Rate vs. Rhythm control

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Goals of therapy in atrial fibrillation

1. Prevention of thromboembolism
2. Symptom control
3. Saving lives?
CASE 1

- 60M, Hypertension
- Persistent typical atrial flutter
- After administration of Bisoprolol 2.5 MG OD- asymptomatic

**Options:**
1. DC cardioversion
2. DC cardioversion + Flecainide
3. Ablation
4. Continue as is
Rate control vs. Rhythm control for AF
AFFIRM, NEJM 2002

- 4060 patients with AF 6 hours – 6 months
- Age> 65 or <65 + risk factor for CVA
- No prior CVA
- Randomization to rate vs. Rhythm control
- Anticoagulant use in 90%, but
  - OAC (Warfarin) could be discontinued after 4 weeks in Sinus rhythm
AFFIRM- 5 years end points

- Sinus rhythm
  - Rate control 35%
  - Rhythm Control 63%
- No significant difference in QOL, CVA, total mortality
- Hospitalization-
  - Rate control 73%
  - Rhythm control 80%*

* Statistically significant
AFFIRM- conclusions

• Rhythm control offers no survival (or other) benefit, and there is a potential advantage in avoiding AADs and their side effects
• Anticoagulation should be continued regardless the rhythm
In AFFIRM, similar rate of TE occurred in both groups; However, OAC could be stopped after >4 weeks in sinus rhythm

Mean F/up 26 months
The survival benefit of maintaining sinus rhythm with AADs was offset by their side effects.
Limitations

• Comparison of Rate vs. Rhythm control approach, not comparing Sinus rhythm vs. AF
• Many patients had recurrent AF in the rhythm control
• AAD carries significant risk
• Elderly patients (mean 70 years)
CASE 2

- 53M, recurrent admission for heart failure exacerbation
- EF 25% for at least 3 years
- Normal coronary angiogram
- NYHA FC 3 on OMT for HF
- Last documented sinus- five years ago

Options:
1. DC cardioversion
2. Amiodarone load then DC cardioversion
3. Ablation
4. Single- chamber ICD for primary prevention
• N = 1376 mean
• F/Up 37 months
• Mean age 67
• Mean EF 27%
• Persistent AF in 68%
• LA diameter 49 mm
• Ischemic CDM 48%

hazard ratio, 1.06; 95% CI interval, 0.86 to 1.30)
AF-CHF study- conclusions:

• A rhythm-control strategy does not improve mortality, stroke rates or heart failure
• Rate-control strategy reduces the need for hospitalizations and DCCV
• Rate control should be considered a primary approach for patients with AF and CHF
AF-CHF study- criticism:

• Many patients in rhythm control were in AF
• Many patient in rate-control were in sinus
• The advantage of maintaining sinus rhythm is offset by the AAD side effects
• Ablation rarely done
• High cross over between groups (20% in rhythm, 10% in rate)
Comparative Effectiveness of Rhythm Control vs Rate Control Drug Treatment Effect on Mortality in Patients With Atrial Fibrillation

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• 26,130 patients
• Population-based database from Canada
• Age ≥ 66

< 6 months- HR 1.07 (1.01-1.14) favors Rate control
6 months- 4 years- equal
> 4 years – reduced mortality with rhythm control

Rhythm Versus Rate Control Therapy and Subsequent Stroke or Transient Ischemic Attack in Patients With Atrial Fibrillation

Meytal Avgil Tsadok, PhD; Cynthia A. Jackevicius, PharmD, MSc; Vidal Essebag, MD, PhD; Mark J. Eisenberg, MD, MPH; Elham Rahme, PhD; Karin H. Humphries, DSc; Jack V. Tu, MD, PhD; Hassan Behlouli, PhD; Louise Pilote, MD, PhD

- 60,000 patients
- Both group- OAC in 78% of patients
- Rhythm control associated with lower rate of stroke with CHADS2 ≥1
- Overall, Rhythm control was associated with a 20% lower risk of stroke

Circulation. 2012;126:2680-2687
Stroke and Cardiovascular Events After Ablation or Antiarrhythmic Drugs for Treatment of Patients With Atrial Fibrillation

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Catheter ablation and antiarrhythmic drugs (AADs) are the most common rhythm-control strategies for atrial fibrillation (AF). Data comparing the rate of stroke and cardiovascular events between the treatment strategies are limited. Therefore, this observational study uses claims data to compare rate of cardiovascular hospitalization and stroke for patients with AF treated with ablation or AADs. Patients in the MarketScan dataset with AF between January 2010 and December 2014 were categorized in the ablation group if an atrial catheter ablation was performed, or in the AAD group if a relevant AAD was prescribed for AF but no ablation was performed. One year of history was required, and the index event was selected as the most recent ablation or AAD prescription closest to January 1, 2013. A 2:1 propensity score match was performed for age, gender, comorbidities, and total medical cost in the year before index event. Outcomes included thromboembolic event (ischemic stroke, transient ischemic attack, or systemic embolism) and all cardiovascular hospitalizations. Of the 164,639 patients in the AAD group, 29,456 were matched to the 14,728 ablation patients. There were no significant differences in age (64 ± 10 in both groups), gender (58% male), or CHA\textsubscript{2}-DS\textsubscript{2}-VASc score (3.2 ± 1.3). Risk of hospitalization with primary diagnosis of thromboembolic event was 41% greater in the AADs group (p < 0.001), and cardiovascular hospitalizations were 13% more likely (p < 0.001). In conclusion, patients treated with catheter ablation of AF have lower risk of thromboembolic events and cardiovascular hospitalizations than a matched cohort of patients managed with AADs. © 2018 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/). (Am J Cardiol 2018;121:1192–1199)
Atrial fibrillation ablation patients have long-term stroke rates similar to patients without atrial fibrillation regardless of CHADS2 score.
75M with H/O percutaneous balloon mitral valvuloplasty for MS 5 years ago, now with mild MS, AF and EF 25%
On Warfarin with high INR
Atrial fibrillation is independently associated with senile, vascular, and Alzheimer’s dementia

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Patients Treated with Catheter Ablation for Atrial Fibrillation Have Long-Term Rates of Death, Stroke, and Dementia Similar to Patients Without Atrial Fibrillation

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Summary so far

• No randomized study justify rhythm control using antiarrhythmic medications over rate control
• AAD efficacy is limited
• AAD side effects are significant
• Studies had too short follow up
• Studies had high cross-over rate
Catheter Ablation for Atrial Fibrillation with Heart Failure

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A Death or Hospitalization for Worsening Heart Failure

B Death from Any Cause

Effect of Catheter Ablation vs Antiarrhythmic Drug Therapy on Mortality, Stroke, Bleeding, and Cardiac Arrest Among Patients With Atrial Fibrillation: The CABANA Randomized Clinical Trial

• 2204 symptomatic patients with AF > 65 years or <65+ risk factor for stroke

• Ablation vs. medical treatment (rhythm or rate control)

Conclusion:
Among patients with AF, the strategy of catheter ablation, compared with medical therapy, did not significantly reduce the primary composite end point of death, disabling stroke, serious bleeding, or cardiac arrest.
Conclusions

• Sinus rhythm is better than atrial fibrillation
  • Excluding elderly inactive patients
• Patient-specific approach should be pursued
Whom should be offer rhythm-control?

• Young patients
• Patients without long-standing persistent AF
• Patients with tachycardia-induced cardiomyopathy
• Patients with heart failure
  —(not with longstanding AF and very low EF of < 25%)
What type or rhythm control to use?

Initiation of long term rhythm control therapy to improve symptoms in AF

- No or minimal signs for structural heart disease
  - Patient choice
    - Dronedarone (IA)
    - Flecainide (IA)
    - Propafenone (IA)
    - Sotalol (IA)

- Coronary artery disease, significant valvular heart disease, abnormal LVH
  - Patient choice
    - Dronedarone (IA)
    - Sotalol (IA)
    - Amiodarone (IA)

- Heart failure
  - Patient choice
    - Amiodarone (IA)
    - Catheter ablation (IIaB)

ESC guidelines 2016
**CASE 2**

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- EF 25% for at least 3 years
- Normal coronary angiogram
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**Options:**
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4. Single-chamber ICD for primary prevention
CASE 1

- 60M, Hypertension
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**Options:**
1. DC cardioversion
2. DC cardioversion + PO Flecainide
3. Ablation
4. Continue as is
Underlying sinus node dysfunction...
And now he is symptomatic....
Luckily he went into AF and became asymptomatic again...
CAN YOU GUESS WHO'S PREGNANT?
THANK YOU