Current Management of Atrial Fibrillation

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DISCLOSURES

*I have no financial conflicts to disclose


Heart Beat Anatomy

**THE PURKINJE NETWORK**
- Bundle Branches
- Purkinje Fibers
- Moves the impulse through the ventricles for contraction
- Provides “Escape Rhythm”: 20-40 BPM
Normal EKG Activation

Atrial Fibrillation
- Incidence 2-3 per 1000 population btw 55-64. Increases with age
- Btw 2010 and 2050 expected to double to 5.6 million adults
- 350,000 hospitalizations & 5 million office visits for A Fib (2001)
- Underlying etiology in 75,000 strokes per year with 5 fold increased risk of ischemic stroke

Fibrillation vs Flutter
- Fibrillation is a different beast than atrial flutter
- The P waves are referred to as flutter or f waves
- Appear in a saw-tooth pattern
- Regular atrial rhythm; vent. rhythm may be regular or irregular
Atrial Flutter Strips

Atrial Flutter Strips (cont.)

Atrial Fibrillation

* Can be extremely challenging to treat
* Problematic in patients with HF
* Is associated with increased risk of stroke
* Three main types
  - Paroxysmal (intermittent)
  - Persistent (greater than 7 day)
  - Permanent (greater than 1 year)
  - Recurrent (2 or more episodes)
Atrial Fibrillation

Atria are irritable, no longer beating, just quivering (fibrillating)
No P waves, wavy baseline of fibrillatory or f waves
Random, chaotic conduction through the AVN totally irregular ventricular rhythm,
QRS complex <0.12 seconds unless BBB present or aberrant conduction

Atrial Fibrillation

If ventricular rate is >100/minute the rhythm is said to have a rapid ventricular response or an uncontrolled response
< 100/min is a controlled ventricular response

Atrial Fibrillation Strips
**Atrial Fibrillation**

* Substrate is located around the pulmonary veins

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**Consequences of A Fib**

* Symptoms
* Stroke
* Cardiomyopathy/heart failure (chicken or egg question)

* Consequences of medications
  - Coumadin
  - Antiarrhythmics

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**COMMON SYMPTOMS**

* Palpitations
* Fatigue
* Shortness of breath
* Fluid retention
* Exercise intolerance
* Lightheadedness/presyncope
* Chest discomfort
How to Treat AF

- Many approaches to AF, but not all are right for every patient
- Pharmacological therapy
- Cardioversion
  - Chemical
  - Electric
- Radiofrequency (RF) ablation
- Surgical approaches
- Stepwise approach best starting with stroke risk assessment

CHADS2

- Cardiac Failure = 1
- Hypertension = 1
- Age > 75 = 1
- Diabetes = 1
- Stroke or TIA history = 2

- Score >2 – Warfarin
- Score of 1 = aspirin or warfarin
- Score 0 = aspirin

<table>
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<th>CHADS: Score</th>
<th>Stroke Risk %</th>
<th>95% CI</th>
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<td>6</td>
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Warfarin

- Anticoagulant
- INR between 2-3
- Consider fall risk and other consequences of bleeding
- Frequent monitoring
- Other medication interferences

Dabigatran

- Direct Thrombin inhibitor
- Dosed 150mg bid
- No INRs required
- Less potential for interaction with other medications
- Lower dose in renal insufficiency
- New finding related to bleeding

Rivaroxaban (Xarleto)

- New oral factor Xa inhibitor
- Approved for nonvalvular atrial fibrillation
- First agent approved for prevention of DVT
- Noninferior to warfarin
- Less intracranial and fatal bleeding
- Once daily dose of 20mg. 15mg if Cr Cl 15-50ml/min
Increased Risk of Stroke After Discontinuation in Nonvalvular Atrial Fibrillation: Discontinuing XARELTO®, in the absence of adequate alternative anticoagulation, increases the risk of thrombotic events. An increased rate of stroke was observed during the transition from XARELTO® to warfarin in clinical trials in atrial fibrillation patients. If XARELTO® must be discontinued for a reason other than pathological bleeding, consider administering another anticoagulant.

**Case Study**

- 57 year old female wakens in the morning from palpitations
- After one hour, feeling poorly
- Notes heart “fast and pounding”
- Feels the irregularity
- No cardiac history
- No significant medication issues
- On no routine medications
**Case Study**

- Arrives in ER
- Atrial fibrillation with RVR
- Diltiazem converts quickly
- What might next steps be?

**First tier strategy**

- First tier strategy
  - Beta Blockers
  - Calcium channel blockers
**CALCIUM CHANNEL BLOCKERS**

- Cause vasodilatation and reduction of peripheral vascular resistance
- Also act on the nodal tissue to slow conduction (verapamil and diltiazem)
- Used for hypertension, supraventricular arrhythmias, angina
- Caution when combined with other CV agents
- Contraindicated in patients with HF due to negative inotropic effect

**SOTALOL**

- Mixed class II and III – has antiarrhythmic and beta blocking effects
- Useful for ventricular arrhythmias and for a fib/flutter
- Can cause prolonged QT – Torsades
- Check an EKG after starting and increasing doses
- Not a good choice in HF

**FLECAINIDE**

- Class IC antiarrhythmic
- Used for PSVT, A fib/flutter and ventricular arrhythmias
- Can be proarrhythmic
- Need to monitor ECG initially
AMIODARONE

- Mixed Class III antiarrhythmic
- Less likely than sotalol to prolong the QT interval
- Good drug when LVD exists
- Long half life
- Interaction with other meds (warfarin)

- Many side effects
- Need to monitor for these
- Guidelines through the HRS
- At baseline- LFTs, TSH, CBC, INR
- Evaluate the lungs- CXR vs PFTs
- Repeat regularly

DRONEDARONE

- New drug similar to amiodarone – without iodine group
- Properties of all 4 antiarrhythmic categories
- Inhibits calcium, sodium and potassium channels and has alpha and beta blocking properties
**Dronedarone**
* Dosed as 400mg bid
* Do not use with other antiarrhythmic or QT prolonging drugs
* Contraindicated in patients with Class 4 HR or Class 2-3 with recent exacerbation
* Monitoring of side effects (as with amiodarone) not necessary

**Dofetilide (Tikosyn)**
* Must be hospitalized to initiate.
* Monitor QRS duration

**Radiofrequency (RF) Ablation**
* Application of RF energy directly to cardiac tissue to destroy or alter conduction pathways involved in arrhythmias
* Catheter technique
* Not appropriate for all patients or all arrhythmias
* Often used when other therapies fail or are not desired
* A curative procedure—for the right candidates
Atrial Flutter/Fibrillation: Treatment

- Indications for synchronized cardioversion
  - Any unstable condition related to tachycardia
  - Chest pain
  - AMI
  - Shortness of breath
  - Pulmonary congestion/CHF
  - Decreased level of consciousness
  - Low blood pressure
  - Shock