Atrial Fibrillation

12 Angry Cardiologists

- Cardiology vs Emergency
- Australia vs UK vs USA vs Canada

AF Burden

- Most common arrhythmia seen in the ED
- 3 million people affected each year in the US (6million by 2050)
- $6 billion in health care expenses each year in the US
- Patient present due to symptoms or complications
  - Palpitations
  - Chest Pain
  - Dyspnoea
  - Shock
  - Heart Failure
  - Thromboembolic disease
  - Syncope

Pathophysiology

- Atrial fibrosis and loss of atrial muscle mass causes remodelling resulting in multiple re-entry circuits or rapidly firing atrial foci

- Triggers include
  - Autonomic nervous system stimulation
  - Bradycardia
  - Atrial premature beats
  - Tachycardia
  - Accessory AV pathways
  - Ectopic foci occurring sleeves of the atrial tissue within the pulmonary veins or vena caval junctions
  - Atrial stretrch

- Decreased atrial contractile function, loss of synchronized atrial activity and rapid ventricular response can lead to decreased cardiac output

- Prolonged rapid ventricular rate can lead to mitral regurgitation and subsequently dilated ventricular cardiomyopathy

- “atrial fibrillation begets atrial fibrillation” – i.e. the longer the rhythm is sustained, the harder it is to achieve sinus rhythm

- Electrophysiological remodelling occurs which favours AF

- Prolonged AF disturbs atrial contractile function which may take weeks to recover after reversion to sinus rhythm (atrial stunning)

Management of Atrial Fibrillation

- Before deciding on Management it is vital to determine if Atrial Fibrillation is the primary condition or if there is an acute underlying medical illness

The Complex AF Patient

- How do we manage the patient in AF with an acute underlying medical illness
- AKA “complex” AF patients
- Vague symptom – SOB, weakness
- Is it the AF causing these symptoms?
- Or is it the underlying illness causing the AF?
- Should the rate of rhythm be treated?

- Underlying medical conditions that can cause rapid AF include:-
- Sepsis
- Airways disease
- Pulmonary Embolus
- ETOH

- Treatment of Acute Medical Condition
- Vs
- Treatment of Acute Medical + Rate / Rhythm Control

- Retrospective Study of 416 Complex AF patients showed that it attempt at Rate of rhythm control was made the occurrence of adverse event increased by 6 fold!!!

- Requirement of inotropes
- CPR
- Intubation
- Death

The Management of Primary AF

- Rate Control
- Vs
- Rhythm Control

- Strong evidence of Rate Control
- AFFIRM study >4000 patients
- Rhythm control offers no survival advantage over rate control
- Lower risk of adverse events with rate control
- Medications used for Rhythm control have significant side effects and long term control rhythm control not always possible (Only successful in 60% of patients)

- Still some place for Rhythm control in the ED population
- Only consider if onset <48hrs
- Young
- Want to avoid medications
- LV dysfunction

Cardioversion

- Early cardioversion Vs Delayed Cardioversion

RACE 7 study showed delayed cardioversion not inferior to early cardioversion

>400 patients split into 2 groups – Immediate Cadrio-version and Delayed

Delayed group were treated with rate control medication only (beta blocker / Ca blocker / digoxin- aim <110bpm) and then if still in AF at 48hrs were cardio-verted

2/3 of delayed group reverted spontaneously

At 4 weeks 94% of early cardioversion still in sinus Vs 91% of delayed group

Electrical Vs Chemical Rhythm Control

- RAFF2 trial- 396 patients
- Shock Approach Vs Drug then Shock approach
- 97% reverted with shock approach
- 50% reverted with chemical therapy thus not requiring resources of shock
- Trial was with procainamide but not possible in Oz!! ?Flecanide 300mg orally (oral metoprolol given 15mins before to avoid 1:1 Aflutter)
- If flecanide works this may allow a “pill in the pocket” approach for future episodes

- No difference in PAD placement – AP Vs Antero-lateral
- No difference in energy approach – escalating Vs straight to 200Js

Rate control

- Beta-blockers
- Calcium Channel Blockers
- Digoxin is an adjunct
- Magnesium (LOMAGHI) - synergistic effect with rate control medication (study was with digoxin)
- IV esmolol safer than IV metoprolol in unstable patients

Antiocoagualtion

- Should be the EDs responsibility
- High risk of thromboembolism after cardioversion
- Commence at least until the patient follows up with a cardiologist
- NOACs appropriate (Usually apixiban or riveroxiban)
- Mechanical Heart Valve – Stick to Warfarin

Sexless CHA2Ds-VA Score

Score:-

0=No NOAC

1=NOAC

>or =2 = NOAC

Score	Points	Definition
C	1	**C**ongestive heart failure—recent signs, symptoms or admission for decompensated heart failure; this includes both HFrEF and HFpEF, or moderately to severely reduced systolic left ventricular function, whether or not there is a history of heart failure
H	1	History of **H**ypertension, whether or not BP is currently elevated
A_2	2	**A**ge ≥75 years
D	1	**D**iabetes
S_2	2	History of prior **S**troke or TIA or systemic thromboembolism
V	1	**V**ascular disease, defined as prior myocardial infarction or peripheral arterial disease or complex aortic atheroma or plaque on imaging (if performed)

- Finnish Study showed significant less stroke risk in patients cardio-verted <12hrs Vs <48hrs

ETOH

- Melbourne Study
- Moderate drinkers 12-15 standard drinks a week
- Randomised to stop drinking Vs keep drinking for 6 months
- AF recurrence and burden:-

½ Vs ¾

Summary

- Vital to recognise complex AF patients to avoid treating them as primary AF patients

- Rate Control and Rhythm Control are both recognised strategies – management plans should be determined on an individual basis usually in consultation with cardiology

- Anticoagulation should be considered and if appropriate commenced as part of management and discharge planning