0.4

p=0.001

Rienstra M, van Veldhuisen DJ, Hagens VE et al. Gender-Related Differences in Rhythm Control Treatment in Persistent Atrial Fibrillation: Data of the Rate Control vs Electrical Cardioversion (RACE) Study. JACC 2005 46(7) :1298-1306.

2014 AHA/ACC/HRS Guideline for the Management of Patients with Atrial Fibrillation, JACC 2014, doi:10.1016/j.jacc.2014.03.022
Transesophageal Echo (TEE)

- If < 48 hours in AF can cardiovert without TEE
- If > 48 hours of AF without adequate anticoagulation, must undergo TEE prior to any attempt at rhythm control

Conclusions

- Women with AF have worse prognosis with increased strokes, and increased mortality c/w men
- Women have an increased risk factor burden
- New guidelines recommend active screening for AF especially women >75 years of age
- CHA$_2$DS$_2$VASc provides improved risk stratification for stroke risk in women
- Rate control strategy is appropriate in women

Call to Action

- More aggressive and earlier diagnosis and treatment of AF in postmenopausal women
- Increased Risk Factor modification
- Treatment with OAC’s when appropriate
- Early referral to Cardiology