

ATRIAL FIBRILLATION IN HEART FAILURE- TREATMENT OPTIONS AND ANTICOAGULATION

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Special Article

SHATTUCK LECTURE — CARDIOVASCULAR MEDICINE AT THE TURN OF THE
MILLENNIUM: TRIUMPHS, CONCERNS, AND OPPORTUNITIES

ELMER BRAUNWALD, M.D.

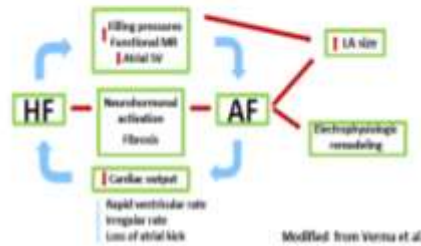
*"Two epidemics of cardiovascular disease
are emerging:
heart failure and atrial fibrillation"*



Braunwald E. N Engl J Med 1997;337:1360-9

AF and HF: two *interconnected* epidemics

- Common predisposing factors
- Co-exist and promote each other
- Prevalence of AF ~ 30% in HF (5% in NYHA I to 50% in NYHA IV)
- Prognostic value of AF in HF (both HFrEF and HFpEF)

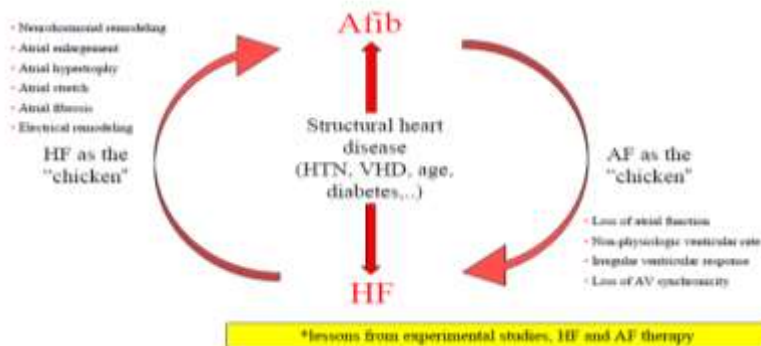


GY et al. *Europace* 2016;18:12-36
Verma et al. *Circulation* 2017;135:1547-1563

Modified from Verma et al.

Co-existence of Afib and HF

The vicious circle of the chicken and the egg



Clinical Characteristics and Management of Hospitalized and Ambulatory Patients with Heart Failure-Results from ESC Heart Failure Long-Term Registry- Egyptian cohort

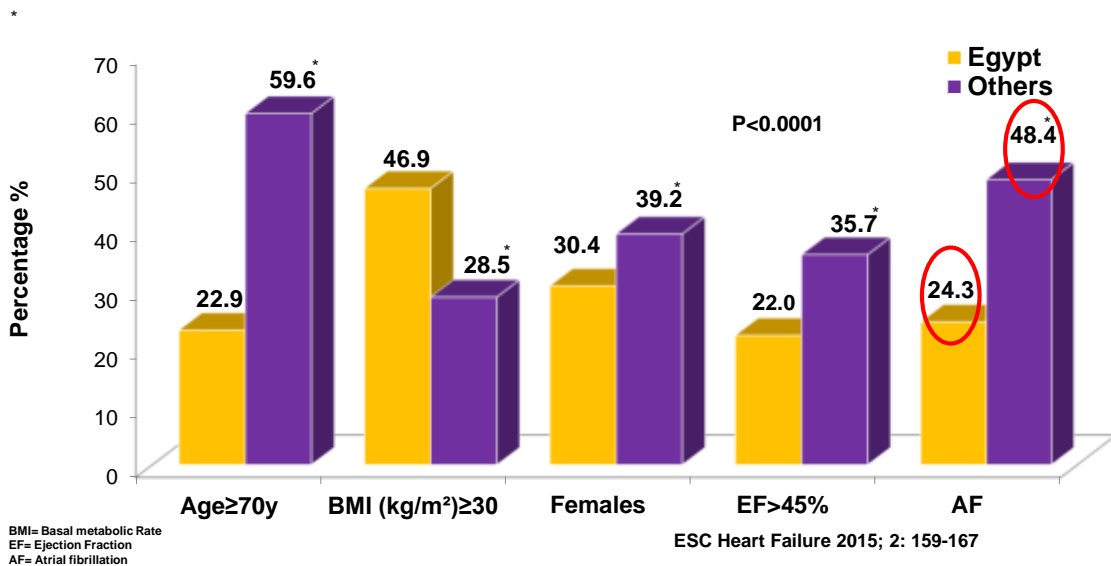
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ESC Heart Failure 2015; 2: 159-167

| Presentation Title | Presenter Name | Date | Subject |
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Baseline Characteristics



Prevention of AF in patients with heart failure

- ACEIs
- ARBs
- Betablockers
- MRAs
- CRT...little effect
- Beware *ivabradine* may increase the incidence of AF in patients with heart failure

Amiodarone

- Reduces the incidence of AF
- Induces pharmacological cardioversion
- Maintains more patients in sinus rhythm after cardioversion
- May be used to control symptoms in patients with paroxysmal AF if beta-blockers fail to do so.

Amiodarone

- Amiodarone should generally be restricted to short-term (6 months) use in patients with paroxysmal or persistent AF
- It helps attain sinus rhythm and reduce the high rate of recurrent AF immediately after cardioversion.
- Dronedarone is contraindicated in patients with HF and AF

Identification of potentially correctable causes

- Thyroid disorder.....hypothyroidism or hyperthyroidism
- Electrolyte disorders
- Uncontrolled hypertension
- Mitral valve disease
- Other precipitating factors..... recent surgery, chest infection or exacerbation of COPD/asthma, acute myocardial ischaemia, alcohol binge

Management Strategy

- Assessment of stroke risk and need for anticoagulation
- Assessment of ventricular rate and need for rate control
- Evaluation of symptoms of HF and AF

Assessment of stroke risk and need for anticoagulation

Thromboembolism profilaxis: OAC

- Same risk and protection for HF_rEF and HF_pEF
- More difficult balance of CHA₂DS₂-Vasc and HAS-BLED scores
- Attention to renal function for dosage (no data for NOACs when creatinine clearance <30 mL/min)
- Age >75 years
- Small differences among different NOACs

Clinical risk factors for stroke, transient ischaemic attack, and systemic embolism

CHA ₂ DS ₂ -VASc risk factor	Points
Congestive heart failure Signs/symptoms of heart failure or objective evidence of reduced left-ventricular ejection fraction	1
Hypertension Resting blood pressure >140/90 mmHg on at least two occasions or current antihypertensive treatment	1
Age 75 years or older	2
Diabetes mellitus Fasting glucose >125 mg/dL (7 mmol/L) or treatment with oral hypoglycaemic agent and/or insulin	1
Previous stroke, transient ischaemic attack, or thromboembolism	2
Vascular disease Previous myocardial infarction, peripheral artery disease, or aortic plaque	1
Age 65–74 years	1
Sex category (female)	1

Modifiable and non-modifiable risk factors for bleeding in anticoagulated patients with AF

Modifiable bleeding risk factors:	Non-modifiable bleeding risk factors:
Hypertension (especially when systolic blood pressure is >160 mmHg)	Age (>65 years) (≥75 years)
Labile INR or time in therapeutic range <60% in patients on vitamin K antagonists	History of major bleeding
Medication predisposing to bleeding, such as antiplatelet drugs and non-steroidal anti-inflammatory drugs	Previous stroke
Excess alcohol (≥8 drinks/week)	Dialysis-dependent kidney disease or renal transplant
Potentially modifiable bleeding risk factors:	Cirrhotic liver disease
Anaemia	Malignancy
Impaired renal function	Genetic factors
Impaired liver function	Biomarker-based bleeding risk factors:
Reduced platelet count or function	High-sensitivity troponin
	Growth differentiation factor-15
	Serum creatinine/estimated CrCl

The prevention of thrombo-embolism in patients with symptomatic heart failure (NYHA Class II-IV) and paroxysmal or persistent/permanent atrial fibrillation (1)

Recommendations	Class	Level
The <u>CHA₂DS₂-VAS</u> and <u>HAS-BLED</u> scores are recommended tools in patients with HF for the estimation of the risk of thromboembolism and the risk of bleeding associated with oral anticoagulation, respectively.	I	B
An <u>oral anticoagulant</u> is recommended to prevent thrombo-embolism for all patients with paroxysmal or persistent/permanent AF and a CHA ₂ DS ₂ -VAS _c score ≥ 2, without contra-indications, and irrespective of whether a rate or rhythm management strategy is used (including after successful cardioversion).	I	A
NOAC treatment is contra-indicated in patients with <u>mechanical valves</u> or at least moderate mitral stenosis.	III	B
In patients with <u>AF of ≥48 h duration</u> , or when the duration of AF is unknown, an oral anticoagulant is recommended at a therapeutic dose for ≥ 3 weeks prior to electrical or pharmacological cardioversion.	I	B

Prevention of thrombo-embolism in patients with symptomatic heart failure (NYHA Class II-IV) and paroxysmal or persistent/permanent atrial fibrillation (2)

Recommendations	Class	Level
<u>Intravenous heparin or LMWH and TOE guided strategy</u> is recommended for patients who have not been treated with an anticoagulant dose for ≥ 3 weeks and require urgent <u>electrical or pharmacological cardioversion</u> for a life threatening arrhythmia.	I	C
<u>Combination of an oral anticoagulant and an antiplatelet agent</u> is not recommended in patients with chronic (> 12 months after an acute event) coronary or other arterial disease, because of a high-risk of serious bleeding. Single therapy with an oral anticoagulant is preferred after 12 months.	III	C
For patients with HF and non-valvular AF eligible for anticoagulation based on a CHA ₂ DS ₂ -VAS _c score, <u>NOACs rather than warfarin</u> should be considered for anticoagulation as <u>NOACs are associated with a lower risk of stroke, intracranial haemorrhage and mortality, which outweigh the increased risk of gastrointestinal haemorrhage.</u>	IIa	B

A left atrial occlusion device could be considered in a patient with AF as an alternative to an oral anticoagulant who is at high-risk both of thromboembolism and of bleeding in order to avoid the risk of haemorrhage due to anticoagulation risk

Rate control

- Limited drug therapy: Beta-blocker and Digoxin
- Optimal resting ventricular rate is uncertain
 - ESC AF guidelines suggest $<110/\text{min}$
 - In HF is suggested 70-100/min
 - $<70/\text{min}$ could worsen prognosis
- Optimal ventricular rate also uncertain by exercise: probably $<110/\text{min}$
- AV node ablation and CRT implantation

Tachycardiomyopathy

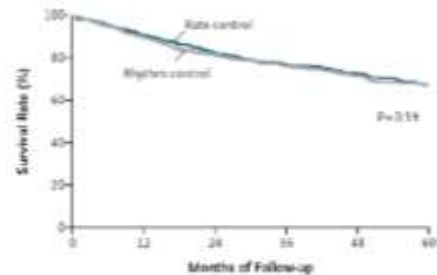
- Persistent $\text{HR} > 150/\text{min}$
- Respond better with increase of LVEF after treatment: rhythm control
- Some degree of tachycardiomyopathy in 20-50% of patients

Rhythm control

Rate versus rhythm control

AF-CHF trial

- > 1300 patients
- LVEF <35% (27±6%)
- NYHA II-IV (>III 76%)
- Px and Persistent AF
- Amiodarone >80%



No. at Risk	0	12	24	36	48	60
Rhythm control	283	214	178	148	128	82
Rate control	304	221	182	158	139	89

Sinus Rhythm in 73% in Rhythm control
versus 35% in Rate control arm

Management of new-onset, rapid atrial fibrillation in patients with heart failure

Recommendations	Class ^a	Level ^b
Urgent <u>electrical cardioversion</u> is recommended if AF is thought to be contributing to the patient's <u>haemodynamic compromise</u> in order to improve the patient clinical condition.	I	C
For patients in NYHA Class IV, in addition to treatment for AHF, an <u>intravenous bolus of amiodarone</u> or, in digoxin-naïve patients, an <u>intravenous bolus of digoxin</u> should be considered to reduce the ventricular rate.	IIa	B

For patients in NYHA Class I–III, a <u>beta-blocker</u> , usually given orally, is safe and therefore is recommended as first-line treatment to control ventricular rate, provided the patient is euvolaemic.	I	A
For patients in NYHA Class I–III, <u>digoxin</u> , should be considered when ventricular rate remains high ^d despite beta-blockers or when beta-blockers are not tolerated or contra-indicated.	IIa	B
<u>AV node catheter ablation</u> may be considered to control heart rate and relieve symptoms in patients unresponsive or intolerant to intensive pharmacological rate and rhythm control therapy, accepting that these patients will become pacemaker dependent.	IIb	B

Recommendations	Class ^a	Level ^b
<u>Electrical cardioversion or pharmacological cardioversion with amiodarone may be considered in patients with persisting symptoms and/or signs of HF, despite OMT and adequate control of ventricular rate, to improve clinical/symptomatic status.</u>	IIb	B
<u>AF ablation may be considered in order to restore sinus rhythm to improve symptoms in patients with persisting symptoms and/or signs of HF, despite OMT and adequate control of ventricular rate, to improve clinical/symptomatic status.</u>	IIb	B
Amiodarone may be considered prior to (and following) successful electrical cardioversion to maintain sinus rhythm.	IIb	B

<u>Dronedarone</u> is not recommended because of an increased risk of hospital admissions for cardiovascular causes and an increased risk of premature death in NYHA Class III–IV patients.	III	A	247,347
<u>Class I antiarrhythmic agents</u> are not recommended because of an increased risk of premature death.	III	A	248,364,365

CONCLUSIONS

- AF is the most common arrhythmia in HF
- AF increases the risk of thromboembolic complications
- AF may impair cardiac function, leading to worsening symptoms of HF
- New-onset AF in a patient with established HF is associated with a worse outcome

CONCLUSIONS

- Identification of potentially correctable causes and precipitating factors is mandatory
- Management strategy should be based on assessment of stroke risk and need for anticoagulation and assessment of ventricular rate and need for rate control

THANK YOU