American College of Cardiology
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MEXICO CITY
JUNE 22 - 24, 2017

GLOBAL EXPERTS, LOCAL LEARNING
Solutions for Every Day Problems
Ask the Experts Roundtable:
Common Dilemmas in AF

Moderator: Hector Michelena, MD
Presenters: Drs. Samuel Asirvatham & Manlio F. Marquez
Saturday, June 24, 2017
3:30 to 4:15 p.m.
Challenges in Atrial Fibrillation

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Learning Objectives

• **Recognize** reversible causes of AF

• **Identify** upstream therapies for AF management

• **Explore** various treatment strategies for AF

• **Formulate** a plan for patients with high bleeding risk
Atrial Fibrillation Cases
Atrial Fibrillation: Case 1
Case 1: Young Male With Syncope

- 35 year old male passed out while playing basketball
- Palpitations before onset of dizziness
- No significant past medical history
- Not on any medications
Most appropriate next step in management?

1. Adenosine
2. IV Metoprolol or Diltiazem
3. IV antiarrhythmic medications
4. Cardioversion
Case 1

Most appropriate next step in management?

1. Adenosine

2. IV Metoprolol or Diltiazem

3. IV antiarrhythmic medications

4. Cardioversion
Reversible Causes of AF

- Wolff-Parkinson-White (WPW) syndrome
- Thyroid disorders
- Holiday heart syndrome
  - Alcohol withdrawal
- Recreational drug use
- Fever (pneumonia)
Atrial Fibrillation: Case 2
Case 2

- 30 year old male college student
  - Palpitations
- BMI 44 kg/m²
  - 50 pound gain over the last 6 months
- He wears a shirt with color size 18"
- Snores at bedtime – per his girl friend
- Clinic exam: Normal sinus rhythm
| Patient: | Recorded: Monday, September 19, 2016 at 10:10:44 PM | Heart Rate: 120 bpm | Duration: 30s | Finding by Kardia: Possible atrial fibrillation |

![Heart rate graph](image)

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Case 2

Most likely diagnosis?

1. Sinus arrhythmia
2. Sinus rhythm with PACs
3. Junctional rhythm, underlying artifact
4. Atrial fibrillation
OSA and AF

AF-free survival

Follow-up, months

- PVI(+) OSA(-) CPAP(-)
- PVI(+) OSA(+) CPAP(+)
- PVI(+) OSA(+) CPAP(-)
- PVI(-) OSA(+) CPAP(+)

Fein AS: J Am Coll Cardiol 2013;62(4):300-305
Atrial Fibrillation: Case 3
Case 3

• 66 year old male with HTN and highly symptomatic AF
• He has preserved EF and no other risk factors
• BMI 22 kg/m\(^2\)

Most appropriate next step in management?

1. Rhythm control strategy
2. Rate control strategy
3. AV node ablation/PPM implant
4. Surgical MAZE procedure
Brief History: Discovery

- William Stokes (1854)
- Karel Wenckebach (1904)
- Einthoven (1907, 1908)
- Moe (1964)
- Haissaguerre (1998)

Key Events:
- Irregular Pulse
- Pulmonary vein (PV) are the triggers
- Multiple wavelet theory
- ECG

Timeline:
- 1854
- 1904
- 1907
- 1908
- 1964
- 1998
Brief History: Therapy

- Phillips & Levine (1949)
  - Rate control for tachycardia cardiomyopathy

- Lown (1962)
  - Cardioversion

- Cox & Haissaguerre (1991)
  - Anticoagulation
  - Maze Pulmonary Vein Isolation (1998)
Paroxysmal

Persistent

Permanent

Trigger/initiation

Substrate/maintenance

AF duration
Why Rhythm Control?

- Symptoms
- Stroke and mortality
- QOL
- Dementia
- Symptoms
No structural heart disease

Dofetilide
Dronedarone
Flecainide
Propafenone
Sotalol

Catheter ablation

Amiodarone

Structural heart disease

CAD

Dofetilide
Dronedarone
Sotalol

Catheter ablation

Amiodarone

HF

Dofetilide
Dronedarone

Catheter ablation

Amiodarone

Dofetilide
## Success Rates

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paroxysmal AF</td>
<td>80%</td>
</tr>
<tr>
<td>Persistent AF</td>
<td>60%</td>
</tr>
<tr>
<td>Blanking period</td>
<td>Normal to have AF</td>
</tr>
<tr>
<td>Periprocedural complications</td>
<td>2-5%</td>
</tr>
<tr>
<td>Stroke/TIA</td>
<td>1%</td>
</tr>
<tr>
<td>Death</td>
<td>0.25%</td>
</tr>
<tr>
<td>Pericardial complications</td>
<td>1-2%</td>
</tr>
</tbody>
</table>
Atrial Fibrillation: Case 3
Case 3

Most appropriate next step in management?

1. Rhythm control strategy
2. Rate control strategy
3. AV node ablation/ PPM implant
4. Surgical MAZE procedure
Case 3

- 2 weeks after recent cardioversion
- STEMI and PCI (drug eluting stent) to LAD

Anticoagulation regimen:

1. ASA + Clopidogrel
2. ASA + NOAC/Coumadin
3. Clopidogrel + NOAC/Coumadin
4. ASA + Clopidogrel + NOAC/Coumadin
Triple- vs Double-Therapy Groups

Cumulative Incidence, %

Time, Days

Triple-therapy
44.4%

Double-therapy
19.4%

2013 Mar 30;381(9872):1107-15
Case 3

Anticoagulation regimen:

1. ASA + Clopidogrel

2. ASA + NOAC/Coumadin

3. Clopidogrel + NOAC/Coumadin

4. ASA + Clopidogrel + NOAC/Coumadin
Atrial Fibrillation: Case 4
Case 4

• 80 year old female with frequent falls
• Recent subdural hematoma with associated intra-parenchymal brain bleed

Most appropriate next step in management?

1. Coumadin INR 1.5-2
2. Apixaban
3. Aspirin
4. LAA occlusion
Perfect Storm

- Extracellular matrix abnormal changes
- Myocytic hypertrophy
- Sclerosis
- Fibroelastosis

- Thrombus
- Inflammation
- Hypercoaguable State
- Blood Stasis

- ↑vWF
- ↑IL6
- ↑CRP
- ↑thrombin-antithrombin complex
- ↑D-dimer
- ↑Prothrombin 1 and 2

- Loss of atrial systole
- LAA
- LA dilation
CHADS\textsubscript{2} and CHA\textsubscript{2}DS\textsubscript{2}VASc

Key differences

• Intermediate risk
• Low risk: no therapy
• Women aged 65 and above
Mechanical heart valves or moderate or severe MS

No

CHA$_2$DS$_2$-VASc Score

0

No antiplatelet or anticoagulant treatment

1

OAC

≥2

LAA occlusion contraindications for OAC

OAC

NOAC

VKA

Yes
• Coumadin
  • Cheap
  • Adherence
• ASA: Almost never for AF
• Dabigatran: Ischemic stroke reduction
• Apixaban: Low bleeding risk
• Rivaroxaban: Compliance
Watchman

- **Advantages**
  - Expertise readily available

- **Disadvantages**
  - Requires anticoagulation
  - Foreign body in circulation
  - Erosion
  - Embolization
Watchman

Price, MJ. Circulation. 2014;130:202-212
Case 4

Most appropriate next step in management?

1. Coumadin INR 1.5-2
2. Apixaban
3. Aspirin
4. LAA occlusion
Summary

- Reversible causes of AF
  - WPW
- Upstream therapy
  - Weight management
- Rhythm control strategy
  - Symptoms
- Stroke prevention
  - NOACs > warfarin
  - LAA occlusion
Questions & Discussion